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January 27, 1988

R. C. Vaseleski
Mail Code 4902

ACC Torrance Plant CERCLIS Listing

Attached is the response to our Freedom of Information inquiry regarding the Torrance plant's CERCLIS listing. The response includes a copy of an inspection report dated March 21, 1987, and a Preliminary Assessment Summary report dated June 1986. The response also includes a PA/SI Review sheet dated October 28, 1987, recommending that no further action be taken at the site. Note that the March 1987 report indicates that a copy of the inspection report will be sent to the Los Angeles County Health Department.

If I can be of any further assistance in this matter, let me know.

Ralph C. Feeney/kmt

R. C. Feeney
Mail Code 4902

RCF/kmt

Attachment

ENVIRONMENTAL
CONSERVATION
(CHEMICALS)
JAN 27 '88
RCV
JSS
CJW
FILE:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

RECEIVED
JAN 25 1988
R. C. FEENEY

IN REPLY: T-4-7
REFER TO: RIN 9-1354-87

15 JAN 1988

Ralph C. Feeney
Amoco Corporation
Mail Code 4902
200 East Randolph Drive
Chicago, IL 60601

Dear Mr. Feeney:

This is in response to your Freedom of Information request (RIN 9-1354-87) regarding the Amoco Chemical Co. facility in Torrance, California.

Enclosed please find a copy of the Preliminary Assessment for this facility. If you have any questions, please contact Holly Hadlock of this office at (415) 974-7931.

Sincerely,

Thomas L. Lif
for Jeff Zelikson
Director
Toxics & Waste Management Division

Enclosure

RIN 9-1354-87

PA/SI REVIEW

TO: Paul La Courreye

FROM: Carolyn d'Almeida Cd

DATE: 11/25/87

SITE NAME: Amoco Chemicals Corp

EPA ID: CAD048489306

LOCATION: Torrence, CA

LEAD: DHS

RECOMMENDATION: NO FURTHER ACTION

PENDING

ACTIVE

REFERRAL: DHS for RCRA generator Inspection

COMMENTS: No evidence of hazardous waste
[illegible] No Further action

Concur
Paul J. [illegible]
11-25-87

BPACC00738

ecology and environment, inc.
160 SPEAR STREET, SAN FRANCISCO, CALIFORNIA 94105, TEL. 415/777-2811
International Specialists in the Environment

MEMORANDUM

TO: Paul La Courreye, EPA Region IX

FROM: Kimberley Williams Bean, Ecology and Environment, Inc.

DATE: March 21, 1987

SUBJECT: Review of the Preliminary Assessment of the Amoco Chemical Corporation prepared by Steve Tumura of the California Department of Health Services (CDHS) dated June 1986.

EPA ID #: CAD048489306

cc: Martha Walters, Ecology and Environment, Inc.

Summary

Amoco Chemicals, formerly known as Brand Plastics, has been located at 1225 W. 196th Street in Torrance, California since 1964. Both Amoco Chemical and Brands Plastics produce polystyrene. They manufacture plastic tubing by mixing a styrene monomer and a 20% mineral oil solution to obtain polystyrene. The plastic is extruded into a trough with water flowing counter currently to set the product (1). According to the preliminary assessment, the chemicals utilized in this process include styrene monomers, oils, nitrogen and solvents. Storage facilities on-site include towers, aboveground tanks, 12,000 gallon unlined sump, drums and silos. Information describing these storage units was not given in the preliminary assessment.

Prior to 1978, the wastes that were generated were disposed of at BKK. Currently, the wastes are hauled to WH Tank Lines and General Portland for recycling and disposal. The types of wastes were listed in the preliminary assessment as styrene monomer, fatty acids, mineral oil, unspecific solvent mixture and nitrogen.

Prior to 1969, the waste water generated in the process was strained through two interceptors before entering the recirculating sump. The waste water originates when the recirculating sump overflow. This overflow water was discharged into a 35-foot dry well which was permitted through the County of Los Angeles

recycled paper

(2). After a sewer line was installed near the plant, the County of Los Angeles permitted this wastewater to be discharged directly to the sewer and the dry well was abandoned (2). The dry well was filled and "blacktopped". The method of fill was not specified. The facility currently uses a "closed loop cooling water circulating system" permitted through the Los Angeles County Engineer, Industrial Waste Division. The waste water goes through this closed loop system prior to being discharged to the sewer.

In 1973, the County Sanitation Districts considered that this was clean water and should not be discharged to the sewer. It was proposed that an injection well be drilled and the water be injected into the Silverado aquifer (3). To date, this injection well has not been installed.

RCRA Status

Amoco is currently listed as a RCRA generator in the EPA RCRA data base.

HRS Factors

Route characteristics, waste characteristics and target information were not addressed in the preliminary assessment although there was information available in the CERCLIS file. There is no record of hazardous waste disposal on site therefore it is unlikely that this site would score higher than 28.5.

Recommendations/Justifications

The CDHS recommends further characterization of the wastes based on the fact that heavy metals and biocide constituents may be associated with cooling waters. The CDHS also indicates that the preliminary assessment will be sent to the Los Angeles County Health Department. FIT recommends no further action under CERCLA at this time. In addition, FIT recommends that this site be referred to the CDHS for a RCRA generator inspection.

References

1. Department of Public Works, Industrial Waste Survey of Brand Plastics Company, 1962.

2. Letter from Gunther M. Hockmiller, Project Engineers Amoco Chemicals to Department of Water Resources, 1971.

3. Letter from Max Bookman of Bookman-Edmonston Engineering Inc. and Mr. Carl Fossette, Central and West Basin Water Replenishment District. Subject: Discharge of Water by Amoco Chemical Corporation, March 1, 1973.

CONTACT REPORT

AGENCY: Los Angeles County Department of Health
Hazardous Material Divisions

ADDRESS:

PERSON
CONTACTED: Stan Townsend, Duty Officer

PHONE NO.: (213) 744-3223

FROM: K. Williams Bean

TO: CERCLIS File

DATE: March 23, 1987

SUBJECT:

cc:

No information was available on the following sites:

1. A&T Machine Company (f.k.a Hanley's Welding)

2. Amoco Chemical Corporation
f.k.a. Branch Plastics Company

PRELIMINARY ASSESSMENT SUMMARY

CAD048489306 June 1986
Amoco Chemicals Corporation
f.k.a. Brand Plastics Company
1225 W. 196th Street
Torrance, CA 90504

Preparer: Steve Tsumura
Toxic Substances Control Division
Southern California Section
CA Department of Health Services
(213) 620-2380

History and Problem:

Amoco Chemicals has operated its facility at this location since 1964; the previous company was Brand Plastics. The main operation by both companies has been the production of polystyrene. Chemicals used in the process include styrene monomer, oils, nitrogen and solvents. Storage facilities include towers, above ground tanks, sumps, drums and silos. Prior to 1978, wastes were disposed of at BKK. Wastes are currently hauled to W-H Tank Lines and General Portland for recycling and disposal. According to Amoco's plant foreman, wastes are also incinerated by a company in Northern California.

In the 1960's, cooling tank skimmings and interceptor wastes were discharged to a drywell 35 feet deep. The drywell was abandoned around 1969, and was later filled and blacktopped. Cooling waters are currently passed through a "closed loop system", prior to discharge into the city sewer. There is no record of violations regarding hazardous waste disposal in the files at the agencies contacted.

Recommendation:

Due to the fact that heavy metal and biocide constituents may be associated with cooling waters, staff recommends further characterization of the wastes and drywell. Active status, low priority is recommended.

A copy of this report will be provided to the Los Angeles County Health Department for the regulation of the current generator.

PRELIMINARY ASSESSMENT
Region 9

Preparer's Name Steve Tsumura Date June 1986

	SOURCE	INFORMATION
1. Site I.D. Number	05-02-85 Hazardous Waste Information System, Facility Inventory Information (1.4.T)-pages	CAD048489306
2. Site Name	06-18-82 Solid Waste Information System facility inventory information DHS 8026 (3/82)	Amoco Chemicals Corp. (current)
	03-17-65 L.A. County Engineer, inspector's report	FKA Brand Plastics Company
3. Site Location	06-22-82 Abandoned Site Project drive-by inspection	1225 W. 196th Street Torrance, CA 90504
4. County	06-22-82 Solid Waste Information System, oversight Action Reporting Form. DHS 8015 (3/82)	Los Angeles
5. Owner	05-02-86 Memo to File, L.A. County Tax Assessor's Information Mapbook 7351-035-003	Amoco Chemicals Corporation 600 S. Cherry Street No. 915 Denver, Colorado 80236
6. Operator	04-17-86 Abandoned Site Assessment Program drive-by inspection	Amoco Chemical Corporation 1225 W. 196th Street Torrance, CA 90502 (213) 329-6379
7. Type of Ownership	Same as #5	Corporation
8. Status	Same as #6	Active - Amoco Inactive - Brand Plastics

PRELIMINARY ASSESSMENT
Region IX

(Continuation Sheet)

ITEM NUMBER	SOURCE	INFORMATION
9. Source Activity	04-13-83 Abandoned Industrial Waste Disposal Site Survey. DHS 8004 (12/80)	Polystyrene manufacturer - Amoco
		Polystyrene manufacturer - Brand Plastics
10. Years of Operation	a) Same as #9	1964 - present (Amoco)
	b) 05-16-62 L.A. County Engineer Memorandum	1962 - 1964 (Brand Plastics)
11. Facility Type	a) Same as 6	towers, above ground tanks, cinder block trough, railcars, fiber drum
	b) 01-05-81 L.A. County Health Dept. Phone request for plant survey	Silos
	c) 06-25-75 Regional Water Quality Control Board (RWQCB) memo from J.B. Choi to R.A. Harris	cooling tower reservoir tank evaporative cooling tower process equipment - pump glands air cooled chiller unit process water baths sump bleed-off collection sump
	d) 06-23-75 certification of Termination of surface water discharge - RWQCB	drywell
	e) 11-08-72 Report document prepared by	tank farm, styrene tank

PRELIMINARY ASSESSMENT
(Continuation Sheet)

ITEM NUMBER	SOURCE	INFORMATION
11. Facility Type (Continued)	f) 09-10-64 L.A. County Engineer, industrial waste survey	12,000 gal. unlined sump, septic tank, drywell (Brand Plastic)
	g) 12-17-62 L.A. County Engineer, industrial waste survey	(2) S-a-152 interceptors (Brand Plastic)
12. Waste Type and Description	a) Memo of Call with Bob Duer	styrene monomer, dyes, fatty acids mineral oil.
	b) 06-24-86 Hazardous Waste Information System, Manifest sub-system	organic monomer waste unspecified solvent mixture waste oil and mixed oil
	c) Same as #6	nitrogen
	d) 03-17-80 Dept. of Health Services Industrial Waste Survey Questionnaire	oil and water, organic chemicals
	e) 10-13-72 L.A. County Engineer, ground disposal permit self monitoring information inventory	process cooling water from solidification of plastics
	f) 12-11-62 L.A. County Engineer, application for industrial waste permit	plastic grounds, paper, cardboard (Brand Plastic)

BPACC00746

13. Contacts:

Bob Duer (Plant Foreman); Amoco Chemicals Corp. (213) 329-6379

14. Incidents:

None documented at the agencies contacted.

Fire and Explosion _____ Direct Contact _____

15. Inspections:

04/17/86	Abandoned Site Assessment Program drive-by inspection. Paved site has tanks, tower, tanker cars, and process silos. Site appears clean.
06/22/82	Abandoned Site Project drive-by inspection. Large tank (approximately 3 stories) noted in paved area. No visible stains at well maintained facility.
01/26/81	L.A. County Health Dept. Plant survey. Mixing of styrene with catalyst in addition to regrind of plastic.
01/26/80	L.A. County Health Dept. phone request for plant survey. Plant is fairly automated. New silos have not been installed yet.
06/23/75	Regional Water Quality Control Board inspection on discharge. Termination bleed-off is discharged to sewer. Process water was discharged into a drywell located at the plant site around 1969. Dry well has been filled and blacktopped. A closed loop cooling water system is now incorporated.
10/16/72	L.A. County Engineer (LACE) inspector's report. Cooling water discharged to sewer. Amoco wishes to discharge cooling water to a dry well.
06/29/71	LACE Notice of Violation and Order to Comply. One pass cooling water discharged to sewer.

BPACC00747

PRELIMINARY ASSESSMENT

15. Inspections (continued)

03-17-65	LACE inspector's report. Drywell is not used due to evaporation.
09-10-64	LACE Industrial waste survey. Plastic granules manufacturer. Sump is unlined and holds 12,000 gallon of fresh water.
12-17-62	LACE industrial waste survey. Plastic tubing with styrene monomer + 2% mineral oil to obtain polystyrene. Water is strained through two interceptors before entering sump. Waste is produced when sump overflows into drywell.

16. Enfov=rcement History:

06-29-71	Notice of Violation and Order to Comply issued to Amoco Chemicals. Cooling water was required to be re-circulated. Amoco proposes the use of a dry well for waste removal.

17.a. Initial recommendation for further action:

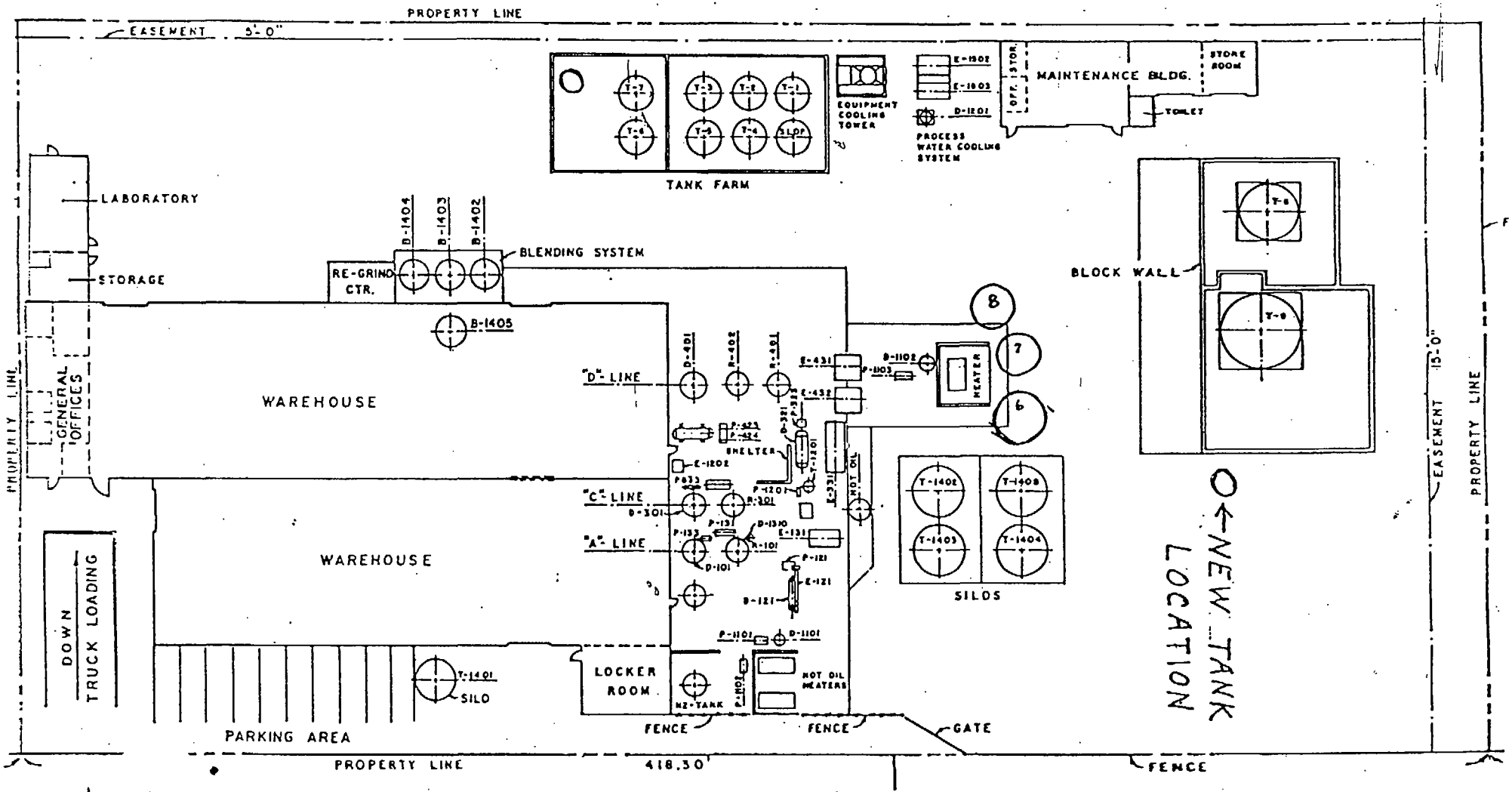
Due to the use of dry wells for waste disposal, active status, low priority. is recommended.

17.b. EPA recommendation for further action:

18. Response Termination: ___No Further Action ___Pending ___Active

Justification:

BPACC00748



TORRANCE PLANT

BPACC00749

ATTACHMENT C

TORRANCE SAMPLING PROCEDURES

The following sampling procedures are to be incorporated in this program. Contractors and laboratories will be mutually determined.

a. Prior to purging or bailing a well, the depth to water shall be measured to the nearest 0.01 ft., and total depth of the well will be measured to calculate the volume of water within the well bore.

b. Temperature, electrical conductivity, and pH will be measured during the purging process. Each well will be purged of 5 well volumes or until 3 well volumes have been purged and 3 consecutive physical measurements have stabilized to within 10 percent of one another before sampling.

c. After purging, a recovery period will be allowed, but sampling will occur no later than 48 hours after purging.

d. Samples will be collected using disposable Teflon bailers fitted with controlled flow emptying devices.

e. Samples will be collected into laboratory clean glass vials having lids with Teflon lined septa and containing hydrochloric acid as a preservative.

f. Samples will be transferred from the bailer to the vials using the submerged fill technique.

g. Lids will be replaced on the vials and the vials will be inverted and visually checked for the presence of air bubbles. Samples containing air will be uncapped, refilled and rechecked.

h. An equipment blank will be collected prior to sampling one well by pouring distilled water into a clean bailer and then decanting the water into sample vials.

i. A trip blank will be provided by the laboratory and will accompany the sample vials during the sampling event.

TORRANCE SAMPLING PROCEDURES (cont'd)

j. Samples not containing air will have labels affixed which contain the following information: date, sampler's initials, job number, well number, sample number and requested analyses. Appropriately sealed and labeled samples will be placed in an ice chest chilled to 4°C for transport to the analytical laboratory.

k. Chain-of-custody forms will be completed in the field and will accompany the samples to the laboratory.

l. Bailers will be properly discarded after use at each well.

m. Samples will be analyzed using EPA method 624 for purgeable compounds for the seven compounds in the baseline:

- 1,1-dichloroethene (1,1 DCE)
- 1,2-dichloroethene (1,2 DCE)
- trichloroethene (TCE)
- tetrachloroethene (PCE)
- methylene chloride (MC1)
- chlorobenzene
- chloroform

n. Copies of any sampling reports shall be made immediately available to both parties.

Statistical Estimation of Groundwater Baseline

from

Torrance Plant Monitoring Wells Data

Background

Property transfers through sales or purchase by Amoco typically have involved groundwater sampling programs to establish the groundwater baseline for hazardous substances at the time of transfer. These sampling programs may involve drilling wells, have samples taken often over several months, and result in considerable cost to Amoco and the transfer party.

The Torrance plant has been monitoring groundwater from six wells for nearly three years. Data from this program is as extensive as a typical baseline sampling program. This data is adequate to estimate the groundwater baseline for the critical chemicals.

This report describes the methods and results for the statistical estimation of the groundwater baseline for those substances which were detected in the groundwater at the final sampling, October, 1992. All other substances are concluded not to be present in the groundwater at the time of transfer of the Torrance property.

Data

Over a three year period from February 1990 to October 1992, six samples were collected from each of six different monitoring wells. Reports made to Amoco contained tables for 12 chemical compounds that were detected at some time during the monitoring period in at least one well. Only 7 of these compounds were detected in the final sampling, October 20, 1992, in any of the wells. The two groups of compounds are shown below.

compounds detected over 3 years and in last sample	compounds previously detected but not found in last sample
1,1-dichloroethene (1,1 DCE)	1,1-dichloroethane (1,1 DCA)
1,2-dichloroethene (1,2 DCE)	benzene
trichloroethene (TCE)	ethylbenzene
tetrachloroethene (PCE)	total xylenes
methylene chloride (MCl)	toluene
chlorobenzene	
chloroform	

Data for this baseline analysis is 6 samples for each of the 7 detected compounds with single analyses and samples only for most of the wells. Any duplicates were averaged.

Data Analysis Strategy

Data analysis was done separately for each of the seven detected compounds and for each of the six monitoring wells. For each compound and well, six points were available for statistical analysis. Some or all of the data points could be nondetect for any measurement and well.

Since the data are collected over time, it is also possible to consider trends in the occurrence of the chemicals over three years. Where possible, statistical analysis for each chemical for each well included a consideration of the effect of time in the statistical analysis. Quantifiable results for three of the six samples were necessary for trend consideration.

Three statistics are reported:

> Trend indicator - a "yes" or "no" result on the statistical significance of the trend over time for the chemical. Results are based on a fitted straight line if the trend is significant.
>
> Estimated level - the median or 50% value, the most likely baseline level, based on summary statistics if no trend, based on the fitted time line if significant trend.
>
> 95% upper confidence limit - value which has only 5% likelihood of being exceeded, based on summary statistics if no trend, based on prediction limits for fitted line if significant trend.

These results are consistent with the reporting format that has been used for past baseline studies. Details of the data analysis methodology are given below following the summary section.

Results

Computing was done using statistics procedures in SAS, a comprehensive statistical computing package. The following tables present the results of the methodology that is described above. When a compound was not detected by analysis, no statistics are quantifiable for the concentration level, which is shown as "nd" for nondetect, and one cannot determine a 95% upper confidence limit. The trend test also could not be made, which was the case as well if there were only two quantifiable results. Units are milligrams/liter.

OW-1	estimated level	95% upper confidence limit	trend significant?
1,1 DCE	nd	-	-
1,2 DCE	nd	-	-
TCE	1.75	2.85	no
PCE	.14	.49	-
MCl	237	3955	no
Chlorobenzene	nd	-	-
Chloroform	.067	.311	-

(Results - continued)

OW-2	estimated level	95% upper confidence limit	trend significant?
1,1 DCE	nd	-	-
1,2 DCE	.054	.212	yes
TCE	3.2	4.4	yes
PCE	.52	.74	yes
MCl	.01	1.04	-
Chlorobenzene	nd	-	-
Chloroform	.031	.102	yes

OW-3	estimated level	95% upper confidence limit	trend significant?
1,1 DCE	.008	.034	-
1,2 DCE	.035	.107	no
TCE	2.36	4.16	no
PCE	.36	.95	no
MCl	.017	.069	-
Chlorobenzene	nd	-	-
Chloroform	nd	-	-

OW-4	estimated level	95% upper confidence limit	trend significant?
1,1 DCE	.049	.099	yes
1,2 DCE	.31	.47	yes
TCE	4.32	12.20	no
PCE	1.37	1.97	yes
MCl	nd	-	-
Chlorobenzene	nd	-	-
Chloroform	.013	.30	-

OW-5	estimated level	95% upper confidence limit	trend significant?
1,1 DCE	.19	.27	yes
1,2 DCE	.77	1.05	yes
TCE	13.6	28.1	no
PCE	5.8	20.8	no
MCl	nd	-	-
Chlorobenzene	nd	-	-
Chloroform	.04	.12	-

(Results - continued)

OW-6	estimated level	95% upper confidence limit	trend significant?
1,1 DCE	.03	.15	no
1,2 DCE	.41	1.15	yes
TCE	30.3	51.1	yes
PCE	13.8	22.8	yes
MCl	nd	-	-
Chlorobenzene	.01	2.5	-
Chloroform	.03	.22	-

Summary

This report has shown the baseline values for chemical compounds which have been detected in groundwater sampling during the past 3 years at the Torrance plant. These numbers represent the best statistical estimate of the chemical compound levels in the groundwater at the time of the final sample from each of the six wells, October 20, 1992. Uncertainty in the estimates is indicated by the upper 95% confidence limit. All compounds except the seven in the tables above are estimated at nondetect, including six compounds detected at some time during the well sampling over the preceding three years.

Note that trend analysis is used only as a consideration in establishing the baseline value. The data available is not adequate for use in projecting significant trends, either up or down, into the future with reasonable statistical confidence in the predictions. Estimates of the level should be judged against established standards for practical importance.

Details of Statistical Analysis

For all data analyses, models are based on the logarithm of the measured compound value with normally distributed errors assumed for the logarithms. This is standard practice in the analysis of groundwater data. The configuration of the data relative to the nondetects led to the following possible situations for reporting the groundwater baseline for any compound and any well. Within each category, the need to evaluate trends for the data over time also is considered.

All Measurements Nondetect

No statistics can be estimated, so neither a 50% concentration level nor an upper 95% confidence limit can be determined. The compound is reported as nondetect without a confidence limit. Trend also cannot be considered.

(Details - continued)

All But One Measurement Nondetect

As with the preceding case, the compound is nondetect, because statistical estimation procedures will not give results unless there are at least two quantifiable values. However, if the quantifiable value is the last sample, then current concentration level of the compound is reported with the value for the last sample, with no confidence limit being given. Trend consideration is not possible.

Two Quantifiable Samples

For this situation, estimation of the current concentration level, or 50% point, of the compound and a statement of the 95% upper confidence level can both be done using quantiles of the lognormal distribution as fitted to the data. However, the maximum likelihood estimation method that is used (SAS PROC LIFEREG) does not permit trend estimation unless there are three quantifiable points.

Three or More Quantifiable Points

For this situation, trend analysis of the effect of time on the concentration of the compound can be done in addition to the estimation of the current compound concentration level and confidence. If all the samples for a compound are quantifiable, usual straight line curve fitting is done for the log of the compound versus the log of time. If the slope of the line is significant with 95% confidence, then the fitted value for the last sample is reported as the current concentration level, and the 95% prediction limit is reported as the upper 95% confidence limit. If the slope is not significant, the median or 50% point for the data is reported as the current concentration level of the compound, and a normal distribution statistic is used to report the upper 95% confidence value, as for two quantifiable points.

If there are one or more nondetects, then maximum likelihood estimation is used. However, the methods for reporting remain the same, with a lognormal distribution statistic again as the basis for the 50% and 95% quantile values that are reported as the concentration level and confidence limit.

Eric Ziegel
Statistics Technology Support

Naperville IL
November 17, 1992

Statistical Estimation of Groundwater Baseline
from
Torrance Plant Monitoring Wells Data

Background

Property transfers through sales or purchase by Amoco typically have involved groundwater sampling programs to establish the groundwater baseline for hazardous substances at the time of transfer. These sampling programs may involve drilling wells, have samples taken often over several months, and result in considerable cost to Amoco and the transfer party.

The Torrance plant has been monitoring groundwater from six wells for nearly three years. Data from this program is as extensive as a typical baseline sampling program. This data is adequate to estimate the groundwater baseline for the critical chemicals.

This report describes the methods and results for the statistical estimation of the groundwater baseline for those substances which were detected in the groundwater at the final sampling, October, 1992. All other substances are concluded not to be present in the groundwater at the time of transfer of the Torrance property.

Data

Over a three year period from February 1990 to October 1992, six samples were collected from each of six different monitoring wells. Reports made to Amoco contained tables for 12 chemical compounds that were detected at some time during the monitoring period in at least one well. Only 7 of these compounds were detected in the final sampling, October 20, 1992, in any of the wells. The two groups of compounds are shown below.

compounds detected over 3 years and in last sample	compounds previously detected but not found in last sample
1,1-dichloroethene (1,1 DCE)	1,1-dichloroethane (1,1 DCA)
1,2-dichloroethene (1,2 DCE)	benzene
trichloroethene (TCE)	ethylbenzene
tetrachloroethene (PCE)	total xylenes
methylene chloride (MCl)	toluene
chlorobenzene	
chloroform	

Data for this baseline analysis is 6 samples for each of the 7 detected compounds with single analyses and samples only for most of the wells. Any duplicates were averaged.

Data Analysis Strategy

Data analysis was done separately for each of the seven detected

compounds and for each of the six monitoring wells. For each compound and well, six points were available for statistical analysis. Some or all of the data points could be nondetect for any measurement and well. Since the data are collected over time, it is also possible to consider trends in the occurrence of the chemicals over three years. Where possible, statistical analysis for each chemical for each well included a consideration of the effect of time in the statistical analysis. Quantifiable results for three of the six samples were necessary for trend consideration.

Three statistics are reported:

Trend indicator - a "yes" or "no" result on the statistical significance of the trend over time for the chemical. Results are based on a fitted straight line if the trend is significant.

Estimated level - the median or 50% value, the most likely baseline level, based on summary statistics if no trend, based on the fitted time line if significant trend.

95% upper confidence limit - value which has only 5% likelihood of being exceeded, based on summary statistics if no trend, based on prediction limits for fitted line if significant trend.

These results are consistent with the reporting format that has been used for past baseline studies. Details of the data analysis methodology are given below following the summary section.

Results

Computing was done using statistics procedures in SAS, a comprehensive statistical computing package. The following tables present the results in this version only for estimated levels for the wells and compounds. When a compound was not detected by analysis, no statistics are quantifiable for the concentration level, which is shown as "nd" for nondetect. For tables showing the 95% confidence limits and the results of the trend test, as discussed above, consult an earlier version of this report. Units are milligrams/liter.

OW-1	estimated level
1,1 DCE	nd
1,2 DCE	nd
TCE	1.75
PCE	.14
MCl	237
Chlorobenzene	nd
Chloroform	.067

(Results - continued)

OW-2	estimated level
1,1 DCE	nd
1,2 DCE	.054
TCE	3.2
PCE	.52
MCl	.01
Chlorobenzene	nd
Chloroform	.031

OW-3	estimated level
1,1 DCE	.008
1,2 DCE	.035
TCE	2.36
PCE	.36
MCl	.017
Chlorobenzene	nd
Chloroform	nd

OW-4	estimated level
1,1 DCE	.049
1,2 DCE	.31
TCE	4.32
PCE	1.37
MCl	nd
Chlorobenzene	nd
Chloroform	.013

OW-5	estimated level
1,1 DCE	.19
1,2 DCE	.77
TCE	13.6
PCE	5.8
MCl	nd
Chlorobenzene	nd
Chloroform	.04

(Results - continued)

OW-6	estimated level

1,1 DCE	.03
1,2 DCE	.41
TCE	30.3
PCE	13.8
MCl	nd
Chlorobenzene	.01
Chloroform	.03

Summary

This report has shown the baseline values for chemical compounds which have been detected in groundwater sampling during the past 3 years at the Torrance plant. These numbers represent the best statistical estimate of the chemical compound levels in the groundwater at the time of the final sample from each of the six wells, October 20, 1992. Uncertainty in the estimates is indicated by the upper 95% confidence limit. All compounds except the seven in the tables above are estimated at nondetect, including six compounds detected at some time during the well sampling over the preceding three years.

Note that trend analysis is used only as a consideration in establishing the baseline value. The data available is not adequate for use in projecting significant trends, either up or down, into the future with reasonable statistical confidence in the predictions. Estimates of the level should be judged against established standards for practical importance.

Details of Statistical Analysis

For all data analyses, models are based on the logarithm of the measured compound value with normally distributed errors assumed for the logarithms. This is standard practice in the analysis of groundwater data. The configuration of the data relative to the nondetects led to the following possible situations for reporting the groundwater baseline for any compound and any well. Within each category, the need to evaluate trends for the data over time also is considered.

All Measurements Nondetect

No statistics can be estimated, so neither a 50% concentration level nor an upper 95% confidence limit can be determined. The compound is reported as nondetect without a confidence limit. Trend also cannot be considered.

(Details - continued)

All But One Measurement Nondetect

As with the preceding case, the compound is nondetect, because statistical estimation procedures will not give results unless there are at least two quantifiable values. However, if the quantifiable value is the last sample, then current concentration level of the compound is reported with the value for the last sample, with no confidence limit

being given. Trend consideration is not possible.

Two Quantifiable Samples

For this situation, estimation of the current concentration level, or 50% point, of the compound and a statement of the 95% upper confidence level can both be done using quantiles of the lognormal distribution as fitted to the data. However, the maximum likelihood estimation method that is used (SAS PROC LIFEREG) does not permit trend estimation unless there are three quantifiable points.

Three or More Quantifiable Points

For this situation, trend analysis of the effect of time on the concentration of the compound can be done in addition to the estimation of the current compound concentration level and confidence. If all the samples for a compound are quantifiable, usual straight line curve fitting is done for the log of the compound versus the log of time. If the slope of the line is significant with 95% confidence, then the fitted value for the last sample is reported as the current concentration level, and the 95% prediction limit is reported as the upper 95% confidence limit. If the slope is not significant, the median or 50% point for the data is reported as the current concentration level of the compound, and a normal distribution statistic is used to report the upper 95% confidence value, as for two quantifiable points.
If there are one or more nondetects, then maximum likelihood estimation is used. However, the methods for reporting remain the same, with a lognormal distribution statistic again as the basis for the 50% and 95% quantile values that are reported as the concentration level and confidence limit.

Eric Ziegel
Statistics Technology Support
Naperville IL
November 17, 1992

SIMON HYDRO-SEARCH

5882 Bolsa Avenue
Huntington Beach, CA 92649

Telephone (714) 891-7446
Facsimile (714) 891-9009

ENVIRONMENTAL CONSERVATION (CHEMICALS)

OCT 26 '92

	NOTE		NOTE
CJW		RJG	
KMS		DMH	
DMD		JLS	
TMS		AEB	
MAP		LEL	
JAL			
FILE:			

Return

TRANSMITTAL LETTER

TO: Amoco Chemical Company
Mail Code 4804
200 E. Randolph Drive
Chicago, IL 60601

DATE: 23 OCT 92

JOB NO. Amoco Torrance, CA
OCT 92 GW Sampling

ATTENTION: T. M. Stark

SUBJECT: Amoco Chemical Company - Torrance

ENCLOSED PLEASE FIND:

1) EPA 624 + 625 lab results - OCT 92

2) Groundwater Sampling Record - OCT 92

3) Lab Memo on Phthalate

REMARKS: cc: T. J. Nagengast - Amoco Tulsa
J. J. Campbell - Amoco Torrance

SHOULD YOU HAVE ANY QUESTIONS, PLEASE FEEL FREE TO CALL ME.

SINCERELY,
SIMON HYDRO-SEARCH

BY: Stephen P. Watters

BPACC00762

SIMON Environmental

SIMON-EEI
GROUND WATER SAMPLING RECORD

Project Name: AMOCO-TORRANCE Date: 10/20/92

Project No.: 512-345 Samplers: LC/LK

Casing Volume
$\pi r^2 h$ (in feet)
x 7.48 gallons/ft

PUMPING/BAILING EQUIPMENT	0 DISPOSABLE BAILER		
Well Number	Well Number OW-2	Well Number OW-1	Well Number EQUIP BLK
Depth of Well (feet)	82.72	77.37	
Depth to Water (feet)	65.02	66.18	
Water "Thickness"	17.70	11.19	
Casing Volume	2.88	1.82	
3 Casings Volume	8.65	5.47	
Purge Start Time	12:17	13:20	

FIELD PARAMETERS

TIME	T	pH	COND.	TIME	T	pH	COND.	TIME	T	pH	COND.
12:55	24.0	6.97	1020	13:40	23.3	5.20	2170				
13:03	23.5	7.02	1070	13:45	22.8	5.04	2750				
				13:59	22.7	5.02	3200				

SAMPLING TIME	13:20	14:03	14:03
VOLUME PURGED	11 gallons	6 gallons	
ANALYSIS	Samples	Samples	Samples
624	OW-2-1	OW-1-1	EQUIP BLNK
625	OW-2-2	OW-1-2	EQUIP BLNK

BPACC00763

SIMON-EEI
GROUND WATER SAMPLING RECORD

Project Name: AMOCO TORRANCE Date: 10/20/92

Project No.: 512-345 Samplers: LK/LC

Casing Volume
$\pi r^2 h$ (in feet)
x 7.48 gallons/ft

PUMPING/BAILING EQUIPMENT	DISPOSABLE BAILER		
Well Number	Well Number OW-4	Well Number OW-5	Well Number OW-6
Depth of Well (feet)	77.67	75.67	78.18
Depth to Water (feet)	64.68	63.60	65.27
Water "Thickness"	12.99	12.07	12.91'
Casing Volume	2.11	1.97	2.10
3 Casings Volume	6.35	5.90	6.3
Purge Start Time	11:05	10:20	12:03

FIELD PARAMETERS

TIME	T	pH	COND.	TIME	T	pH	COND.	TIME	T	pH	COND.
11:33	27.0	7.11	1100	10:58	23.1	6.83	1480	12:16	23.1	7.48	
11:40	25.6	7.14	1000	11:03	23.2	6.98	1400	12:20	22.8	7.41	
				11:17	22.9	6.99	1350	12:44	22.8	7.59	
								12:55	22.8	7.39	

SAMPLING TIME	11:46	11:25	12:59
VOLUME PURGED	7 gallons	9 gallons.	6.5 gallons
ANALYSIS	Samples	Samples	Samples
624	OW-4-1	OW-5-1	OW-6-1
625	OW-4-2	OW-5-2	OW-6-2

SIMON-EEI
GROUND WATER SAMPLING RECORD

Project Name: AMOCO - TORRANCE Date: 10/20/92

Project No.: 512-345 Samplers: LC/LK

Casing Volume
$\pi r^2 h$ (in feet)
x 7.48 gallons/ft

PUMPING/BAILING EQUIPMENT	DISPOSABLE BAILER		
Well Number	Well Number OW-3	Well Number QA/QC	Well Number TRIP BLNK
Depth of Well (feet)	77.22		
Depth to Water (feet)	63.96	DUPLICATE	
Water "Thickness"	13.26	OF WELL	
Casing Volume	2.16	OW-1	
3 Casings Volume	6.48		
Purge Start Time	9:47		

FIELD PARAMETERS

TIME	T	pH	COND.	TIME	T	pH	COND.	TIME	T	pH	COND.
10:50	21.3	7.39	—								
10:55	21.8	7.41	—								

SAMPLING TIME	10:58		
VOLUME PURGED	7 gallons		
ANALYSIS	Samples	Samples	Samples
624	OW-3-1	QC-	TRIP BLNK
625	OW-3-2	QC	TRIP BLNK

BPACC00765

M E M O R A N D U M

Date: 10/23/92

To: Steve Walter, Simon Hydro-Search

From: Val Mallari, Technical Director, Terra Tech Labs

RE: Laboratory Phthalate Ester Contamination

Analytical methods for the determination of phthalate esters (EPA 8270, EPA 8060) are particularly prone to method blank contamination by phthalate esters, such as bis-2-ethylhexyl phthalate, di-n-butyl phthalate, and di-n-octyl phthalate. The analytical methods require scrupulous cleaning of all glassware and materials used in the procedures. All solvents must be evaluated for phthalate contamination. With strict adherence to these procedures, the elimination of "chronic" phthalate ester contamination is possible. However, intermittent contamination cannot be avoided and is difficult to diagnose. Since phthalate esters are used as plasticizers, intermittent contact with phthalate esters is due to the pervasiveness of plastic products in all aspects of manufacturing, shipping, storing, and handling of products utilized in the analysis of environmental samples.

TERRA TECH LABS

1920 E. Deere Ave., Suite 130 ▲ Santa Ana, California 92705
Tel 714.757.7022 ▲ Fax 714.757.7274

LABORATORY REPORT

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue Huntington Beach, CA 92649	Lab P.N.:	4066
		Client P.N.:	512-345
Contact:	Steve Walter		
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Received:	10/20/92
		Date Analyzed:	10/20/92-10/23/92
		Physical State:	Liquid

Quality Assurance/Quality Control Summary

Parameter (Method)	QC Type	MS Percent Recovery	MSD Percent Recovery	Acceptable Range	Relative Percent Difference	Acceptable Range
1,1, Dichloroethene (EPA 624/8260)	M	93	92	61-145	1	0-14
Benzene (EPA 624/8260)	M	102	101	76-127	1	0-11
Trichloroethene (EPA 624/8260)	M	114	70*	71-120	47*	0-14
Toluene (EPA 624/8260)	M	97	97	76-125	0	0-13
Chlorobenzene (EPA 624/8260)	M	103	101	75-130	2	0-13
Phenol (EPA 625)	M	62	64	12-110	2	0-42
2-Chlorophenol (EPA 625)	M	94	96	27-123	2	0-40
1,4-Dichlorobenzene (EPA 625)	M	88	89	36-97	1	0-28
N-Nitroso-di-n-propylamine (EPA 625)	M	101	109	41-116	8	0-38
1,2,4-Trichlorobenzene (EPA 625)	M	88	89	39-98	1	0-28
4-Chloro-3-methylphenol (EPA 625)	M	102**	106**	23-97	4	0-42
Acenaphthene (EPA 625)	M	97	98	46-118	2	0-31
4-Nitrophenol (EPA 625)	M	82**	85**	10-80	3	0-50
2,4-Dinitrotoluene (EPA 625)	M	100**	102**	24-96	2	0-38
Pentachlorophenol (EPA 625)	M	120**	123**	9-103	3	0-50
Pyrene (EPA 625)	M	106	105	26-127	1	0-31

*QC outside of established limits due to the fact that the sample used for spiking had elevated levels of TCE which caused matrix interference.
**There were elevated recoveries on the indicated constituents for both MS & MSD. Recoveries were outside of the established QC limits on the high side rather than the low side and the samples revealed no detectable concentrations for any of these constituents. Therefore, results are valid as is.

M = Matrix Spike / Matrix Spike Duplicate L = Laboratory Control Sample Spike / Spike Duplicate

Reviewed Approved

The samples were received by TERRA TECH LABS, Inc. in a chilled state, intact and accompanied by the Chain-of-Custody Record.
Acceptance of samples by Terra Tech Labs, Inc. is not an indication of condition upon receipt.
Laboratory Results apply only to the sample matrix analyzed and may not apply to an apparently identical or similar sample.
The Laboratory Report is the property of the client to whom it is addressed.
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00767

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Extracted:	10/21/92
		Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-1-2		

Semi-Volatile Organics, EPA 625

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
Acenaphthene	83-32-9	ND	2.0
Acenaphthylene	208-96-8	ND	2.0
Anthracene	120-12-7	ND	2.0
Azobenzene	103-33-3	ND	5.0
Benz(a)anthracene	56-55-3	ND	2.0
Benzo(b)fluoranthene	205-99-2	ND	2.0
Benzo(k)fluoranthene	207-08-9	ND	2.0
Benzoic acid	65-85-0	ND	20
Benzo(g,h,i)perylene	191-24-2	ND	5.0
Benzo(a)pyrene	50-32-8	ND	2.0
Benzyl alcohol	100-51-6	ND	5.0
Bis(2-chloroethoxy)methane	111-91-1	ND	5.0
Bis(2-chloroethyl)ether	111-44-4	ND	5.0
Bis(2-chloroisopropyl)ether	180-60-1	ND	5.0
Bis(2-ethylhexyl)phthalate	117-81-7	55	2.0
4-Bromophenyl phenyl ether	101-55-3	ND	5.0
Butyl benzyl phthalate	85-68-7	ND	2.0
4-Chloroaniline	106-47-8	ND	20
4-Chloro-3-methylphenol	59-50-7	ND	5.0
2-Chloronaphthalene	91-58-7	ND	2.0
2-Chlorophenol	95-57-8	ND	5.0
4-Chlorophenyl phenyl ether	7005-72-3	ND	5.0
Chrysene	218-01-9	ND	2.0
Dibenz(a,h)anthracene	53-70-3	ND	5.0
Dibenzofuran	132-64-9	ND	5.0
Di-n-butyl phthalate	84-74-2	2.0	2.0
1,2-Dichlorobenzene	95-50-1	ND	5.0
1,3-Dichlorobenzene	541-73-1	ND	5.0
1,4-Dichlorobenzene	106-46-7	ND	5.0
2,4-Dichlorophenol	120-83-2	ND	5.0
Diethyl phthalate	84-66-2	ND	2.0
2,4-Dimethylphenol	105-67-9	ND	5.0
Dimethyl phthalate	131-11-3	ND	2.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00768

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Extracted:	10/21/92
		Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-1-2		

Semi-Volatile Organics, EPA 625

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
4,6-Dinitro-2-methylphenol	534-52-1	ND	50
2,4-Dinitrophenol	51-28-5	ND	50
2,4-Dinitrotoluene	121-14-2	ND	5.0
2,6-Dinitrotoluene	606-20-2	ND	5.0
Di-n-octyl phthalate	117-84-0	ND	2.0
Fluoranthene	206-44-0	ND	2.0
Fluorene	86-73-7	ND	2.0
Hexachlorobenzene	118-74-1	ND	5.0
Hexachlorobutadiene	87-68-3	ND	5.0
Hexachlorocyclopentadiene	77-47-4	ND	20
Hexachloroethane	67-72-1	ND	5.0
Indeno(1,2,3-cd)pyrene	193-39-5	ND	5.0
Isophorone	78-59-1	ND	5.0
2-Methylnaphthalene	91-57-6	ND	2.0
2-Methylphenol	95-48-7	ND	5.0
4-Methylphenol	106-44-5	12	5.0
Naphthalene	91-20-3	ND	2.0
2-Nitroaniline	88-74-4	ND	20
3-Nitroaniline	99-09-2	ND	50
4-Nitroaniline	100-01-6	ND	20
Nitrobenzene	98-95-3	ND	5.0
2-Nitrophenol	88-75-5	ND	5.0
4-Nitrophenol	100-02-7	ND	20
N-Nitrosodimethylamine	62-75-9	ND	5.0
N-Nitrosodiphenylamine	86-30-6	ND	5.0
N-Nitroso-di-n-propylamine	621-64-7	ND	5.0
Pentachlorophenol	87-86-5	ND	20
Phenanthrene	85-01-8	ND	2.0
Phenol	108-95-2	ND	10
Pyrene	129-00-0	ND	2.0
1,2,4-Trichlorobenzene	120-82-1	ND	5.0
2,4,5-Trichlorophenol	95-95-4	ND	5.0
2,4,6-Trichlorophenol	88-06-2	ND	5.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00769

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue Huntington Beach, CA 92649	Lab P.N.:	4066
		Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Extracted:	10/21/92
		Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-2-2		

Semi-Volatile Organics, EPA 625

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
Acenaphthene	83-32-9	ND	2.0
Acenaphthylene	208-96-8	ND	2.0
Anthracene	120-12-7	ND	2.0
Azobenzene	103-33-3	ND	5.0
Benz(a)anthracene	56-55-3	ND	2.0
Benzo(b)fluoranthene	205-99-2	ND	2.0
Benzo(k)fluoranthene	207-08-9	ND	2.0
Benzoic acid	65-85-0	ND	20
Benzo(g,h,i)perylene	191-24-2	ND	5.0
Benzo(a)pyrene	50-32-8	ND	2.0
Benzyl alcohol	100-51-6	ND	5.0
Bis(2-chloroethoxy)methane	111-91-1	ND	5.0
Bis(2-chloroethyl)ether	111-44-4	ND	5.0
Bis(2-chloroisopropyl)ether	180-60-1	ND	5.0
Bis(2-ethylhexyl)phthalate	117-81-7	10	2.0
4-Bromophenyl phenyl ether	101-55-3	ND	5.0
Butyl benzyl phthalate	85-68-7	ND	2.0
4-Chloroaniline	106-47-8	ND	20
4-Chloro-3-methylphenol	59-50-7	ND	5.0
2-Chloronaphthalene	91-58-7	ND	2.0
2-Chlorophenol	95-57-8	ND	5.0
4-Chlorophenyl phenyl ether	7005-72-3	ND	5.0
Chrysene	218-01-9	ND	2.0
Dibenz(a,h)anthracene	53-70-3	ND	5.0
Dibenzofuran	132-64-9	ND	5.0
Di-n-butyl phthalate	84-74-2	4.0	2.0
1,2-Dichlorobenzene	95-50-1	ND	5.0
1,3-Dichlorobenzene	541-73-1	ND	5.0
1,4-Dichlorobenzene	106-46-7	ND	5.0
2,4-Dichlorophenol	120-83-2	ND	5.0
Diethyl phthalate	84-66-2	ND	2.0
2,4-Dimethylphenol	105-67-9	ND	5.0
Dimethyl phthalate	131-11-3	ND	2.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00770

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Extracted:	10/21/92
		Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-2-2		

Semi-Volatile Organics, EPA 625

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
4,6-Dinitro-2-methylphenol	534-52-1	ND	50
2,4-Dinitrophenol	51-28-5	ND	50
2,4-Dinitrotoluene	121-14-2	ND	5.0
2,6-Dinitrotoluene	606-20-2	ND	5.0
Di-n-octyl phthalate	117-84-0	ND	2.0
Fluoranthene	206-44-0	ND	2.0
Fluorene	86-73-7	ND	2.0
Hexachlorobenzene	118-74-1	ND	5.0
Hexachlorobutadiene	87-68-3	ND	5.0
Hexachlorocyclopentadiene	77-47-4	ND	20
Hexachloroethane	67-72-1	ND	5.0
Indeno(1,2,3-cd)pyrene	193-39-5	ND	5.0
Isophorone	78-59-1	ND	5.0
2-Methylnaphthalene	91-57-6	ND	2.0
2-Methylphenol	95-48-7	ND	5.0
4-Methylphenol	106-44-5	ND	5.0
Naphthalene	91-20-3	ND	2.0
2-Nitroaniline	88-74-4	ND	20
3-Nitroaniline	99-09-2	ND	50
4-Nitroaniline	100-01-6	ND	20
Nitrobenzene	98-95-3	ND	5.0
2-Nitrophenol	88-75-5	ND	5.0
4-Nitrophenol	100-02-7	ND	20
N-Nitrosodimethylamine	62-75-9	ND	5.0
N-Nitrosodiphenylamine	86-30-6	ND	5.0
N-Nitroso-di-n-propylamine	621-64-7	ND	5.0
Pentachlorophenol	87-86-5	ND	20
Phenanthrene	85-01-8	ND	2.0
Phenol	108-95-2	ND	10
Pyrene	129-00-0	ND	2.0
1,2,4-Trichlorobenzene	120-82-1	ND	5.0
2,4,5-Trichlorophenol	95-95-4	ND	5.0
2,4,6-Trichlorophenol	88-06-2	ND	5.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00771

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Extracted:	10/21/92
		Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-3-2		

Semi-Volatile Organics, EPA 625

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
Acenaphthene	83-32-9	ND	2.0
Acenaphthylene	208-96-8	ND	2.0
Anthracene	120-12-7	ND	2.0
Azobenzene	103-33-3	ND	5.0
Benz(a)anthracene	56-55-3	ND	2.0
Benzo(b)fluoranthene	205-99-2	ND	2.0
Benzo(k)fluoranthene	207-08-9	ND	2.0
Benzoic acid	65-85-0	ND	20
Benzo(g,h,i)perylene	191-24-2	ND	5.0
Benzo(a)pyrene	50-32-8	ND	2.0
Benzyl alcohol	100-51-6	ND	5.0
Bis(2-chloroethoxy)methane	111-91-1	ND	5.0
Bis(2-chloroethyl)ether	111-44-4	ND	5.0
Bis(2-chloroisopropyl)ether	180-60-1	ND	5.0
Bis(2-ethylhexyl)phthalate	117-81-7	49	2.0
4-Bromophenyl phenyl ether	101-55-3	ND	5.0
Butyl benzyl phthalate	85-68-7	ND	2.0
4-Chloroaniline	106-47-8	ND	20
4-Chloro-3-methylphenol	59-50-7	ND	5.0
2-Chloronaphthalene	91-58-7	ND	2.0
2-Chlorophenol	95-57-8	ND	5.0
4-Chlorophenyl phenyl ether	7005-72-3	ND	5.0
Chrysene	218-01-9	ND	2.0
Dibenz(a,h)anthracene	53-70-3	ND	5.0
Dibenzofuran	132-64-9	ND	5.0
Di-n-butyl phthalate	84-74-2	6.0	2.0
1,2-Dichlorobenzene	95-50-1	ND	5.0
1,3-Dichlorobenzene	541-73-1	ND	5.0
1,4-Dichlorobenzene	106-46-7	ND	5.0
2,4-Dichlorophenol	120-83-2	ND	5.0
Diethyl phthalate	84-66-2	ND	2.0
2,4-Dimethylphenol	105-67-9	ND	5.0
Dimethyl phthalate	131-11-3	ND	2.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00772

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Extracted:	10/21/92
		Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-3-2		

Semi-Volatile Organics, EPA 625

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
4,6-Dinitro-2-methylphenol	534-52-1	ND	50
2,4-Dinitrophenol	51-28-5	ND	50
2,4-Dinitrotoluene	121-14-2	ND	5.0
2,6-Dinitrotoluene	606-20-2	ND	5.0
Di-n-octyl phthalate	117-84-0	ND	2.0
Fluoranthene	206-44-0	ND	2.0
Fluorene	86-73-7	ND	2.0
Hexachlorobenzene	118-74-1	ND	5.0
Hexachlorobutadiene	87-68-3	ND	5.0
Hexachlorocyclopentadiene	77-47-4	ND	20
Hexachloroethane	67-72-1	ND	5.0
Indeno(1,2,3-cd)pyrene	193-39-5	ND	5.0
Isophorone	78-59-1	ND	5.0
2-Methylnaphthalene	91-57-6	ND	2.0
2-Methylphenol	95-48-7	ND	5.0
4-Methylphenol	106-44-5	ND	5.0
Naphthalene	91-20-3	ND	2.0
2-Nitroaniline	88-74-4	ND	20
3-Nitroaniline	99-09-2	ND	50
4-Nitroaniline	100-01-6	ND	20
Nitrobenzene	98-95-3	ND	5.0
2-Nitrophenol	88-75-5	ND	5.0
4-Nitrophenol	100-02-7	ND	20
N-Nitrosodimethylamine	62-75-9	ND	5.0
N-Nitrosodiphenylamine	86-30-6	ND	5.0
N-Nitroso-di-n-propylamine	621-64-7	ND	5.0
Pentachlorophenol	87-86-5	ND	20
Phenanthrene	85-01-8	ND	2.0
Phenol	108-95-2	ND	10
Pyrene	129-00-0	ND	2.0
1,2,4-Trichlorobenzene	120-82-1	ND	5.0
2,4,5-Trichlorophenol	95-95-4	ND	5.0
2,4,6-Trichlorophenol	88-06-2	ND	5.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00773

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Extracted:	10/21/92
		Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-4-2		

Semi-Volatile Organics, EPA 625

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
Acenaphthene	83-32-9	ND	2.0
Acenaphthylene	208-96-8	ND	2.0
Anthracene	120-12-7	ND	2.0
Azobenzene	103-33-3	ND	5.0
Benz(a)anthracene	56-55-3	ND	2.0
Benzo(b)fluoranthene	205-99-2	ND	2.0
Benzo(k)fluoranthene	207-08-9	ND	2.0
Benzoic acid	65-85-0	ND	20
Benzo(g,h,i)perylene	191-24-2	ND	5.0
Benzo(a)pyrene	50-32-8	ND	2.0
Benzyl alcohol	100-51-6	ND	5.0
Bis(2-chloroethoxy)methane	111-91-1	ND	5.0
Bis(2-chloroethyl)ether	111-44-4	ND	5.0
Bis(2-chloroisopropyl)ether	180-60-1	ND	5.0
Bis(2-ethylhexyl)phthalate	117-81-7	61	2.0
4-Bromophenyl phenyl ether	101-55-3	ND	5.0
Butyl benzyl phthalate	85-68-7	ND	2.0
4-Chloroaniline	106-47-8	ND	20
4-Chloro-3-methylphenol	59-50-7	ND	5.0
2-Chloronaphthalene	91-58-7	ND	2.0
2-Chlorophenol	95-57-8	ND	5.0
4-Chlorophenyl phenyl ether	7005-72-3	ND	5.0
Chrysene	218-01-9	ND	2.0
Dibenz(a,h)anthracene	53-70-3	ND	5.0
Dibenzofuran	132-64-9	ND	5.0
Di-n-butyl phthalate	84-74-2	3.0	2.0
1,2-Dichlorobenzene	95-50-1	ND	5.0
1,3-Dichlorobenzene	541-73-1	ND	5.0
1,4-Dichlorobenzene	106-46-7	ND	5.0
2,4-Dichlorophenol	120-83-2	ND	5.0
Diethyl phthalate	84-66-2	ND	2.0
2,4-Dimethylphenol	105-67-9	ND	5.0
Dimethyl phthalate	131-11-3	ND	2.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue Huntington Beach, CA 92649	Lab P.N.:	4066
		Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Extracted:	10/21/92
		Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-4-2		

Semi-Volatile Organics, EPA 625

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
4,6-Dinitro-2-methylphenol	534-52-1	ND	50
2,4-Dinitrophenol	51-28-5	ND	50
2,4-Dinitrotoluene	121-14-2	ND	5.0
2,6-Dinitrotoluene	606-20-2	ND	5.0
Di-n-octyl phthalate	117-84-0	ND	2.0
Fluoranthene	206-44-0	ND	2.0
Fluorene	86-73-7	ND	2.0
Hexachlorobenzene	118-74-1	ND	5.0
Hexachlorobutadiene	87-68-3	ND	5.0
Hexachlorocyclopentadiene	77-47-4	ND	20
Hexachloroethane	67-72-1	ND	5.0
Indeno(1,2,3-cd)pyrene	193-39-5	ND	5.0
Isophorone	78-59-1	ND	5.0
2-Methylnaphthalene	91-57-6	ND	2.0
2-Methylphenol	95-48-7	ND	5.0
4-Methylphenol	106-44-5	ND	5.0
Naphthalene	91-20-3	ND	2.0
2-Nitroaniline	88-74-4	ND	20
3-Nitroaniline	99-09-2	ND	50
4-Nitroaniline	100-01-6	ND	20
Nitrobenzene	98-95-3	ND	5.0
2-Nitrophenol	88-75-5	ND	5.0
4-Nitrophenol	100-02-7	ND	20
N-Nitrosodimethylamine	62-75-9	ND	5.0
N-Nitrosodiphenylamine	86-30-6	ND	5.0
N-Nitroso-di-n-propylamine	621-64-7	ND	5.0
Pentachlorophenol	87-86-5	ND	20
Phenanthrene	85-01-8	ND	2.0
Phenol	108-95-2	ND	10
Pyrene	129-00-0	ND	2.0
1,2,4-Trichlorobenzene	120-82-1	ND	5.0
2,4,5-Trichlorophenol	95-95-4	ND	5.0
2,4,6-Trichlorophenol	88-06-2	ND	5.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00775

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Extracted:	10/21/92
		Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-5-2		

Semi-Volatile Organics, EPA 625

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
Acenaphthene	83-32-9	ND	2.0
Acenaphthylene	208-96-8	ND	2.0
Anthracene	120-12-7	ND	2.0
Azobenzene	103-33-3	ND	5.0
Benz(a)anthracene	56-55-3	ND	2.0
Benzo(b)fluoranthene	205-99-2	ND	2.0
Benzo(k)fluoranthene	207-08-9	ND	2.0
Benzoic acid	65-85-0	ND	20
Benzo(g,h,i)perylene	191-24-2	ND	5.0
Benzo(a)pyrene	50-32-8	ND	2.0
Benzyl alcohol	100-51-6	ND	5.0
Bis(2-chloroethoxy)methane	111-91-1	ND	5.0
Bis(2-chloroethyl)ether	111-44-4	ND	5.0
Bis(2-chloroisopropyl)ether	180-60-1	ND	5.0
Bis(2-ethylhexyl)phthalate	117-81-7	14	2.0
4-Bromophenyl phenyl ether	101-55-3	ND	5.0
Butyl benzyl phthalate	85-68-7	ND	2.0
4-Chloroaniline	106-47-8	ND	20
4-Chloro-3-methylphenol	59-50-7	ND	5.0
2-Chloronaphthalene	91-58-7	ND	2.0
2-Chlorophenol	95-57-8	ND	5.0
4-Chlorophenyl phenyl ether	7005-72-3	ND	5.0
Chrysene	218-01-9	ND	2.0
Dibenz(a,h)anthracene	53-70-3	ND	5.0
Dibenzofuran	132-64-9	ND	5.0
Di-n-butyl phthalate	84-74-2	5.0	2.0
1,2-Dichlorobenzene	95-50-1	ND	5.0
1,3-Dichlorobenzene	541-73-1	ND	5.0
1,4-Dichlorobenzene	106-46-7	ND	5.0
2,4-Dichlorophenol	120-83-2	ND	5.0
Diethyl phthalate	84-66-2	ND	2.0
2,4-Dimethylphenol	105-67-9	ND	5.0
Dimethyl phthalate	131-11-3	ND	2.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00776

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Extracted:	10/21/92
		Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-5-2		

Semi-Volatile Organics, EPA 625

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
4,6-Dinitro-2-methylphenol	534-52-1	ND	50
2,4-Dinitrophenol	51-28-5	ND	50
2,4-Dinitrotoluene	121-14-2	ND	5.0
2,6-Dinitrotoluene	606-20-2	ND	5.0
Di-n-octyl phthalate	117-84-0	ND	2.0
Fluoranthene	206-44-0	ND	2.0
Fluorene	86-73-7	ND	2.0
Hexachlorobenzene	118-74-1	ND	5.0
Hexachlorobutadiene	87-68-3	ND	5.0
Hexachlorocyclopentadiene	77-47-4	ND	20
Hexachloroethane	67-72-1	ND	5.0
Indeno(1,2,3-cd)pyrene	193-39-5	ND	5.0
Isophorone	78-59-1	ND	5.0
2-Methylnaphthalene	91-57-6	ND	2.0
2-Methylphenol	95-48-7	ND	5.0
4-Methylphenol	106-44-5	ND	5.0
Naphthalene	91-20-3	ND	2.0
2-Nitroaniline	88-74-4	ND	20
3-Nitroaniline	99-09-2	ND	50
4-Nitroaniline	100-01-6	ND	20
Nitrobenzene	98-95-3	ND	5.0
2-Nitrophenol	88-75-5	ND	5.0
4-Nitrophenol	100-02-7	ND	20
N-Nitrosodimethylamine	62-75-9	ND	5.0
N-Nitrosodiphenylamine	86-30-6	ND	5.0
N-Nitroso-di-n-propylamine	621-64-7	ND	5.0
Pentachlorophenol	87-86-5	ND	20
Phenanthrene	85-01-8	ND	2.0
Phenol	108-95-2	ND	10
Pyrene	129-00-0	ND	2.0
1,2,4-Trichlorobenzene	120-82-1	ND	5.0
2,4,5-Trichlorophenol	95-95-4	ND	5.0
2,4,6-Trichlorophenol	88-06-2	ND	5.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Extracted:	10/21/92
		Date Analyzed:	10/22/92
		Physical State:	Liquid
Sample ID:	OW-6-2		

Semi-Volatile Organics, EPA 625

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
Acenaphthene	83-32-9	ND	2.0
Acenaphthylene	208-96-8	ND	2.0
Anthracene	120-12-7	ND	2.0
Azobenzene	103-33-3	ND	5.0
Benz(a)anthracene	56-55-3	ND	2.0
Benzo(b)fluoranthene	205-99-2	ND	2.0
Benzo(k)fluoranthene	207-08-9	ND	2.0
Benzoic acid	65-85-0	ND	20
Benzo(g,h,i)perylene	191-24-2	ND	5.0
Benzo(a)pyrene	50-32-8	ND	2.0
Benzyl alcohol	100-51-6	ND	5.0
Bis(2-chloroethoxy)methane	111-91-1	ND	5.0
Bis(2-chloroethyl)ether	111-44-4	ND	5.0
Bis(2-chloroisopropyl)ether	180-60-1	ND	5.0
Bis(2-ethylhexyl)phthalate	117-81-7	67	2.0
4-Bromophenyl phenyl ether	101-55-3	ND	5.0
Butyl benzyl phthalate	85-68-7	ND	2.0
4-Chloroaniline	106-47-8	ND	20
4-Chloro-3-methylphenol	59-50-7	ND	5.0
2-Chloronaphthalene	91-58-7	ND	2.0
2-Chlorophenol	95-57-8	ND	5.0
4-Chlorophenyl phenyl ether	7005-72-3	ND	5.0
Chrysene	218-01-9	ND	2.0
Dibenz(a,h)anthracene	53-70-3	ND	5.0
Dibenzofuran	132-64-9	ND	5.0
Di-n-butyl phthalate	84-74-2	5.0	2.0
1,2-Dichlorobenzene	95-50-1	6.0	5.0
1,3-Dichlorobenzene	541-73-1	ND	5.0
1,4-Dichlorobenzene	106-46-7	ND	5.0
2,4-Dichlorophenol	120-83-2	ND	5.0
Diethyl phthalate	84-66-2	ND	2.0
2,4-Dimethylphenol	105-67-9	ND	5.0
Dimethyl phthalate	131-11-3	ND	2.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Extracted:	10/21/92
		Date Analyzed:	10/22/92
		Physical State:	Liquid
Sample ID:	OW-6-2		

Semi-Volatile Organics, EPA 625

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
4,6-Dinitro-2-methylphenol	534-52-1	ND	50
2,4-Dinitrophenol	51-28-5	ND	50
2,4-Dinitrotoluene	121-14-2	ND	5.0
2,6-Dinitrotoluene	606-20-2	ND	5.0
Di-n-octyl phthalate	117-84-0	ND	2.0
Fluoranthene	206-44-0	ND	2.0
Fluorene	86-73-7	ND	2.0
Hexachlorobenzene	118-74-1	ND	5.0
Hexachlorobutadiene	87-68-3	ND	5.0
Hexachlorocyclopentadiene	77-47-4	ND	20
Hexachloroethane	67-72-1	ND	5.0
Indeno(1,2,3-cd)pyrene	193-39-5	ND	5.0
Isophorone	78-59-1	ND	5.0
2-Methylnaphthalene	91-57-6	ND	2.0
2-Methylphenol	95-48-7	ND	5.0
4-Methylphenol	106-44-5	ND	5.0
Naphthalene	91-20-3	ND	2.0
2-Nitroaniline	88-74-4	ND	20
3-Nitroaniline	99-09-2	ND	50
4-Nitroaniline	100-01-6	ND	20
Nitrobenzene	98-95-3	ND	5.0
2-Nitrophenol	88-75-5	ND	5.0
4-Nitrophenol	100-02-7	ND	20
N-Nitrosodimethylamine	62-75-9	ND	5.0
N-Nitrosodiphenylamine	86-30-6	ND	5.0
N-Nitroso-di-n-propylamine	621-64-7	ND	5.0
Pentachlorophenol	87-86-5	ND	20
Phenanthrene	85-01-8	ND	2.0
Phenol	108-95-2	ND	10
Pyrene	129-00-0	ND	2.0
1,2,4-Trichlorobenzene	120-82-1	ND	5.0
2,4,5-Trichlorophenol	95-95-4	ND	5.0
2,4,6-Trichlorophenol	88-06-2	ND	5.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue Huntington Beach, CA 92649	Lab P.N.:	4066
		Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Extracted:	10/21/92
		Date Analyzed:	10/22/92
		Physical State:	Liquid
Sample ID:	EQ. BLNK		

Semi-Volatile Organics, EPA 625

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
Acenaphthene	83-32-9	ND	2.0
Acenaphthylene	208-96-8	ND	2.0
Anthracene	120-12-7	ND	2.0
Azobenzene	103-33-3	ND	5.0
Benz(a)anthracene	56-55-3	ND	2.0
Benzo(b)fluoranthene	205-99-2	ND	2.0
Benzo(k)fluoranthene	207-08-9	ND	2.0
Benzoic acid	65-85-0	ND	20
Benzo(g,h,i)perylene	191-24-2	ND	5.0
Benzo(a)pyrene	50-32-8	ND	2.0
Benzyl alcohol	100-51-6	ND	5.0
Bis(2-chloroethoxy)methane	111-91-1	ND	5.0
Bis(2-chloroethyl)ether	111-44-4	ND	5.0
Bis(2-chloroisopropyl)ether	180-60-1	ND	5.0
Bis(2-ethylhexyl)phthalate	117-81-7	40	2.0
4-Bromophenyl phenyl ether	101-55-3	ND	5.0
Butyl benzyl phthalate	85-68-7	ND	2.0
4-Chloroaniline	106-47-8	ND	20
4-Chloro-3-methylphenol	59-50-7	ND	5.0
2-Chloronaphthalene	91-58-7	ND	2.0
2-Chlorophenol	95-57-8	ND	5.0
4-Chlorophenyl phenyl ether	7005-72-3	ND	5.0
Chrysene	218-01-9	ND	2.0
Dibenz(a,h)anthracene	53-70-3	ND	5.0
Dibenzofuran	132-64-9	ND	5.0
Di-n-butyl phthalate	84-74-2	5.0	2.0
1,2-Dichlorobenzene	95-50-1	ND	5.0
1,3-Dichlorobenzene	541-73-1	ND	5.0
1,4-Dichlorobenzene	106-46-7	ND	5.0
2,4-Dichlorophenol	120-83-2	ND	5.0
Diethyl phthalate	84-66-2	ND	2.0
2,4-Dimethylphenol	105-67-9	ND	5.0
Dimethyl phthalate	131-11-3	ND	2.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00780

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Extracted:	10/21/92
		Date Analyzed:	10/22/92
		Physical State:	Liquid
Sample ID:	EQ. BLNK		

Semi-Volatile Organics, EPA 625

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
4,6-Dinitro-2-methylphenol	534-52-1	ND	50
2,4-Dinitrophenol	51-28-5	ND	50
2,4-Dinitrotoluene	121-14-2	ND	5.0
2,6-Dinitrotoluene	606-20-2	ND	5.0
Di-n-octyl phthalate	117-84-0	ND	2.0
Fluoranthene	206-44-0	ND	2.0
Fluorene	86-73-7	ND	2.0
Hexachlorobenzene	118-74-1	ND	5.0
Hexachlorobutadiene	87-68-3	ND	5.0
Hexachlorocyclopentadiene	77-47-4	ND	20
Hexachloroethane	67-72-1	ND	5.0
Indeno(1,2,3-cd)pyrene	193-39-5	ND	5.0
Isophorone	78-59-1	ND	5.0
2-Methylnaphthalene	91-57-6	ND	2.0
2-Methylphenol	95-48-7	ND	5.0
4-Methylphenol	106-44-5	ND	5.0
Naphthalene	91-20-3	ND	2.0
2-Nitroaniline	88-74-4	ND	20
3-Nitroaniline	99-09-2	ND	50
4-Nitroaniline	100-01-6	ND	20
Nitrobenzene	98-95-3	ND	5.0
2-Nitrophenol	88-75-5	ND	5.0
4-Nitrophenol	100-02-7	ND	20
N-Nitrosodimethylamine	62-75-9	ND	5.0
N-Nitrosodiphenylamine	86-30-6	ND	5.0
N-Nitroso-di-n-propylamine	621-64-7	ND	5.0
Pentachlorophenol	87-86-5	ND	20
Phenanthrene	85-01-8	ND	2.0
Phenol	108-95-2	ND	10
Pyrene	129-00-0	ND	2.0
1,2,4-Trichlorobenzene	120-82-1	ND	5.0
2,4,5-Trichlorophenol	95-95-4	ND	5.0
2,4,6-Trichlorophenol	88-06-2	ND	5.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00781

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Extracted:	10/21/92
		Date Analyzed:	10/22/92
		Physical State:	Liquid
Sample ID:	TRIP BLNK		

Semi-Volatile Organics, EPA 625

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
Acenaphthene	83-32-9	ND	2.0
Acenaphthylene	208-96-8	ND	2.0
Anthracene	120-12-7	ND	2.0
Azobenzene	103-33-3	ND	5.0
Benz(a)anthracene	56-55-3	ND	2.0
Benzo(b)fluoranthene	205-99-2	ND	2.0
Benzo(k)fluoranthene	207-08-9	ND	2.0
Benzoic acid	65-85-0	ND	20
Benzo(g,h,i)perylene	191-24-2	ND	5.0
Benzo(a)pyrene	50-32-8	ND	2.0
Benzyl alcohol	100-51-6	ND	5.0
Bis(2-chloroethoxy)methane	111-91-1	ND	5.0
Bis(2-chloroethyl)ether	111-44-4	ND	5.0
Bis(2-chloroisopropyl)ether	180-60-1	ND	5.0
Bis(2-ethylhexyl)phthalate	117-81-7	9.0	2.0
4-Bromophenyl phenyl ether	101-55-3	ND	5.0
Butyl benzyl phthalate	85-68-7	ND	2.0
4-Chloroaniline	106-47-8	ND	20
4-Chloro-3-methylphenol	59-50-7	ND	5.0
2-Chloronaphthalene	91-58-7	ND	2.0
2-Chlorophenol	95-57-8	ND	5.0
4-Chlorophenyl phenyl ether	7005-72-3	ND	5.0
Chrysene	218-01-9	ND	2.0
Dibenz(a,h)anthracene	53-70-3	ND	5.0
Dibenzofuran	132-64-9	ND	5.0
Di-n-butyl phthalate	84-74-2	5.0	2.0
1,2-Dichlorobenzene	95-50-1	ND	5.0
1,3-Dichlorobenzene	541-73-1	ND	5.0
1,4-Dichlorobenzene	106-46-7	ND	5.0
2,4-Dichlorophenol	120-83-2	ND	5.0
Diethyl phthalate	84-66-2	ND	2.0
2,4-Dimethylphenol	105-67-9	ND	5.0
Dimethyl phthalate	131-11-3	ND	2.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00782

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Extracted:	10/21/92
		Date Analyzed:	10/22/92
		Physical State:	Liquid
Sample ID:	TRIP BLNK		

Semi-Volatile Organics, EPA 625

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
4,6-Dinitro-2-methylphenol	534-52-1	ND	50
2,4-Dinitrophenol	51-28-5	ND	50
2,4-Dinitrotoluene	121-14-2	ND	5.0
2,6-Dinitrotoluene	606-20-2	ND	5.0
Di-n-octyl phthalate	117-84-0	ND	2.0
Fluoranthene	206-44-0	ND	2.0
Fluorene	86-73-7	ND	2.0
Hexachlorobenzene	118-74-1	ND	5.0
Hexachlorobutadiene	87-68-3	ND	5.0
Hexachlorocyclopentadiene	77-47-4	ND	20
Hexachloroethane	67-72-1	ND	5.0
Indeno(1,2,3-cd)pyrene	193-39-5	ND	5.0
Isophorone	78-59-1	ND	5.0
2-Methylnaphthalene	91-57-6	ND	2.0
2-Methylphenol	95-48-7	ND	5.0
4-Methylphenol	106-44-5	ND	5.0
Naphthalene	91-20-3	ND	2.0
2-Nitroaniline	88-74-4	ND	20
3-Nitroaniline	99-09-2	ND	50
4-Nitroaniline	100-01-6	ND	20
Nitrobenzene	98-95-3	ND	5.0
2-Nitrophenol	88-75-5	ND	5.0
4-Nitrophenol	100-02-7	ND	20
N-Nitrosodimethylamine	62-75-9	ND	5.0
N-Nitrosodiphenylamine	86-30-6	ND	5.0
N-Nitroso-di-n-propylamine	621-64-7	ND	5.0
Pentachlorophenol	87-86-5	ND	20
Phenanthrene	85-01-8	ND	2.0
Phenol	108-95-2	ND	10
Pyrene	129-00-0	ND	2.0
1,2,4-Trichlorobenzene	120-82-1	ND	5.0
2,4,5-Trichlorophenol	95-95-4	ND	5.0
2,4,6-Trichlorophenol	88-06-2	ND	5.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00783

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue Huntington Beach, CA 92649	Lab P.N.:	4066
		Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-1-1		

Volatile Organic Compounds, EPA 624/8260

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
Acetone	67-64-1	ND	4000
Benzene	71-43-2	ND	200
Bromobenzene	108-86-1	ND	200
Bromochloromethane	74-97-5	ND	400
Bromodichloromethane	75-27-4	ND	200
Bromoform	75-25-2	ND	200
Bromomethane	74-83-9	ND	400
2-Butanone	78-93-3	ND	4000
n-Butylbenzene	104-51-8	ND	200
sec-Butylbenzene	135-98-8	ND	200
tert-Butylbenzene	98-06-6	ND	200
Carbon tetrachloride	56-23-5	ND	200
Carbon disulfide	75-15-0	ND	200
Chlorobenzene	108-90-7	ND	200
Chloroethane	75-00-3	ND	400
Chloroform	67-66-3	230	200
Chloromethane	74-87-3	ND	400
2-Chlorotoluene	95-49-8	ND	200
4-Chlorotoluene	106-43-4	ND	200
Dibromochloromethane	124-48-01	ND	200
1,2-Dibromo-3-chloropropane	96-12-8	ND	400
Dibromomethane	74-95-3	ND	200
1,2-Dibromoethane	106-93-4	ND	200
1,2-Dichlorobenzene	95-50-1	ND	200
1,3-Dichlorobenzene	541-73-1	ND	200
1,4-Dichlorobenzene	106-46-7	ND	200
Dichlorodifluoromethane	75-71-8	ND	200
1,1-Dichloroethane	75-34-3	ND	200
1,2-Dichloroethane	107-06-2	ND	200
1,1-Dichloroethene	75-35-4	ND	400
cis-1,2-Dichloroethene	156-59-2	ND	200
trans-1,2-Dichloroethene	156-60-5	ND	200

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00784

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-1-1		

Volatile Organic Compounds, EPA 624/8260

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
1,2-Dichloropropane	78-87-5	ND	200
1,3-Dichloropropane	142-28-9	ND	200
2,2-Dichloropropane	594-20-7	ND	200
1,1-Dichloropropene	563-58-6	ND	200
cis-1,3-Dichloropropene	10061-01-5	ND	200
trans-1,3-Dichloropropene	10061-02-6	ND	200
Ethylbenzene	100-41-4	ND	200
Hexachlorobutadiene	87-68-3	ND	400
2-Hexanone	591-78-6	ND	2000
Isopropylbenzene	98-82-8	ND	200
p-Isopropyltoluene	99-87-6	ND	200
Methylene chloride	75-09-2	270000	400
4-Methyl-2-pentanone	108-10-1	ND	2000
Napthalene	91-20-3	ND	200
n-Propylbenzene	103-65-1	ND	200
Styrene	100-42-5	ND	200
1,1,1,2-Tetrachloroethane	630-20-6	ND	200
1,1,2,2-Tetrachloroethane	79-34-5	ND	200
Tetrachloroethene	127-18-4	290	200
Toluene	108-88-3	ND	200
1,2,3-Trichlorobenzene	87-61-6	ND	200
1,2,4-Trichlorobenzene	120-82-1	ND	200
1,1,1-Trichloroethane	71-55-6	ND	200
1,1,2-Trichloroethane	79-00-5	ND	400
Trichloroethene	79-01-6	1700	200
Trichlorofluoromethane	75-69-4	ND	200
1,2,3-Trichloropropane	96-18-4	ND	200
1,2,4-Trimethylbenzene	95-63-6	ND	200
1,3,5-Trimethylbenzene	108-67-8	ND	200
Vinyl chloride	75-01-4	ND	400
o-Xylene	95-47-6	ND	200
p,m-Xylene	108-38-3, 106-42-3	ND	200

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00785

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-2-1		

Volatile Organic Compounds, EPA 624/8260

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
Acetone	67-64-1	ND	400
Benzene	71-43-2	ND	20
Bromobenzene	108-86-1	ND	20
Bromochloromethane	74-97-5	ND	40
Bromodichloromethane	75-27-4	ND	20
Bromoform	75-25-2	ND	20
Bromomethane	74-83-9	ND	40
2-Butanone	78-93-3	ND	400
n-Butylbenzene	104-51-8	ND	20
sec-Butylbenzene	135-98-8	ND	20
tert-Butylbenzene	98-06-6	ND	20
Carbon tetrachloride	56-23-5	ND	20
Carbon disulfide	75-15-0	ND	20
Chlorobenzene	108-90-7	ND	20
Chloroethane	75-00-3	ND	40
Chloroform	67-66-3	28	20
Chloromethane	74-87-3	ND	40
2-Chlorotoluene	95-49-8	ND	20
4-Chlorotoluene	106-43-4	ND	20
Dibromochloromethane	124-48-01	ND	20
1,2-Dibromo-3-chloropropane	96-12-8	ND	40
Dibromomethane	74-95-3	ND	20
1,2-Dibromoethane	106-93-4	ND	20
1,2-Dichlorobenzene	95-50-1	ND	20
1,3-Dichlorobenzene	541-73-1	ND	20
1,4-Dichlorobenzene	106-46-7	ND	20
Dichlorodifluoromethane	75-71-8	ND	20
1,1-Dichloroethane	75-34-3	ND	20
1,2-Dichloroethane	107-06-2	ND	20
1,1-Dichloroethene	75-35-4	ND	40
cis-1,2-Dichloroethene	156-59-2	27	20
trans-1,2-Dichloroethene	156-60-5	ND	20

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-2-1		

Volatile Organic Compounds, EPA 624/8260

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
1,2-Dichloropropane	78-87-5	ND	20
1,3-Dichloropropane	142-28-9	ND	20
2,2-Dichloropropane	594-20-7	ND	20
1,1-Dichloropropene	563-58-6	ND	20
cis-1,3-Dichloropropene	10061-01-5	ND	20
trans-1,3-Dichloropropene	10061-02-6	ND	20
Ethylbenzene	100-41-4	ND	20
Hexachlorobutadiene	87-68-3	ND	40
2-Hexanone	591-78-6	ND	200
Isopropylbenzene	98-82-8	ND	20
p-Isopropyltoluene	99-87-6	ND	20
Methylene chloride	75-09-2	400B	40
4-Methyl-2-pentanone	108-10-1	ND	200
Napthalene	91-20-3	ND	20
n-Propylbenzene	103-65-1	ND	20
Styrene	100-42-5	ND	20
1,1,1,2-Tetrachloroethane	630-20-6	ND	20
1,1,2,2-Tetrachloroethane	79-34-5	ND	20
Tetrachloroethene	127-18-4	380	20
Toluene	108-88-3	ND	20
1,2,3-Trichlorobenzene	87-61-6	ND	20
1,2,4-Trichlorobenzene	120-82-1	ND	20
1,1,1-Trichloroethane	71-55-6	ND	20
1,1,2-Trichloroethane	79-00-5	ND	40
Trichloroethene	79-01-6	2300	20
Trichlorofluoromethane	75-69-4	ND	20
1,2,3-Trichloropropane	96-18-4	ND	20
1,2,4-Trimethylbenzene	95-63-6	ND	20
1,3,5-Trimethylbenzene	108-67-8	ND	20
Vinyl chloride	75-01-4	ND	40
o-Xylene	95-47-6	ND	20
p,m-Xylene	108-38-3, 106-42-3	ND	20

B = Found in blank at a concentration of 400 µg/l
ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00787

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-3-1		

Volatile Organic Compounds, EPA 624/8260

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
Acetone	67-64-1	ND	400
Benzene	71-43-2	ND	20
Bromobenzene	108-86-1	ND	20
Bromochloromethane	74-97-5	ND	40
Bromodichloromethane	75-27-4	ND	20
Bromoform	75-25-2	ND	20
Bromomethane	74-83-9	ND	40
2-Butanone	78-93-3	ND	400
n-Butylbenzene	104-51-8	ND	20
sec-Butylbenzene	135-98-8	ND	20
tert-Butylbenzene	98-06-6	ND	20
Carbon tetrachloride	56-23-5	ND	20
Carbon disulfide	75-15-0	ND	20
Chlorobenzene	108-90-7	ND	20
Chloroethane	75-00-3	ND	40
Chloroform	67-66-3	ND	20
Chloromethane	74-87-3	ND	40
2-Chlorotoluene	95-49-8	ND	20
4-Chlorotoluene	106-43-4	ND	20
Dibromochloromethane	124-48-01	ND	20
1,2-Dibromo-3-chloropropane	96-12-8	ND	40
Dibromomethane	74-95-3	ND	20
1,2-Dibromoethane	106-93-4	ND	20
1,2-Dichlorobenzene	95-50-1	ND	20
1,3-Dichlorobenzene	541-73-1	ND	20
1,4-Dichlorobenzene	106-46-7	ND	20
Dichlorodifluoromethane	75-71-8	ND	20
1,1-Dichloroethane	75-34-3	ND	20
1,2-Dichloroethane	107-06-2	ND	20
1,1-Dichloroethene	75-35-4	ND	40
cis-1,2-Dichloroethene	156-59-2	41	20
trans-1,2-Dichloroethene	156-60-5	ND	20

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00788

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-3-1		

Volatile Organic Compounds, EPA 624/8260

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
1,2-Dichloropropane	78-87-5	ND	20
1,3-Dichloropropane	142-28-9	ND	20
2,2-Dichloropropane	594-20-7	ND	20
1,1-Dichloropropene	563-58-6	ND	20
cis-1,3-Dichloropropene	10061-01-5	ND	20
trans-1,3-Dichloropropene	10061-02-6	ND	20
Ethylbenzene	100-41-4	ND	20
Hexachlorobutadiene	87-68-3	ND	40
2-Hexanone	591-78-6	ND	200
Isopropylbenzene	98-82-8	ND	20
p-Isopropyltoluene	99-87-6	ND	20
Methylene chloride	75-09-2	48B	40
4-Methyl-2-pentanone	108-10-1	ND	200
Napthalene	91-20-3	ND	20
n-Propylbenzene	103-65-1	ND	20
Styrene	100-42-5	ND	20
1,1,1,2-Tetrachloroethane	630-20-6	ND	20
1,1,2,2-Tetrachloroethane	79-34-5	ND	20
Tetrachloroethene	127-18-4	230	20
Toluene	108-88-3	ND	20
1,2,3-Trichlorobenzene	87-61-6	ND	20
1,2,4-Trichlorobenzene	120-82-1	ND	20
1,1,1-Trichloroethane	71-55-6	ND	20
1,1,2-Trichloroethane	79-00-5	ND	40
Trichloroethene	79-01-6	1700	20
Trichlorofluoromethane	75-69-4	ND	20
1,2,3-Trichloropropane	96-18-4	ND	20
1,2,4-Trimethylbenzene	95-63-6	ND	20
1,3,5-Trimethylbenzene	108-67-8	ND	20
Vinyl chloride	75-01-4	ND	40
o-Xylene	95-47-6	ND	20
p,m-Xylene	108-38-3, 106-42-3	ND	20

B = Found in blank at a concentration of 20 µg/l
ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00789

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Analyzed:	10/20/92
		Physical State:	Liquid
Sample ID:	OW-4-1		

Volatile Organic Compounds, EPA 624/8260

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
Acetone	67-64-1	ND	400
Benzene	71-43-2	ND	20
Bromobenzene	108-86-1	ND	20
Bromochloromethane	74-97-5	ND	40
Bromodichloromethane	75-27-4	ND	20
Bromoform	75-25-2	ND	20
Bromomethane	74-83-9	ND	40
2-Butanone	78-93-3	ND	400
n-Butylbenzene	104-51-8	ND	20
sec-Butylbenzene	135-98-8	ND	20
tert-Butylbenzene	98-06-6	ND	20
Carbon tetrachloride	56-23-5	ND	20
Carbon disulfide	75-15-0	ND	20
Chlorobenzene	108-90-7	ND	20
Chloroethane	75-00-3	ND	40
Chloroform	67-66-3	23	20
Chloromethane	74-87-3	ND	40
2-Chlorotoluene	95-49-8	ND	20
4-Chlorotoluene	106-43-4	ND	20
Dibromochloromethane	124-48-01	ND	20
1,2-Dibromo-3-chloropropane	96-12-8	ND	40
Dibromomethane	74-95-3	ND	20
1,2-Dibromoethane	106-93-4	ND	20
1,2-Dichlorobenzene	95-50-1	ND	20
1,3-Dichlorobenzene	541-73-1	ND	20
1,4-Dichlorobenzene	106-46-7	ND	20
Dichlorodifluoromethane	75-71-8	ND	20
1,1-Dichloroethane	75-34-3	ND	20
1,2-Dichloroethane	107-06-2	ND	20
1,1-Dichloroethene	75-35-4	44	40
cis-1,2-Dichloroethene	156-59-2	210	20
trans-1,2-Dichloroethene	156-60-5	ND	20

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00790

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Analyzed:	10/20/92
		Physical State:	Liquid
Sample ID:	OW-4-1		

Volatile Organic Compounds, EPA 624/8260

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
1,2-Dichloropropane	78-87-5	ND	20
1,3-Dichloropropane	142-28-9	ND	20
2,2-Dichloropropane	594-20-7	ND	20
1,1-Dichloropropene	563-58-6	ND	20
cis-1,3-Dichloropropene	10061-01-5	ND	20
trans-1,3-Dichloropropene	10061-02-6	ND	20
Ethylbenzene	100-41-4	ND	20
Hexachlorobutadiene	87-68-3	ND	40
2-Hexanone	591-78-6	ND	200
Isopropylbenzene	98-82-8	ND	20
p-Isopropyltoluene	99-87-6	ND	20
Methylene chloride	75-09-2	ND	40
4-Methyl-2-pentanone	108-10-1	ND	200
Napthalene	91-20-3	ND	20
n-Propylbenzene	103-65-1	ND	20
Styrene	100-42-5	ND	20
1,1,1,2-Tetrachloroethane	630-20-6	ND	20
1,1,2,2-Tetrachloroethane	79-34-5	ND	20
Tetrachloroethene	127-18-4	920	20
Toluene	108-88-3	ND	20
1,2,3-Trichlorobenzene	87-61-6	ND	20
1,2,4-Trichlorobenzene	120-82-1	ND	20
1,1,1-Trichloroethane	71-55-6	ND	20
1,1,2-Trichloroethane	79-00-5	ND	40
Trichloroethene	79-01-6	4400	20
Trichlorofluoromethane	75-69-4	ND	20
1,2,3-Trichloropropane	96-18-4	ND	20
1,2,4-Trimethylbenzene	95-63-6	ND	20
1,3,5-Trimethylbenzene	108-67-8	ND	20
Vinyl chloride	75-01-4	ND	40
o-Xylene	95-47-6	ND	20
p,m-Xylene	108-38-3, 106-42-3	ND	20

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00791

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-5-1		

Volatile Organic Compounds, EPA 624/8260

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
Acetone	67-64-1	ND	2000
Benzene	71-43-2	ND	100
Bromobenzene	108-86-1	ND	100
Bromochloromethane	74-97-5	ND	200
Bromodichloromethane	75-27-4	ND	100
Bromoform	75-25-2	ND	100
Bromomethane	74-83-9	ND	200
2-Butanone	78-93-3	ND	2000
n-Butylbenzene	104-51-8	ND	100
sec-Butylbenzene	135-98-8	ND	100
tert-Butylbenzene	98-06-6	ND	100
Carbon tetrachloride	56-23-5	ND	100
Carbon disulfide	75-15-0	ND	100
Chlorobenzene	108-90-7	ND	100
Chloroethane	75-00-3	ND	200
Chloroform	67-66-3	110	100
Chloromethane	74-87-3	ND	200
2-Chlorotoluene	95-49-8	ND	100
4-Chlorotoluene	106-43-4	ND	100
Dibromochloromethane	124-48-01	ND	100
1,2-Dibromo-3-chloropropane	96-12-8	ND	200
Dibromomethane	74-95-3	ND	100
1,2-Dibromoethane	106-93-4	ND	100
1,2-Dichlorobenzene	95-50-1	ND	100
1,3-Dichlorobenzene	541-73-1	ND	100
1,4-Dichlorobenzene	106-46-7	ND	100
Dichlorodifluoromethane	75-71-8	ND	100
1,1-Dichloroethane	75-34-3	ND	100
1,2-Dichloroethane	107-06-2	ND	100
1,1-Dichloroethene	75-35-4	200	200
cis-1,2-Dichloroethene	156-59-2	590	100
trans-1,2-Dichloroethene	156-60-5	ND	100

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00792

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-5-1		

Volatile Organic Compounds, EPA 624/8260

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
1,2-Dichloropropane	78-87-5	ND	100
1,3-Dichloropropane	142-28-9	ND	100
2,2-Dichloropropane	594-20-7	ND	100
1,1-Dichloropropene	563-58-6	ND	100
cis-1,3-Dichloropropene	10061-01-5	ND	100
trans-1,3-Dichloropropene	10061-02-6	ND	100
Ethylbenzene	100-41-4	ND	100
Hexachlorobutadiene	87-68-3	ND	200
2-Hexanone	591-78-6	ND	1000
Isopropylbenzene	98-82-8	ND	100
p-Isopropyltoluene	99-87-6	ND	100
Methylene chloride	75-09-2	ND	200
4-Methyl-2-pentanone	108-10-1	ND	1000
Napthalene	91-20-3	ND	100
n-Propylbenzene	103-65-1	ND	100
Styrene	100-42-5	ND	100
1,1,1,2-Tetrachloroethane	630-20-6	ND	100
1,1,2,2-Tetrachloroethane	79-34-5	ND	100
Tetrachloroethene	127-18-4	7000	100
Toluene	108-88-3	ND	100
1,2,3-Trichlorobenzene	87-61-6	ND	100
1,2,4-Trichlorobenzene	120-82-1	ND	100
1,1,1-Trichloroethane	71-55-6	ND	100
1,1,2-Trichloroethane	79-00-5	ND	200
Trichloroethene	79-01-6	16000	100
Trichlorofluoromethane	75-69-4	ND	100
1,2,3-Trichloropropane	96-18-4	ND	100
1,2,4-Trimethylbenzene	95-63-6	ND	100
1,3,5-Trimethylbenzene	108-67-8	ND	100
Vinyl chloride	75-01-4	ND	200
o-Xylene	95-47-6	ND	100
p,m-Xylene	108-38-3, 106-42-3	ND	100

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	OW-6-1		

Volatile Organic Compounds, EPA 624/8260

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
Acetone	67-64-1	ND	2000
Benzene	71-43-2	ND	100
Bromobenzene	108-86-1	ND	100
Bromochloromethane	74-97-5	ND	200
Bromodichloromethane	75-27-4	ND	100
Bromoform	75-25-2	ND	100
Bromomethane	74-83-9	ND	200
2-Butanone	78-93-3	ND	2000
n-Butylbenzene	104-51-8	ND	100
sec-Butylbenzene	135-98-8	ND	100
tert-Butylbenzene	98-06-6	ND	100
Carbon tetrachloride	56-23-5	ND	100
Carbon disulfide	75-15-0	ND	100
Chlorobenzene	108-90-7	ND	100
Chloroethane	75-00-3	ND	200
Chloroform	67-66-3	140	100
Chloromethane	74-87-3	ND	200
2-Chlorotoluene	95-49-8	ND	100
4-Chlorotoluene	106-43-4	ND	100
Dibromochloromethane	124-48-01	ND	100
1,2-Dibromo-3-chloropropane	96-12-8	ND	200
Dibromomethane	74-95-3	ND	100
1,2-Dibromoethane	106-93-4	ND	100
1,2-Dichlorobenzene	95-50-1	ND	100
1,3-Dichlorobenzene	541-73-1	ND	100
1,4-Dichlorobenzene	106-46-7	ND	100
Dichlorodifluoromethane	75-71-8	ND	200
1,1-Dichloroethane	75-34-3	ND	100
1,2-Dichloroethane	107-06-2	ND	100
1,1-Dichloroethene	75-35-4	ND	200
cis-1,2-Dichloroethene	156-59-2	280	100
trans-1,2-Dichloroethene	156-60-5	ND	100

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Analyzed:	10/20/92
		Physical State:	Liquid
Sample ID:	OW-6-1		

Volatile Organic Compounds, EPA 624/8260

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
1,2-Dichloropropane	78-87-5	ND	100
1,3-Dichloropropane	142-28-9	ND	100
2,2-Dichloropropane	594-20-7	ND	100
1,1-Dichloropropene	563-58-6	ND	100
cis-1,3-Dichloropropene	10061-01-5	ND	100
trans-1,3-Dichloropropene	10061-02-6	ND	100
Ethylbenzene	100-41-4	ND	100
Hexachlorobutadiene	87-68-3	ND	200
2-Hexanone	591-78-6	ND	1000
Isopropylbenzene	98-82-8	ND	100
p-Isopropyltoluene	99-87-6	ND	100
Methylene chloride	75-09-2	ND	200
4-Methyl-2-pentanone	108-10-1	ND	1000
Napthalene	91-20-3	ND	100
n-Propylbenzene	103-65-1	ND	100
Styrene	100-42-5	ND	100
1,1,1,2-Tetrachloroethane	630-20-6	ND	100
1,1,2,2-Tetrachloroethane	79-34-5	ND	100
Tetrachloroethene	127-18-4	10000	100
Toluene	108-88-3	ND	100
1,2,3-Trichlorobenzene	87-61-6	ND	100
1,2,4-Trichlorobenzene	120-82-1	ND	100
1,1,1-Trichloroethane	71-55-6	ND	100
1,1,2-Trichloroethane	79-00-5	ND	200
Trichloroethene	79-01-6	21000	100
Trichlorofluoromethane	75-69-4	ND	100
1,2,3-Trichloropropane	96-18-4	ND	100
1,2,4-Trimethylbenzene	95-63-6	ND	100
1,3,5-Trimethylbenzene	108-67-8	ND	100
Vinyl chloride	75-01-4	ND	200
o-Xylene	95-47-6	ND	100
p,m-Xylene	108-38-3, 106-42-3	ND	100

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Analyzed:	10/21/92
		Physical State:	Liquid

Sample ID: EQ BLNK

Volatile Organic Compounds, EPA 624/8260

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
Acetone	67-64-1	ND	40
Benzene	71-43-2	ND	2.0
Bromobenzene	108-86-1	ND	2.0
Bromochloromethane	74-97-5	ND	4.0
Bromodichloromethane	75-27-4	ND	2.0
Bromoform	75-25-2	ND	2.0
Bromomethane	74-83-9	ND	4.0
2-Butanone	78-93-3	ND	40
n-Butylbenzene	104-51-8	ND	2.0
sec-Butylbenzene	135-98-8	ND	2.0
tert-Butylbenzene	98-06-6	ND	2.0
Carbon tetrachloride	56-23-5	ND	2.0
Carbon disulfide	75-15-0	ND	2.0
Chlorobenzene	108-90-7	ND	2.0
Chloroethane	75-00-3	ND	4.0
Chloroform	67-66-3	ND	2.0
Chloromethane	74-87-3	ND	4.0
2-Chlorotoluene	95-49-8	ND	2.0
4-Chlorotoluene	106-43-4	ND	2.0
Dibromochloromethane	124-48-01	ND	2.0
1,2-Dibromo-3-chloropropane	96-12-8	ND	4.0
Dibromomethane	74-95-3	ND	2.0
1,2-Dibromoethane	106-93-4	ND	2.0
1,2-Dichlorobenzene	95-50-1	ND	2.0
1,3-Dichlorobenzene	541-73-1	ND	2.0
1,4-Dichlorobenzene	106-46-7	ND	2.0
Dichlorodifluoromethane	75-71-8	ND	2.0
1,1-Dichloroethane	75-34-3	ND	2.0
1,2-Dichloroethane	107-06-2	ND	2.0
1,1-Dichloroethene	75-35-4	ND	4.0
cis-1,2-Dichloroethene	156-59-2	ND	2.0
trans-1,2-Dichloroethene	156-60-5	ND	2.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	EQ BLNK		

Volatile Organic Compounds, EPA 624/8260

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
1,2-Dichloropropane	78-87-5	ND	2.0
1,3-Dichloropropane	142-28-9	ND	2.0
2,2-Dichloropropane	594-20-7	ND	2.0
1,1-Dichloropropene	563-58-6	ND	2.0
cis-1,3-Dichloropropene	10061-01-5	ND	2.0
trans-1,3-Dichloropropene	10061-02-6	ND	2.0
Ethylbenzene	100-41-4	ND	2.0
Hexachlorobutadiene	87-68-3	ND	4.0
2-Hexanone	591-78-6	ND	20
Isopropylbenzene	98-82-8	ND	2.0
p-Isopropyltoluene	99-87-6	ND	2.0
Methylene chloride	75-09-2	ND	4.0
4-Methyl-2-pentanone	108-10-1	ND	20
Napthalene	91-20-3	ND	2.0
n-Propylbenzene	103-65-1	ND	2.0
Styrene	100-42-5	ND	2.0
1,1,1,2-Tetrachloroethane	630-20-6	ND	2.0
1,1,2,2-Tetrachloroethane	79-34-5	ND	2.0
Tetrachloroethene	127-18-4	ND	2.0
Toluene	108-88-3	ND	2.0
1,2,3-Trichlorobenzene	87-61-6	ND	2.0
1,2,4-Trichlorobenzene	120-82-1	ND	2.0
1,1,1-Trichloroethane	71-55-6	ND	2.0
1,1,2-Trichloroethane	79-00-5	ND	4.0
Trichloroethene	79-01-6	ND	2.0
Trichlorofluoromethane	75-69-4	ND	2.0
1,2,3-Trichloropropane	96-18-4	ND	2.0
1,2,4-Trimethylbenzene	95-63-6	ND	2.0
1,3,5-Trimethylbenzene	108-67-8	ND	2.0
Vinyl chloride	75-01-4	ND	4.0
o-Xylene	95-47-6	ND	2.0
p,m-Xylene	108-38-3, 106-42-3	ND	2.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	TRIP BLNK		

Volatile Organic Compounds, EPA 624/8260

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
Acetone	67-64-1	ND	40
Benzene	71-43-2	ND	2.0
Bromobenzene	108-86-1	ND	2.0
Bromochloromethane	74-97-5	ND	4.0
Bromodichloromethane	75-27-4	ND	2.0
Bromoform	75-25-2	ND	2.0
Bromomethane	74-83-9	ND	4.0
2-Butanone	78-93-3	ND	40
n-Butylbenzene	104-51-8	ND	2.0
sec-Butylbenzene	135-98-8	ND	2.0
tert-Butylbenzene	98-06-6	ND	2.0
Carbon tetrachloride	56-23-5	ND	2.0
Carbon disulfide	75-15-0	ND	2.0
Chlorobenzene	108-90-7	ND	2.0
Chloroethane	75-00-3	ND	4.0
Chloroform	67-66-3	ND	2.0
Chloromethane	74-87-3	ND	4.0
2-Chlorotoluene	95-49-8	ND	2.0
4-Chlorotoluene	106-43-4	ND	2.0
Dibromochloromethane	124-48-01	ND	2.0
1,2-Dibromo-3-chloropropane	96-12-8	ND	4.0
Dibromomethane	74-95-3	ND	2.0
1,2-Dibromoethane	106-93-4	ND	2.0
1,2-Dichlorobenzene	95-50-1	ND	2.0
1,3-Dichlorobenzene	541-73-1	ND	2.0
1,4-Dichlorobenzene	106-46-7	ND	2.0
Dichlorodifluoromethane	75-71-8	ND	2.0
1,1-Dichloroethane	75-34-3	ND	2.0
1,2-Dichloroethane	107-06-2	ND	2.0
1,1-Dichloroethene	75-35-4	ND	4.0
cis-1,2-Dichloroethene	156-59-2	ND	2.0
trans-1,2-Dichloroethene	156-60-5	ND	2.0

ND; Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

BPACC00798

LABORATORY RESULTS

Client:	Simon Hydro-Search	Report Date:	10/23/92
Client Address:	5882 Bolsa Avenue	Lab P.N.:	4066
	Huntington Beach, CA 92649	Client P.N.:	512-345
Project Name:	Amoco	Date Sampled:	10/20/92
Project Address:	Torrance, CA	Date Analyzed:	10/21/92
		Physical State:	Liquid
Sample ID:	TRIP BLNK		

Volatile Organic Compounds, EPA 624/8260

Parameters	CAS #	Conc. µg/l	Quantitation limit µg/l
1,2-Dichloropropane	78-87-5	ND	2.0
1,3-Dichloropropane	142-28-9	ND	2.0
2,2-Dichloropropane	594-20-7	ND	2.0
1,1-Dichloropropene	563-58-6	ND	2.0
cis-1,3-Dichloropropene	10061-01-5	ND	2.0
trans-1,3-Dichloropropene	10061-02-6	ND	2.0
Ethylbenzene	100-41-4	ND	2.0
Hexachlorobutadiene	87-68-3	ND	4.0
2-Hexanone	591-78-6	ND	20
Isopropylbenzene	98-82-8	ND	2.0
p-Isopropyltoluene	99-87-6	ND	2.0
Methylene chloride	75-09-2	ND	4.0
4-Methyl-2-pentanone	108-10-1	ND	20
Napthalene	91-20-3	ND	2.0
n-Propylbenzene	103-65-1	ND	2.0
Styrene	100-42-5	ND	2.0
1,1,1,2-Tetrachloroethane	630-20-6	ND	2.0
1,1,2,2-Tetrachloroethane	79-34-5	ND	2.0
Tetrachloroethene	127-18-4	ND	2.0
Toluene	108-88-3	ND	2.0
1,2,3-Trichlorobenzene	87-61-6	ND	2.0
1,2,4-Trichlorobenzene	120-82-1	ND	2.0
1,1,1-Trichloroethane	71-55-6	ND	2.0
1,1,2-Trichloroethane	79-00-5	ND	4.0
Trichloroethene	79-01-6	ND	2.0
Trichlorofluoromethane	75-69-4	ND	2.0
1,2,3-Trichloropropane	96-18-4	ND	2.0
1,2,4-Trimethylbenzene	95-63-6	ND	2.0
1,3,5-Trimethylbenzene	108-67-8	ND	2.0
Vinyl chloride	75-01-4	ND	4.0
o-Xylene	95-47-6	ND	2.0
p,m-Xylene	108-38-3, 106-42-3	ND	2.0

ND: Not Detectable
The Laboratory Results are only a portion of the Laboratory Report.

CHAIN OF CUSTODY AND ANALYSIS REQUEST

PROJECT NAME/NO. AMOCO / 512-345
PROJECT LOCATION TORRANCE
SAMPLERS NAME L. KELLY / L. CHAIDEZ
SIGNATURE L. Chaidez
LABORATORY TERRA TECH

SIMON HYDRO-SEARCH
5882 BOLSA AVENUE
HUNTINGTON BEACH, CALIFORNIA 92649
TELEPHONE (714) 891-7446
FAX (714) 891-9009

SEND ANALYSES TO: LEONARDO CHAIDEZ

ANALYSIS REQUESTED

SAMPLE	DATE	TIME	SAMPLE LOCATION, MEDIA TYPE DESCRIPTION	624	625										REMARKS
OW-1-1	10/20/92	AM	WATER	✓										3	24 hr T.A.T TT1644
OW-1-2					✓									2	TT1644
OW-2-1				✓										3	TT1644
OW-2-2					✓									2	TT1644
OW-3-1				✓										3	did not Received 10/20 JF
OW-3-2					✓									2	TT1644
OW-4-1				✓										3	TT1645
OW-4-2					✓									2	TT1645
OW-5-1				✓										3	TT1645
OW-5-2					✓									2	TT1645
OW-6-1				✓										3	TT1645
OW-6-2					✓									2	TT1645
EQ. BLNK				✓	✓									5	TT1645
TRIP BLNK				✓	✓									5	TT1645
QC				✓	✓	LC	10/21/92							2	TT1645
				Total Number of Containers										42	

Relinquished by:	Date / Time	Recieved by:	Relinquished by:	Date / Time	Recieved by:
L. Chaidez	10/20/92 15:36	Jeff Jensen TTL			
Relinquished by:	Date / Time	Recieved by:	Relinquished by:	Date / Time	Recieved by:

Method of Shipment to Laboratory: Agent: Person Shipping:

BPACC00800

Distribution: Laboratory signs and returns WHITE copy. Sampler retains YELLOW copy.

004066

CHAIN OF CUSTODY AND ANALYSIS REQUEST

Page ____ of ____

PROJECT NAME/NO. AMCCO /512-345
PROJECT LOCATION TORRANCE
SAMPLERS NAME L. CHAIDEZ
SIGNATURE L Chaidez
LABORATORY TERRA TECH

SIMON HYDRO-SEARCH
5882 BOLSA AVENUE
HUNTINGTON BEACH, CALIFORNIA 92649
TELEPHONE (714) 891-7446
FAX (714) 891-9009

SEND ANALYSES TO: Ledoordo Chaidez

ANALYSIS REQUESTED

SAMPLE	DATE	TIME	SAMPLE LOCATION, MEDIA TYPE DESCRIPTION	624	625										REMARKS
OW-3-1	10/20/92	11:00	WATER	X										3	24 hr. TAT TT 16460
-0															

Total Number of Containers 3

Relinquished by:	Date / Time	Recieved by:	Relinquished by:	Date / Time	Recieved by:
L Chaidez	10/21/92 9:59	Jeff Freeman	JF		
Relinquished by:	Date / Time	Recieved by:	Relinquished by:	Date / Time	Recieved by:

Method of Shipment to Laboratory: Agent: Person Shipping:

BPACC00801

Distribution: Laboratory signs and returns WHITE copy. Sampler retains YELLOW copy.

Amoco Corporation
7201 East 38th Street (Space 7253)
Tulsa, Oklahoma 74145-3207

Post Office Box 3385
Tulsa, OK 74102-3385

Environmental, Health & Safety Department
918-660-4420
Facsimile: 918-660-4443

GMS 92-494

November 25, 1992

Jeff Campbell
Amoco Chemical Company
1225 W. 196th Street
Torrance, CA 90502

Soils and Groundwater Investigations
Amoco Chemical Company Plant, Torrance, California

The attached documents are provided as evidence of Amoco's reasons for installing groundwater monitoring wells and collecting soil samples at the Amoco Chemical Company (ACC) Polystyrene Plant in Torrance, California. Document No. GMS 86-455 clearly shows that the monitor wells were proposed as part of a company-wide policy to monitor groundwater at all chemical facilities. Document No. GMS 88-978 shows that soil samples were collected in anticipation of construction activities at the site.

Tim Nagengast

Timothy J. Nagengast
Sr. Environmental Specialist

TJN/tjn
92330ART0190
Attachments

Arthur Dias - Chicago
Roger Grimm - Chicago
Tom Stark - Chigago
W. P. Weisrock/E. L. Hockman - Tulsa

ENVIRONMENTAL CONSERVATION (CHEMICALS)

NOV 30 92

	NOTE		NOTE
CJW		RJG	
KMS		DMH	
DMD		JLS	
TMS		AEB	
MAP		LEL	
JAL			
FILE:			

Amoco Corporation
7201 East 38th Street (Space 7253)
Post Office Box 3385
Tulsa, Oklahoma 74102
Environmental and Energy Conservation
Environmental Affairs and
Safety Department
918-660-3218

Gene W. Schmidt
Director, Groundwater Management

June 16, 1986

GMS 86-455

R. G. Graham
Amoco Chemicals Company
200 E. Randolph Drive, M/C 4902
Chicago, IL 60601

Subject: Proposal to Install and Upgrade Groundwater Monitoring Systems at Amoco Chemical's Plants

At your request the Groundwater Management Section (GMS) has mostly completed the investigation of the Amoco Chemicals Company plants in the U.S. Facilities at Texas City A and B plants, Cedar Bayou, Cooper River and Decatur are already adequately monitored for evidence of groundwater contamination. Several facilties need to expand the monitoring system into the process areas. These facilities are Joliet and Chocolate Bayou. The two polystyrene plants, Torrance and Willow Springs, do not have any groundwater monitoring systems. The attached table outlines the number of wells proposed for each plant, the estimated cost, and the time required to install these systems.

During my meetings with representatives of these plants, it became obvious there are different timetables for installing the observation wells. At some of the facilities they would like to have wells installed as soon as possible, while others would rather undertake the projects over the next 6 to 12 months. That being the case and since each plant will bear the installation costs, the GMS recommends we install the wells on a schedule which meets the needs of each plant. Finally, the Whiting plant has not yet been evaluated. The evaluation and report will be done in July.

If you have questions please call me.

Dennis D. Beckmann

Dennis D. Beckmann, P. E.

DDB:mph
86167ART0192

cc: G. P. Chodil, Joliet
R. F. Havlice, Chocolate Bayou
W. T. Kerr, Torrance
J. A. Lamping, Chicago
R. P. Neuman, Willow Springs
A. E. Ruscilli, Joliet
G. W. Schmidt, Tulsa

Amoco Corporation
7201 East 38th Street (Space 7253)
Post Office Box 3385
Tulsa, Oklahoma 74102
Environmental and Energy Conservation
Environmental Affairs and
Safety Department
918-660-3218

Gene W. Schmidt
Director, Groundwater Management

October 12, 1988

GMS 88-978

W. T. Kerr
Amoco Chemicals Company
1225 West 196th St.
Torrance, CA 90502

Subject: Amoco Chemicals Company Plant in Torrance, California; Recommendations for Soils Investigation

On October 3, 1988, I met with you, R. Coles and G. A. Sanders of Reidel Environmental Services, Inc. The purpose of the meeting was to discuss Reidel's reported detection of styrene during a pre-purchase audit of property adjacent to the Amoco Chemical Company (ACC) Torrance Plant. Draft information presented by Mr. Coles indicated that 4 ppm of styrene had been detected, in addition to several other chlorinated organic compounds, in a single soil sample during the audit.

Mr. Coles indicated that, if the data is verified by additional investigation, Reidel will report the results to the California Regional Water Quality Board. However, as you know, on September 27, 1983, Mr. Coles indicated to me that "4,000 ppm styrene" had been detected in "perched groundwater" at the location.

Thus, I make the following recommendations. First, ACC should split samples with Reidel during the additional investigation proposed by Mr. Coles. Thus, ACC will have its own information to evaluate the presence of contamination on the adjacent property.

Also, as you indicated to me, ACC plans to concrete the bottom of the diked areas surrounding the styrene storage tanks onsite. This concrete would have to be destroyed and replaced if ACC tanks are underlain by contaminated soils. Thus, I recommend collection of soil samples from the diked areas prior to concrete installation. These samples should be ana-

lyzed for both styrene and the chlorinated organics detected on the adjacent property. As you requested, I will initiate this sampling immediately so as to delay the installation of the concrete as little as possible.

Bob Hockman

ELH:cib
88286ART0189

cc: D. M. Hardisty - Chicago
R. C. Vaseleski - Chicago
G. W. Schmidt/D. D. Beckmann - Tulsa

March 16, 1993

Schedule 8
Groundwater Baseline for Real Property

A. Background

The groundwater has been monitored for the presence of substances, contaminants and other materials (herein referred to as "substances") at the Real Property from six wells for nearly three years. This report describes the methods and results which will comprise the groundwater baseline for the Real Property.

B. Data

Over a three year period from February 1990 to October 1992, six samples were collected from each of six different monitoring wells. Attachment A shows the location of the wells. Reports made to Amoco by its environmental consultant contained tables for 12 substances that were detected at some time during the monitoring period in at least one well. Only 7 of these substances were detected in the final sampling done prior to Closing, October 20, 1992, in any of the wells, i.e.:

1,1-dichloroethene (1, 1 DCE)
1,2-dichloroethene (1, 2 DCE)
trichloroethene (TCE)
tetrachloroethene (PCE)
methylene chloride (M Cl)
chlorobenzene
chloroform

Current data for this baseline analysis is 6 samples for each of the 7 detected substances with single analyses and samples only for most of the wells. Any duplicates were averaged.

C. Sampling Methodology

Groundwater sampling was conducted on the six groundwater monitoring wells located onsite. Prior to sampling, wells were gauged to identify depth of water (which varied from about 63 to 66 feet below ground surface), depth of well and volume of water within the well bore. Wells were then purged of at least five well volumes of water. Measurements of temperature, electrical conductivity and Ph were taken

BPACC00806

during the purging process. When five well volumes of water had been purged and three consecutive readings had stabilized to within ten percent of one another, groundwater samples were collected for laboratory analysis.

Groundwater samples were collected using disposable Teflon bailers fitted with controlled flow emptying devices. Samples were collected into laboratory clean glass vials having lids with Teflon lined septa and containing hydrochloric acid as a preservative. Samples were transferred from the bailer to the vials using the submerged fill technique. A field blank was collected by pouring distilled water into a clean bailer and then decanting the water into sample vials, and a trip blank was provided by the laboratory and accompanied the sample vials during the sampling event. Lids were replaced on the vials and the vials were inverted and visually checked for the presence of air bubbles. Samples containing air were uncapped, refilled and rechecked. Samples not containing air had labels affixed which contained the following information: date, sampler's initials, job number, well number, sample number and requested analyses. Appropriately sealed and labeled samples were then placed in an ice chest containing frozen blue-ice for transport to the analytical laboratory. Chain-of-custody forms were completed in the field and accompanied the samples to the laboratory. Bailers were discarded after use at each well.

Groundwater samples were analyzed using EPA method 624 for purgeable compounds.

D. Data Analysis Strategy

For each substance and well, six samples were available. The levels of substances found in the groundwater vary from one sample to the next. Some or all of the data points could be nondetect for any measurement and well. Data analysis was done separately for each of the seven detected substances and for each of the six monitoring wells. Details of the statistical analysis utilized to determine the Baseline Levels from this data are presented in Attachment B. The Estimated Levels in the following table are the median or 50% value. However, for purposes of the groundwater baseline, the values which are two standard deviations above the Estimated Levels are the Baseline Level for each well. Consequently, based on pre-Closing sampling, the groundwater baseline is set forth in the final column of the following table:

Well	Substance	Estimated* Level	Baseline* Level
OW-1	1,1 DCE	nd	0
	1,2 DCE	nd	0
	TCE	1.75	2.60
	PCE	0.14	0.39
	MCL	237	2316.81
	Chlorobenzene	nd	0
	Chloroform	0.067	0.23
OW-2	1,1 DCE	nd	0
	1,2 DCE	0.054	0.15
	TCE	3.2	4.09
	PCE	0.52	0.68
	MCL	0.01	0.43
	Chlorobenzene	nd	0
	Chloroform	0.031	0.08
OW-3	1,1 DCE	0.008	0.03
	1,2 DCE	0.035	0.09
	TCE	2.36	3.74
	PCE	0.36	0.79
	MCL	0.017	0.05
	Chlorobenzene	nd	0
	Chloroform	nd	0
OW-4	1,1 DCE	0.049	0.08
	1,2 DCE	0.31	0.43
	TCE	4.32	10.02
	PCE	1.37	1.81
	MCL	nd	0
	Chlorobenzene	nd	0
	Chloroform	0.013	0.17
OW-5	1,1 DCE	0.19	0.25
	1,2 DCE	0.77	0.98
	TCE	13.6	24.48
	PCE	5.8	16.32
	MCL	nd	0
	Chlorobenzene	nd	0
	Chloroform	0.04	0.10
OW-6	1,1 DCE	0.03	0.11
	1,2 DCE	0.41	0.91
	TCE	30.3	45.31
	PCE	13.8	20.31
	MCL	nd	0
	Chlorobenzene	0.01	0.88
	Chloroform	0.03	0.15

* Concentrations in milligrams per liter (ppm)
nd = not detected

E. Additional Groundwater Sampling

Buyer may conduct additional groundwater sampling after Closing and have the data resulting from such sampling become part of the Baseline Level for each well, subject to the following conditions:

1. Any such sampling shall be conducted within two (2) months after Closing, and shall be conducted prior to any release, discharge, disposal or emission of any substance, contaminant or other material after closing by Buyer or related to Buyer's activities. Data from any samples taken later than two (2) months after Closing, or taken after any release, discharge, disposal or emission of any substance, contaminant or other material after closing by Buyer or related to Buyer's activities, shall not be part of the Baseline Levels.

2. Subject to Amoco's prior written approval, Buyer shall hire an independent environmental contractor or consultant to conduct any such sampling.

3. The costs of any such sampling and of any such environmental contractor or consultant shall be borne as follows:

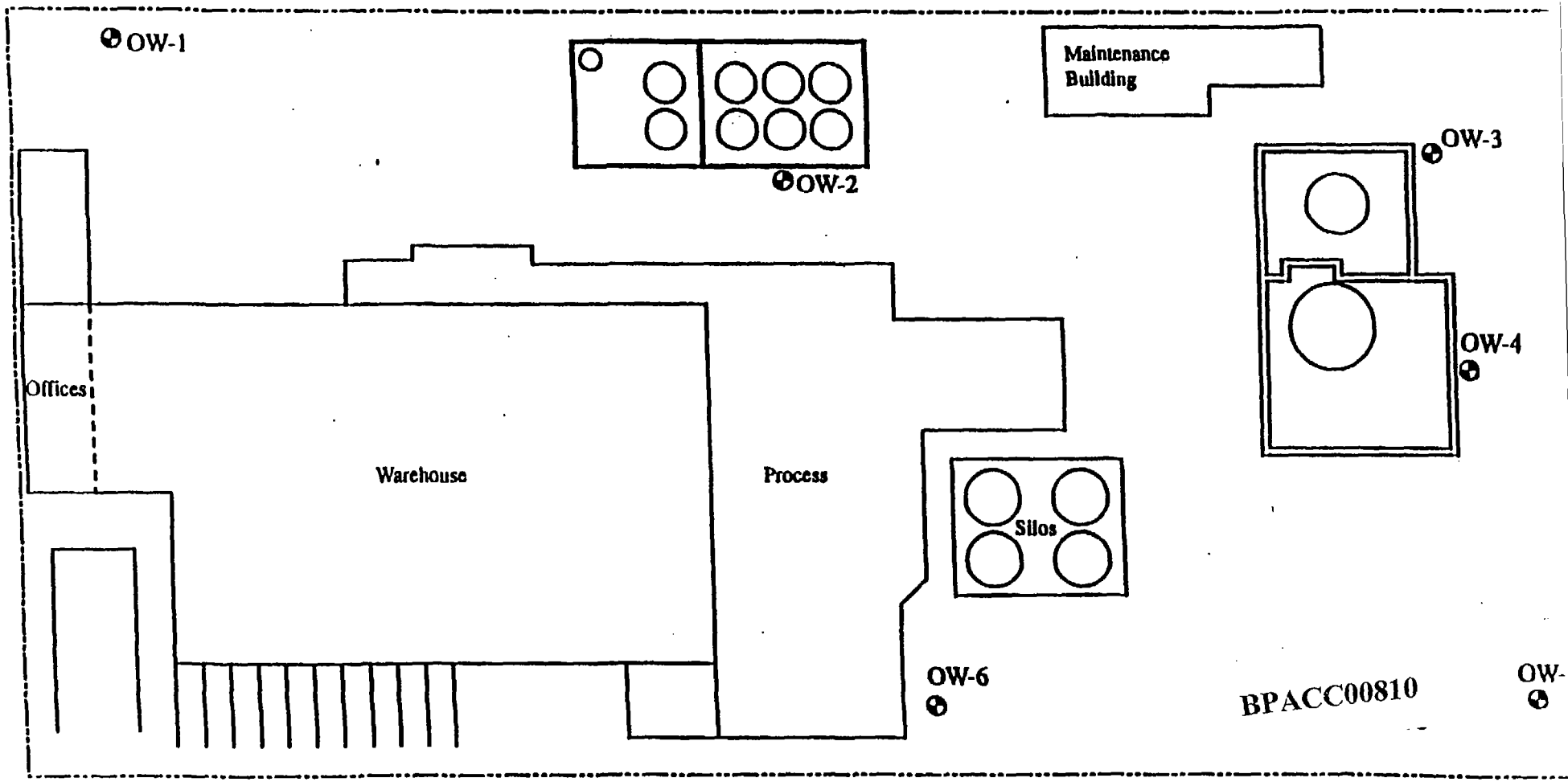
a. up to the first $10,000 of any such costs shall be borne by Buyer.
b. up to the next $10,000 of any such costs shall be borne equally by Amoco and Buyer.
c. any such costs in excess of $20,000 shall be borne by Buyer.

4. Any such sampling shall be conducted in accordance with Attachment C.

5. Data resulting from any such sampling shall become part of the groundwater Baseline Levels in accordance with Attachment D.

6. If Buyer does not conduct additional sampling in accordance with the above conditions, then the groundwater baseline shall be as set forth in the final column of the table on the preceding page.

ATTACHMENT A



N

0 40 80

Scale in feet

OW-3 Monitoring Well

Monitoring Well Locations

Amoco Chemical Company
Polystyrene Facility
1225 West 196th Street
Torrance, California

AMOCO

May, 1992

Attachment A

Attachment B

Details of Statistical Analysis

For all data analyses, models are based on the logarithm of the measured compound value with normally distributed errors assumed for the logarithms. This is standard practice in the analysis of groundwater data. The configuration of the data relative to the nondetects led to the following possible situations for reporting the groundwater baseline for any substance and any well.

All Measurements Nondetect

No statistics can be estimated, so an estimated level cannot be determined. The substance is reported as nondetect and the Baseline Level is zero.

All But One Measurement Nondetect

As with the preceding case the substance is nondetect, because statistical estimation procedures will not give results unless there are at least two quantifiable values. However, if the quantifiable value is the last sample, then current concentration level of the substance is reported with the value for the last sample.

Two Quantifiable Samples

For this situation, estimation of the current concentration level, or 50% point, of the substance and a statement of the level that is two standard deviations above the Estimated Level can both be done using quantiles of the lognormal distribution as fitted to the data.

Three or More Quantifiable Points

If all the samples for a substance are quantifiable, usual straight line curve fitting is done for the log of the substance, contaminant or other material versus the log of time. If the slope of the line is significant with 95% confidence, then the fitted value for the last sample is reported as the current concentration level, and the level that is two standard deviations above the Estimated Level is reported as the Baseline Level. If the slope is not significant, the median or 50% point for the data is reported as the current concentration level of the substance and a normal distribution statistic is used to report the Baseline Level, as for two quantifiable points.

If there are one or more nondetects, then maximum likelihood estimation is used. However, the methods for reporting remain the same, with a lognormal distribution statistic again as the basis for the 50% and the level that is two standard deviations above the Estimated Level reported as the concentration level and Baseline Level.

Attachment C

Torrance Sampling Procedures

1. Prior to purging or bailing a well, the depth to water shall be measured to the nearest 0.01 ft., and total depth of the well shall be measured to calculate the volume of water within the well bore.

2. Temperature, electrical conductivity, and Ph shall be measured during the purging process. Each well shall be purged of 5 well volumes or until 3 well volumes have been purged and 3 consecutive physical measurements have stabilized to within 10 percent of one another before sampling.

3. After purging, a recovery period shall be allowed, but sampling shall occur no later than 48 hours after purging.

4. Samples shall be collected using disposable Teflon bailers fitted with controlled flow emptying devices.

5. Samples shall be collected into laboratory clean glass vials having lids with Teflon lined septa and containing hydrochloric acid as a preservative.

6. Samples shall be transferred from the bailer to the vials using the submerged fill technique.

7. Lids shall be replaced on the vials and the vials shall be inverted and visually checked for the presence of air bubbles. Samples containing air shall be uncapped, refilled and rechecked.

8. An equipment blank shall be collected prior to sampling one well by pouring distilled water into a clean bailer and then decanting the water into sample vials.

9. A trip blank shall be provided by the laboratory and shall accompany the sample vials during the sampling event.

BPACC00812

10. Samples not containing air shall have labels affixed which contain the following information: date, sampler's initials, job number, well number, sample number and requested analyses. Appropriately sealed and labeled samples shall be placed in an ice chest chilled to 4°C for transport to the analytical laboratory.

11. Chain-of-custody forms shall be completed in the field and shall accompany the samples to the laboratory.

12. Bailers shall be properly discarded after use at each well.

13. Samples shall be analyzed using EPA method 624 for purgeable compounds for only the seven substances, contaminants or other materials detected in the October 20, 1992 sampling, i.e.:

    - 1,1-dichloroethene (1,1 DCE)
    - 1,2-dichloroethene (1,2 DCE)
    - trichloroethene (TCE)
    - tetrachloroethene (PCE)
    - methylene chloride (MCl_2)
    - chlorobenzene
    - chloroform

14. Copies of any sampling reports shall be made immediately available to both parties.

BPACC00813

Attachment D

Data Analysis for Inclusion of an Additional Sample

This attachment summarizes the methodology through which data from additional samples from wells OW-1 through OW-6 taken pursuant to paragraph E of Schedule 8 shall be added to the data that was used for the statistical analysis that is embodied in the table on page 3 of Schedule 8, to arrive at a Baseline Level for each well. Figure 1 contains the data used in arriving at the table on page 3 of Schedule 8 and the associated data structure. There are two possible types of impact on the data structure from including an additional sample:

Additional Sample is "Nondetect"

The data for the substance will have the same structure, as categorized in Attachment B of Schedule 8, that the subdstance had for the data analysis that is embodied in the table on page 3 of Schedule 8. The same analysis will be repeated to generate new Estimated Levels and Baseline Levels.

Additional Sample is "Detect"

The data for the substance will have the next structure down the list of structures that are categorized in Attachment B from the structure that the substance had for the data analysis that is embodied in the table on page 3 of Schedule 8. The data analysis appropriate to that structure will be used to determine new Estimated Levels and Baseline Levels.

Mechanics of Data Analysis

Data analysis described in Attachment B is done by programming the application of several procedures in the statistical analysis package, SAS. The computer program is listed in Attachment E. There are two possible analyses types, (1) nondetects and detects mixed, and (2) all results detects. If nondetects and detects and detects are both present, there are two possible data analysis methodologies: (1) trend estimation (as described in Attachment B) feasible, and (2) no trend estimation possible. The three possibilities for data analysis are:

(1) nondetects and detects mixed, no trend estimation
PROC LIFEREG is used to do estimation of lognormal distribution parameters and to calculate quantiles. Quantiles are adjusted to compensate for the small sample size used to estimate the average and standard deviation by reducing the quantile level by the ratio of a normal distribution statistic to the t-statistic to remove the small sample size effect.

(2) nondetects and detects mixed, trend estimation
PROC LIFEREG is used as above except a time variable in days is added to the model.

(3) all data detects

PROC REG is used to do the trend analysis, and PROC MEANS is used to calculate the estimated level and the standard deviation for use in determining quantiles when trend is not significant.

Figure 1

Well	Date of Sampling	1,1 DCE	1,2 DCE	TCE	PCE	M Cl	Chloro-benzene	Chloro-form
OW-1	02-01-90	<.08	<.080	1.00	<.080	10	<.080	<.080
OW-1	02-21-90	<1.5	<1.50	2.20	<1.50	190	<1.50	<1.50
OW-1	12-05-90	<1.0	<1.00	2.00	<1.00	320	<1.00	<1.00
OW-1	06-20-91	<5.0	<5.00	<5.00	<5.00	1100	<5.00	<5.00
OW-1	01-16-92	.008	.060	2.20	.190	1000	<.003	.037
OW-1	10-20-92	<.008	<.060	1.70	.290	270	<.003	.230
OW-2	02-01-90	<.004	<.004	.56	.058	<.020	<.004	<.004
OW-2	02-21-90	<.005	.006	1.10	.160	<.025	<.005	<.005
OW-2	12-05-90	<.010	.056	3.00	.420	<.050	<.010	.025
OW-2	06-20-91	<.020	.032	2.70	.400	<.010	<.020	<.020
OW-2	01-16-92	<.003	.031	2.70	.424	.153	<.003	.012
OW-2	10-20-92	<.008	.027	2.30	.380	.400	<.003	.028
OW-3	02-01-90	<.015	.054	1.70	.240	<.075	<.015	<.015
OW-3	02-21-90	.035	.015	3.80	1.100	<.100	<.020	<.020
OW-3	12-05-90	<.020	.073	2.60	.290	<.100	<.020	<.020
OW-3	06-20-91	<.020	<.020	1.90	.270	<.100	<.020	<.020
OW-3	01-16-92	.008	.059	3.20	.430	.007	<.003	.008
OW-3	10-20-92	<.008	.041	1.70	.230	.048	<.003	<.008
OW-4	02-01-90	.017	.064	1.40	.310	<.050	<.010	<.010
OW-4	02-21-90	<.015	.087	3.40	.400	<.075	<.015	<.015
OW-4	12-05-90	.054	.330	7.20	1.600	<.125	<.025	<.025
OW-4	06-20-91	<.050	.360	7.80	1.000	<.250	<.050	<.050
OW-4	01-16-92	.033	.190	5.50	1.300	.005	<.003	.019
OW-4	10-20-92	.044	.210	4.40	.920	<.040	<.003	.023
OW-5	02-01-90	.063	.200	5.80	1.600	<.200	<.040	<.040
OW-5	02-21-90	.114	.380	15.49	5.490	<.400	<.080	<.080
OW-5	12-05-90	<.100	.670	21.00	8.100	<.500	<.100	<.100
OW-5	06-20-91	<.200	.900	15.00	6.600	<1.000	<.200	<.200
OW-5	01-16-92	.150	.560	14.00	5.000	.006	<.003	.034
OW-5	10-20-92	.200	.590	16.00	17.000	<.200	<.003	.110
OW-6	02-01-90	.021	.021	1.90	.780	<.075	<.015	<.015
OW-6	02-21-90	.056	.059	7.80	3.300	<.040	2.800	<.040
OW-6	12-05-90	<.100	.270	27.00	11.000	<.100	<.100	<.100
OW-6	06-20-91	<.200	<.200	22.00	10.000	<1.000	<.200	<.200
OW-6	01-16-92	.130	.300	21.00	9.400	<.005	<.003	.069
OW-6	10-20-92	<.020	.280	21.00	10.000	<.200	.006	.140

Concentrations reported in milligrams per liter (ppm)
<.08 (e.g.) = not detected at or above concentration indicated

BPACC00816

Attachment E

Listing of SAS Program

```
 %LET WELL=6;
 %LET CHEMNUM=  7;
 %let chems=%str(1,1DCE : 1,2DCE : TCE : PCE : MCl :
       Chloro-Benzene : Chloroform);

%macro program; * %datgen;                    /* Run ONCE to set up the data
for analysis */ * %TREND;
  %NOTIME; * %NOND; %mend program;

 %let vars=dce11 dce12 tce pce mc chbnz chlor;
 %let chem=%scan(&chems, &chemnum, ":");
 %let var=%scan(&vars, &chemnum, " ");

 options ls=71;
 title1 "Fitting Straight Line to Left Censored Data by PROC LIFEREG";
 title2 "OW-&well for &chem";

 data datain;
   set data607.stark;
   if well="OW&well";
   keep date well &var._1 &var._2;

 proc print data=datain;
   title3 "Input Data File Listing";
 run;

          /*---  Do this part only if trend testing is reasonable ---*/
%macro trend;
 proc lifereg data=datain outest=coeffs;
   model (&var._1, &var._2) = date /
         distribution=lnormal corrb covb;
   output out=preds cdf=cumdist p=quant q=.5,.9,.95
          std=quant_se xbeta=pred_mod;
 title3 "PROC Lifereg Output";
   title4 "Date Effect Version";

 proc print data=coeffs;
   TITLE4 "OUTPUT ESTIMATES DATA SET WITH PARAMETER ESTIMATES ";

 proc print data=preds;
   title4 "Output Data Set Information from PROC Lifereg"; %mend trend;

  /*----   This part does estimation without regard for time   ------*/
```

```
%macro notime;
 proc lifereg data=datain outest=coeffs;
   model (&var._1, &var._2) = /
         distribution=lnormal corrb covb;
   output out=preds cdf=cumdist p=quant q=.5,.9,.95
          std=quant_se xbeta=pred_mod;
   title4 "No Date Effect Version";

 proc print data=coeffs;
   title4 "Output Estimates Data Set with Parameter Estimates";
;

 proc print data=preds;
   title4 "Output Data Set Information from PROC Lifereg"; %mend notime;

%MACRO NOND; DATA DATAMEAN;
 SET DATAIN;
 LOGVAR=LOG(&VAR._1);
 LOGTIME=LOG(DATE); RUN;

PROC REG DATA=DATAMEAN;
 MODEL LOGVAR=LOGTIME/P R CLM;
 OUTPUT OUT=LOGLOG PRED=LLEVEL STDP=STDERR;
 TITLE4 "NO NONDETECT DATA, TREND VERSION";

DATA LINE;
 SET LOGLOG;
 LEVEL=EXP(LLEVEL);
 U_95=EXP(LLEVEL+(1.645*STDERR)); RUN;

PROC PRINT;
 VAR LEVEL U_95;

PROC MEANS;
 VAR LOGVAR;
 OUTPUT OUT=LOGSTATS MEAN=MU STD=SIGMA;
 TITLE4 "NO NONDETECT DATA, CALCULATE STATISTICS";

DATA RESULTS;
 SET LOGSTATS;
 LEVEL=EXP(MU);
 U_95=EXP(MU+1.645*SIGMA);
 RUN;

PROC PRINT;
 VAR LEVEL U_95;
 TITLE4 "NO NONDETECT DATA, REPORTED RESULTS IF NO TREND";

%MEND NOND;
```

```
%macro datgen;
  filename indat 'stark data a';
  data datain;
    infile indat firstobs=3;
    informat well $3. _dce11 _dce12 _tce _pce _mc _chbnz _chlor $5.;
    input well date _dce11 _dce12 _tce _pce _mc _chbnz _chlor;
    %do v=1 %to 12;
       %let var=%scan(&vars, &v, " ");
       if substr(_&var, 1, 1)='<' then do;
          &var._1 = .;
          &var._2 = substr(_&var, 2, 4) + 0;
       end;
       else do;
          &var._1 = _&var + 0;
          &var._2 = &var._1;
       end;
    %end;

 proc print u;
   var well date _dce11 _dce12 _tce _pce _mc _chbnz _chlor;

   title3 "Original Data";

 proc print u;
  var well date dce11_1 dce11_2 dce12_1 dce12_2 tce_1 tce_2 pce_1 pce_2;
  title3 "Data as Prepared for PROC LIFEREG";

  proc print u;
   var well date mc_1 mc_2 chbnz_1 chbnz_2 chlor_1 chlor_2;

  data data607.stark;
    set datain;

%mend datgen;

%program;
```

→ C.J. WIERDAK
CHICAGO

Amoco Corporation
7201 East 38th Street (Space 7253)
Post Office Box 3385
Tulsa, Oklahoma 74102
Environmental and Energy Conservation
Environmental Affairs and
Safety Department
918-660-3218

Gene W. Schmidt
Director, Groundwater Management

September 1, 1988

GMS 88-801

W. T. Kerr
Amoco Chemicals Company
1225 West 196th Street
Torrance, CA 90502

Subject: Amoco Chemicals Company Plant, Torrance, California, Observation Well System

Enclosed are the permits (Attachment 1), lithologic logs, and construction details (Attachment 2) for the observation wells installed at the Amoco Chemicals Company plant in Torrance, California. I have reviewed the documents and they appear adequate. In addition, I have reviewed the attached invoices (Attachments 3 and 4) and they appear acceptable. The only discrepancy I identified is that the bid price was $19,320.00 and the total invoiced was $19,340.00 To correct the difference would most likely require more than $20.00 worth of phone calls and time, so I recommend payment as invoiced.

In addition, the casing elevations of each well must be surveyed and the wells sampled. I am currently requesting bids from contractors in the area for the surveying and sampling. As soon as I receive them, I will review them and recommend a contractor for you. I still plan to be onsite during at least part of the sampling activities.

Bob Hockman

Bob Hockman

ELH:mph
88245ART0051
Enclosures

cc: C. J. Wierdak - Chicago
G. W. Schmidt/D. D. Beckmann - Tulsa

ENVIRONMENTAL CONSERVATION (CHEMICALS)
SEP 07 '88

	NOTE	
RCV	[illegible]	
DMH	X	
JSC		
CJW	[illegible]	

FILE: Torrance-Groundwater

BPACC00820

ATTACHMENT 1

ATTACHMENT 1

SERVICE APPLICATION AND FEE COLLECTION
COUNTY OF LOS ANGELES - DEPARTMENT OF HEALTH SERVICES
PUBLIC HEALTH PROGRAMS - ENVIRONMENTAL MANAGEMENT

SERVICE REQUEST APPLICATION

INSTRUCTIONS

1. Check the TYPE OF SERVICE requested and attach the required non-refundable fee to the application. Make money order or check payable to LOS ANGELES COUNTY TREASURER, DO NOT SEND CASH. This application is nontransferable.

FEE REQUIRED *		TYPE OF SERVICE
$300.00	☒	WELL CONSTRUCTION, RENOVATION OR DESTRUCTION PERMIT Complete and attach a Well Permit Application
_____	☐	PRIVATE SEWAGE DISPOSAL SYSTEM CONSTRUCTION PERMIT
_____	☐	PRIVATE SEWAGE DISPOSAL SYSTEM RENOVATION/EXPANSION
_____	☐	INSPECTION OF MOUNTAIN CABIN SITE as required by the United States Forest Service
_____	☐	INSPECTION OF EXISTING PRIVATE SEWAGE SYSTEM as required by FHA/VA
_____	☐	WATER SUPPLY TEST AND CERTIFICATION as required by U.S. Department of Agriculture

2. Check with Contact Office stamped below for requirements or information.
3. Complete the required information or deliver the completed application, money order or check with the forms indicated.

to: County of Los Angeles
Department of Health Services
Public Health Programs
Environmental Management
2615 S. Grand Ave. Rm. 604
Los Angeles, Calif. 90007
744-3214

*Refer to Schedule of Fees for current fiscal year.

NOTE: FIELD PERSONNEL CANNOT ACCEPT FEES.

4. Phone Contact Office noted below, after you have received your receipt, to request an inspection.

1225 WEST 196th St., Torrance		June 18, 1988
Service/Job Location Address		Date
AMOCO CHEMICALS CO.	SAME	213/ 329-6379
Owner/Applicant's Name	Address	Phone No.
DRILL-LINE	11250 E. FIRESTONE BLVE., NORWALK	213/ 924-6688
Contractor's Name	Address	Phone No.

Co. Engineer Plan Check No. _____ Tract No. _____ Lot No. _____ No. Bedrooms _____
(Complete line above for Private Sewage Disposal System Construction or Renovation Application)

CONTACT OFFICE

DEPARTMENT STAMP

PAID
7/1/88
GA 442-601
Rec 1334649

BPACC00821

APPLICATION FOR WELL PERMIT
ENVIRONMENTAL MANAGEMENT - 2615 S. GRAND AVENUE, LOS ANGELES, CA 90007, ROOM 604
COUNTY OF LOS ANGELES DEPARTMENT OF HEALTH SERVICES

DATE: JUNE 18, 1988

DESCRIPTION

TYPE OF PERMIT (CHECK)

- [X] NEW WELL CONSTRUCTION
- [ ] RECONSTRUCTION OR RENOVATION
- [ ] DESTRUCTION

TYPE OF WELL

- [ ] PRIVATE DOMESTIC
- [ ] PUBLIC DOMESTIC
- [ ] IRRIGATION
- [X] OBSERVATION/MONITORING
- [ ] CATHODIC
- [ ] INDUSTRIAL
- [ ] GRAVEL PACK
- [ ] TEST

TYPE OF CASING: 2" SCHEDULE 40 PVC

METHOD OF SEALING OF CASING: 2 FOOT BENTONITE SEAL ABOVE SAND PACK, CEMENT/BENTONITE SLURRY TO SURFACE

METHOD OF DESTRUCTION:

LOCATION

ADDRESS (NUMBER, STREET AND NEAREST INTERSECTION): 1225 W. 196th STREET

CITY: TORRANCE

DIAGRAM (SHOW PROPERTY LINES, STREET, ADDRESS, WELL SITE, SEWERS, AND PRIVATE SEWAGE DISPOSAL SYSTEMS ALONG WITH LABELS AND DIMENSIONS)

6 WELL PROGRAM- SEE ATTACHMENT- EXACT WELL LOCATIONS AND REPORTS TO FOLLOW.

Depth - 80'
Perf 60-80
GW - 70

APPLICANT

NAME OF WELL DRILLER (PRINT): PIPELINE INDUSTRIES, INC.

TRADE NAME: DRILL LINE DIVISION 90650

BUSINESS ADDRESS: 11250 E. FIRESTONE BLVD

CITY: NORWALK

NAME OF WELL OWNER (PRINT): AMOCO CHEMICALS CO

MAILING ADDRESS: 1225 W. 196th ST.

CITY: TORRANCE, CALIF 90503

I hereby agree to comply in every respect with all regulations of the County Preventive/Public Health Services and with all ordinances and laws of the County of Los Angeles and of the State of California pertaining to well construction, reconstruction and destruction. Upon completion of well and within ten days thereafter, I will furnish the County Preventive/Public Health Services with a complete log of the well, giving date drilled, depth of well, all perforations in casing, and any other data deemed necessary by such County Preventive/Public Health Services.

Applicant's Signature

DRILL LINE #484745

DISPOSITION OF APPLICATION: (For Sanitarians Use Only)

- [X] APPROVED
- [ ] DENIED
- [ ] APPROVED WITH CONDITIONS

If denied or approved with conditions, report reason or conditions here:

DATE: 7-8-88 SANITARIAN:

DATE: 7-12-88 SECTION CHIEF:

When signed by Section Chief, this application is a permit.

76A008 (REV. 12-84)
H-13-PS 1-85

(APPLICANT)
Please Return All Copies

BPACC00822

HydroSolutions of California, Inc.

P.O. Box 11531 • Costa Mesa, CA 92627 • (714) 759 - 3464

July 22, 1988

Pipeline Industries
Drill-line Division
11250 East Firestone Boulevard
Norwalk, California 90650

SUBJECT: FIELD DRILLING REPORT
AMOCO CHEMICAL COMPANY PLANT
TORRANCE, CALIFORNIA

RRSP: 88077-01-01

Dear Al:

HydroSolutions of California, Inc. (HSCI) is pleased to submit this letter report concerning the drilling and well construction of six (6) groundwater monitor wells at the Amoco Chemical Company Plant located at 1225 West 196th Street in Torrance, California (Figure 1). Six geologic logs and well completion diagrams, a site location map, well location map and well completion table have been included in this letter.

A California Certified Geologist was present during the drilling and construction of six (6) groundwater monitor wells at the subject site. Drilling was initiated June 22, 1988 with the drilling and construction of observation well, OW-1-88. Final well completion was June 29, 1988. Table 1 has been compiled to summarize completion criteria for each monitor well. Approximate locations of each monitor well are illustrated in Figure 2.

Borings were drilled with an 8 inch diameter continuous-flight hollow stem auger. Observation wells OW-1-88 through OW-4-88 and OW-6-88 were completed with a Mobil B-61 drilling rig. Monitor well OW-5-88 was located beneath overhead electrical lines therefore a CME 75 rig was mobilized and drilling and sampling progressed without the use of a raised derrick. For this reason, soil samples were not successfully collected below the water table. The cathead was used to pound a downhole sampler.

Drilling tools were thoroughly cleaned with a steam cleaner prior to completing each boring. Soil samples were collected with an eighteen inch long, two inch OD split tube sampler. A basket retainer was utilized when loose sands were encountered during sampling. Subsequent to sample collection, soil samples were collected and logged at five foot intervals. Each sample was collected, labeled and placed in a mason jar for possible future inspection. Approximately seven boxes of samples were gathered and placed inside the main warehouse (adjacent the front office).

The saturated zone encountered in each boring contained heaving sand conditions which were compensated for by adding water and over drilling the boring as much as ten (10) feet. Due to heaving sands, five to ten gallons of tap water were added to each boring during well completion. This procedure provided a means for stabilizing the heaving sand problems and assured a more consistent sand pack within the perforated zone. It is suggested that, at a minimum, six to ten casing volumes of groundwater be removed from each monitor well prior to the first water sampling event.

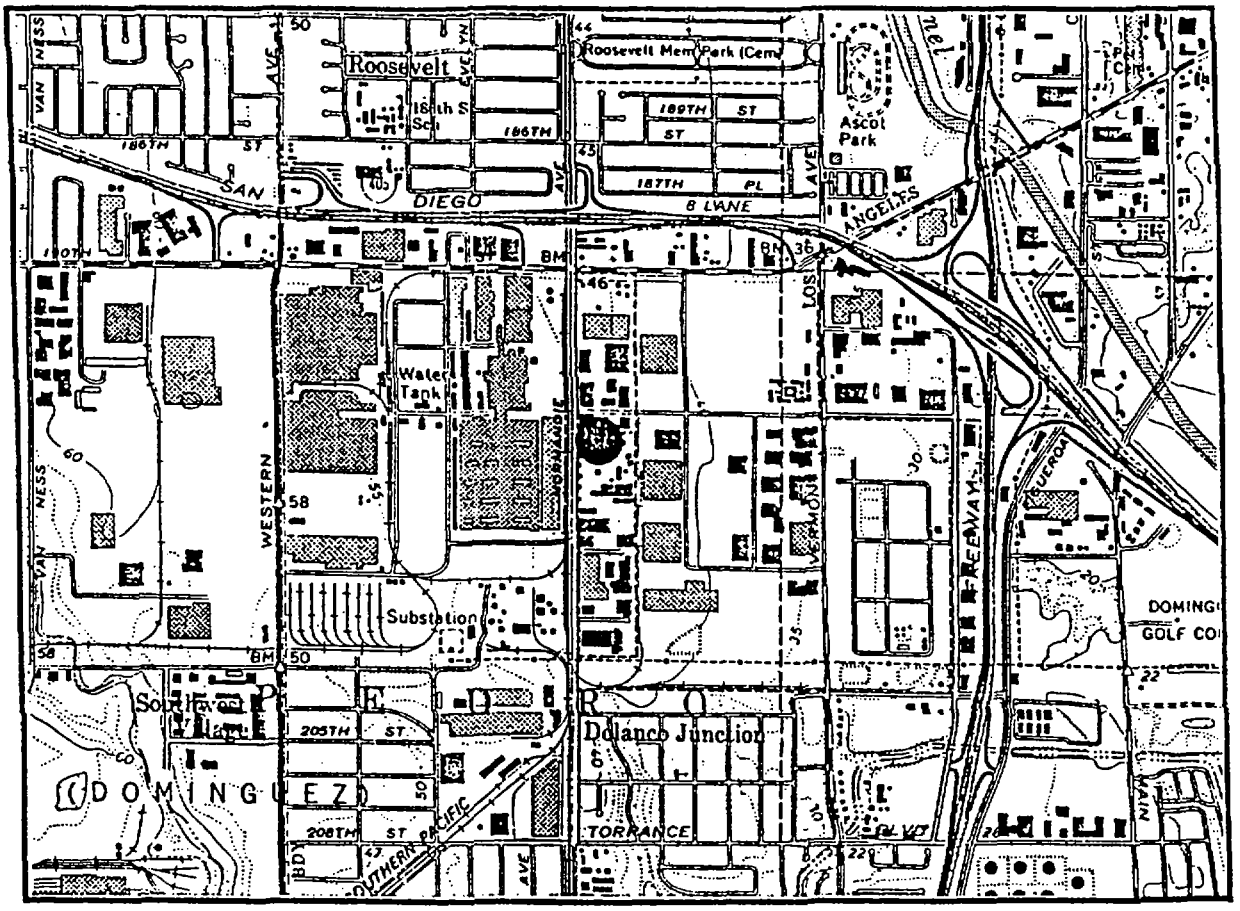
All well construction materials were steam cleaned prior to construction of each observation well. After the well was constructed (minus the surface box), a period of 24 hours was allowed for the volclay grout to settle. Wellheads were then completed by adding more volclay grout (if necessary) and cementing a surface box even with the land surface. A PVC slip-on cap was used to cap the top of the well casing and a metal lid to cover the subsurface casing. This provides better protection against well head damage and allows for unobstructed flow of site vehicle traffic. Locking wellheads were not installed.

A well completion diagram has also been included for each monitoring well. In summary, no unusual problems or conditions were encountered and no visual or olfactory notations with respect to chemicals were observed. If you have any questions regarding this field program, please contact me.

Respectfully submitted,

Stephen J. Baker
California Registered Geologist No. 4354

Enclosures



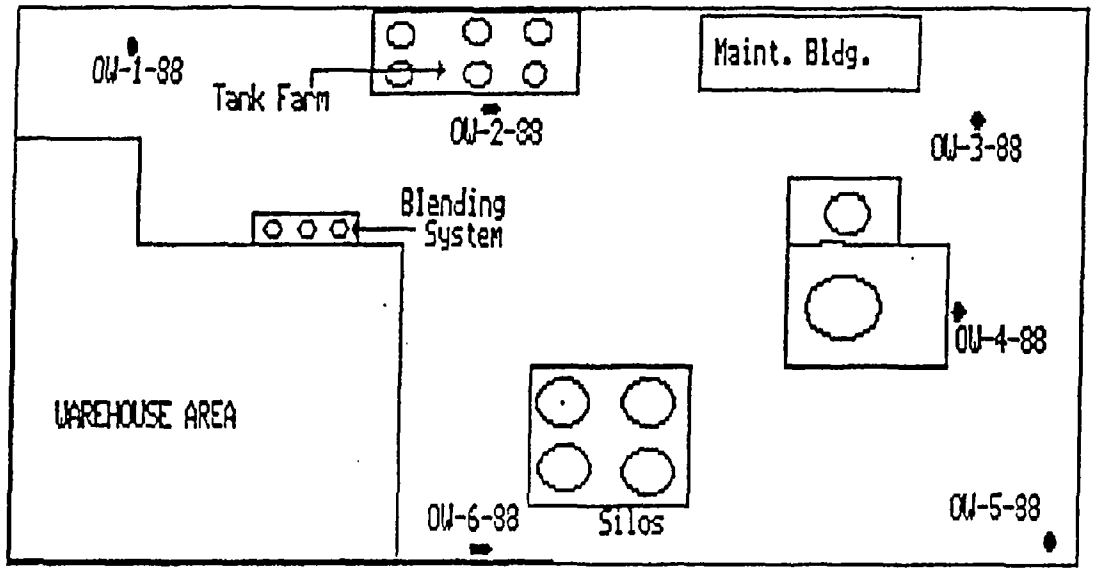
SCALE: 1"=2,000 FEET

SITE LOCATION MAP

SUBJECT PROPERTY

FIGURE 1

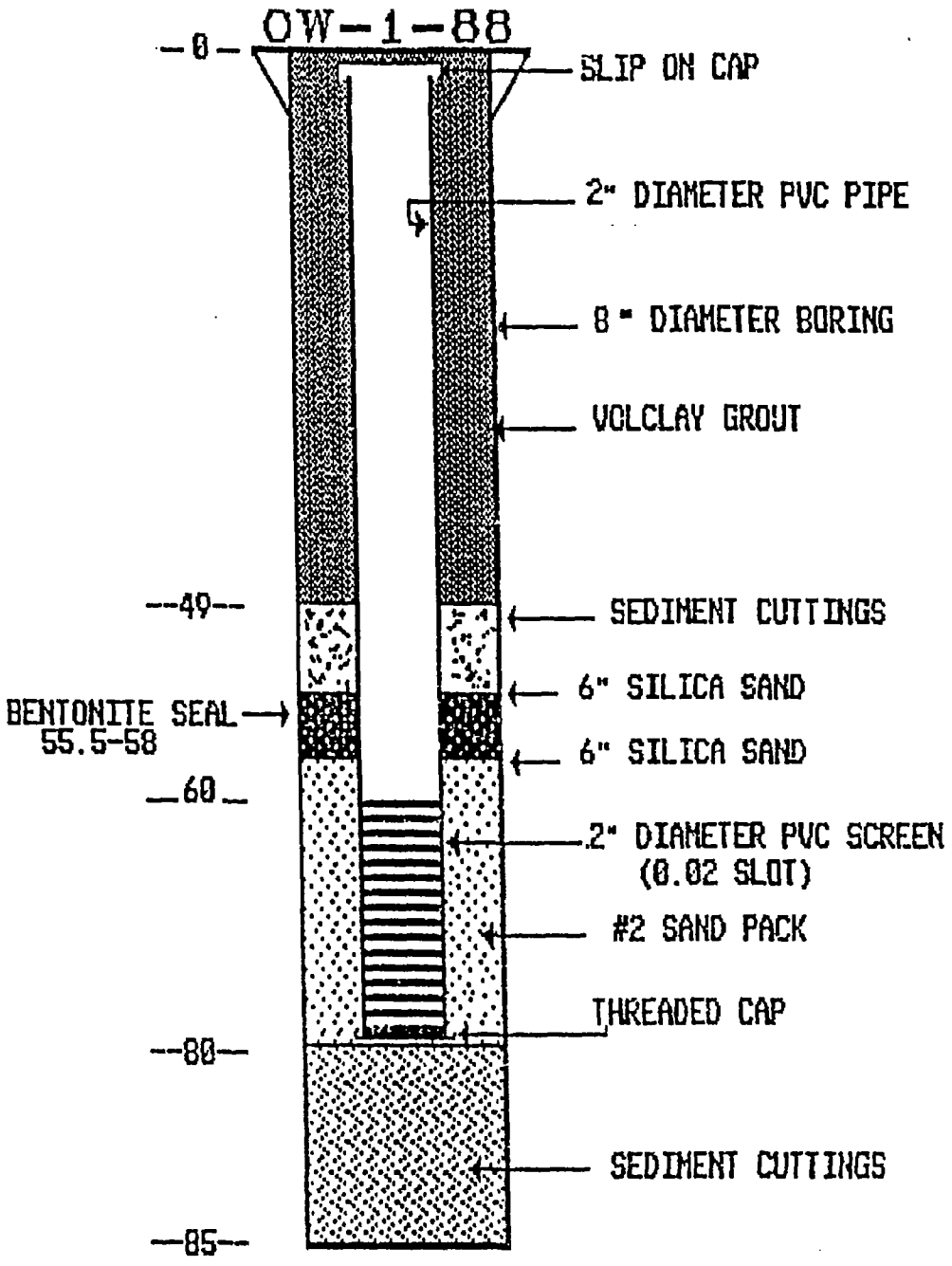
HydroSolutions Of California, Inc.



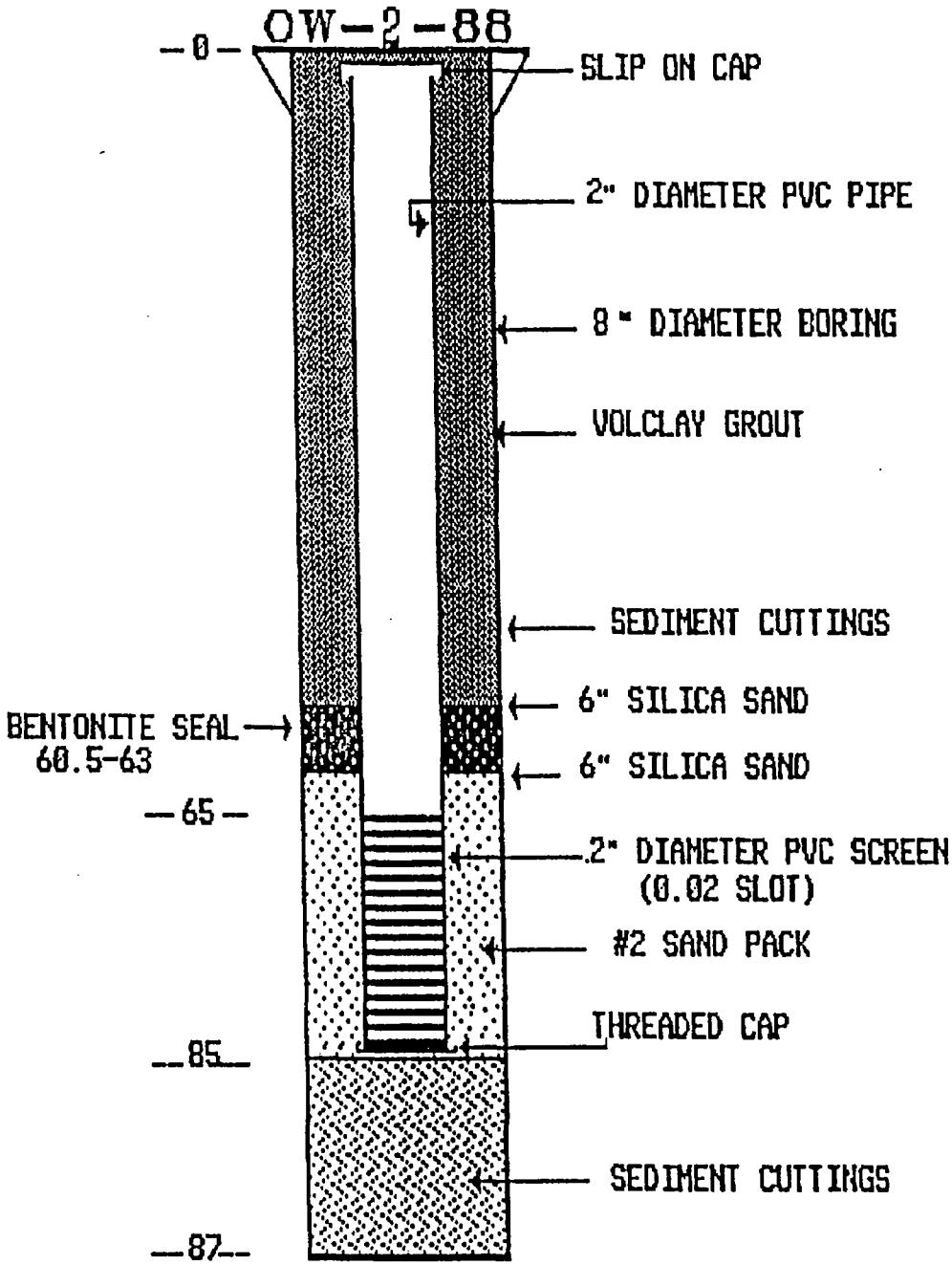
196 th Street

Figure 2

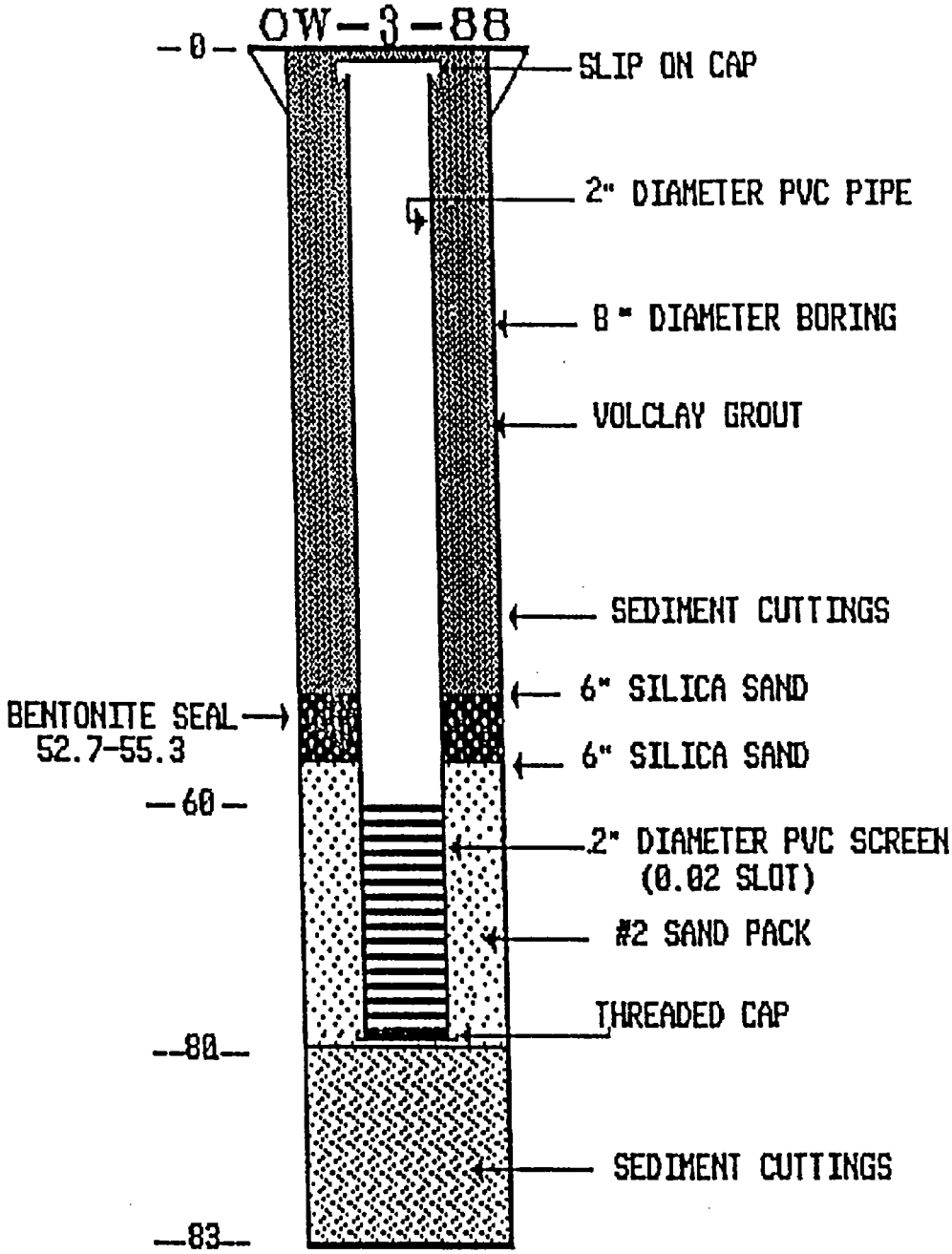
HydroSolutions Of California, Inc.



HydroSolutions Of California, Inc.

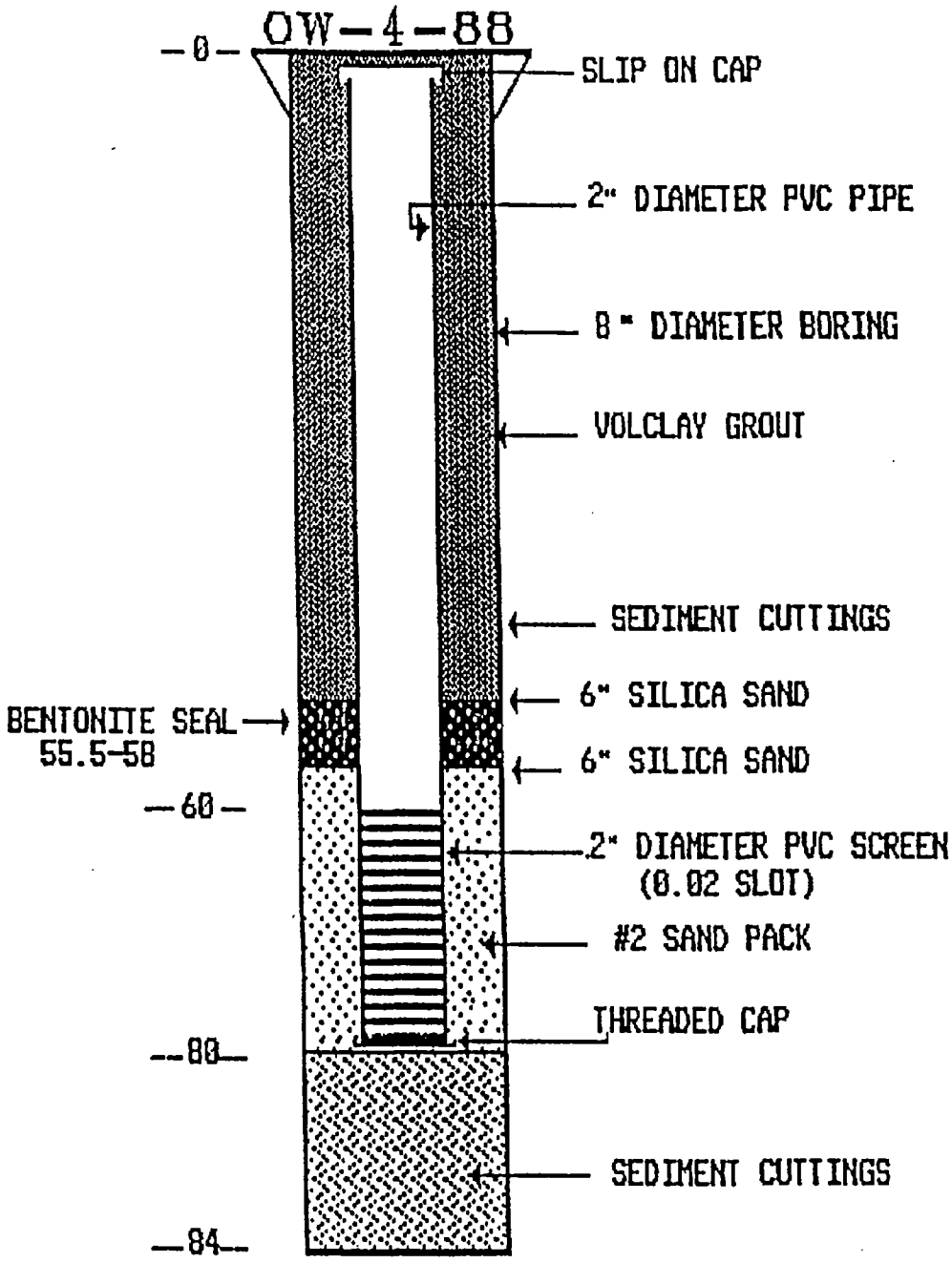


HydroSolutions Of California, Inc.



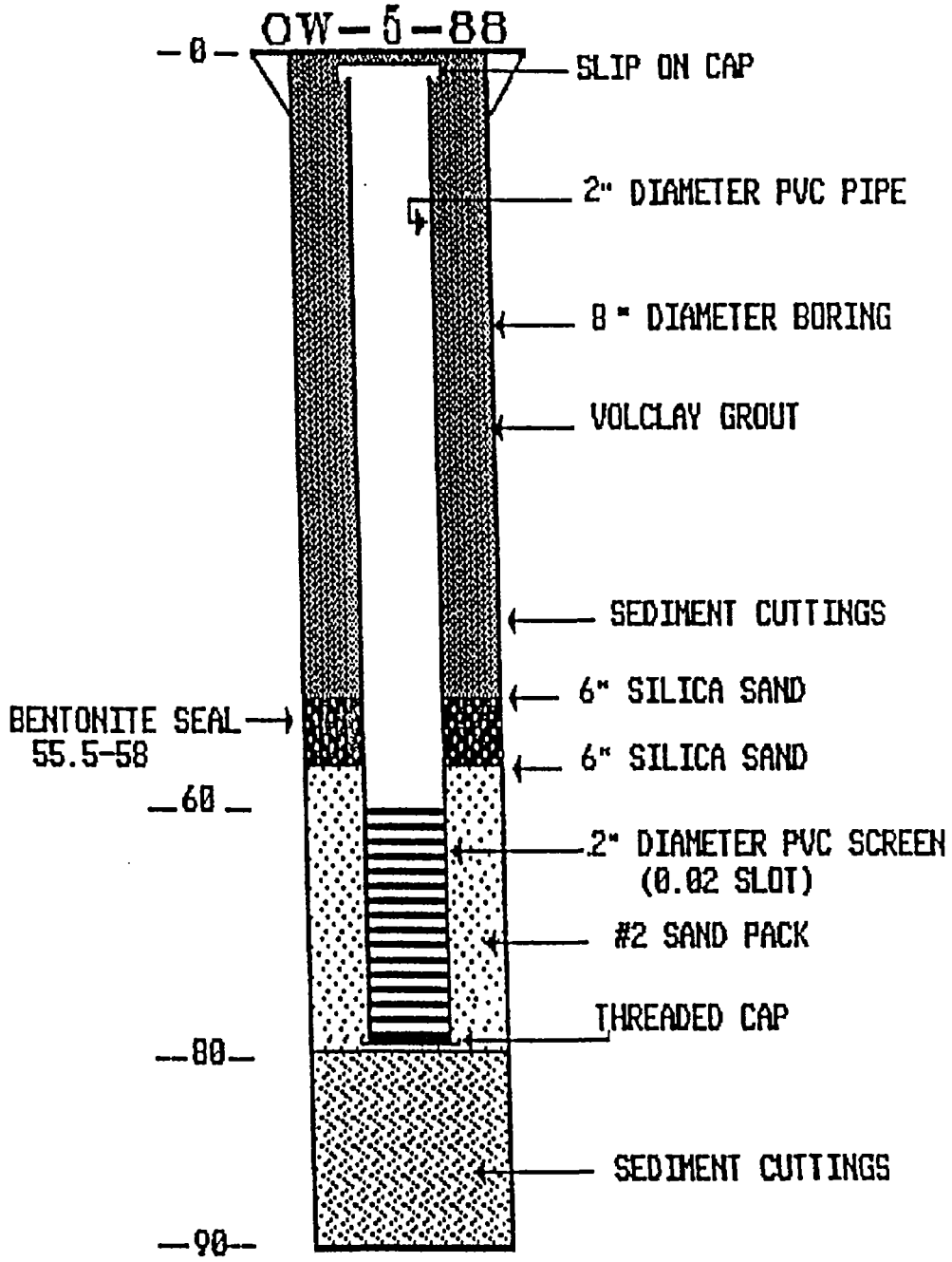
HydroSolutions Of California, Inc.

BPACC00829



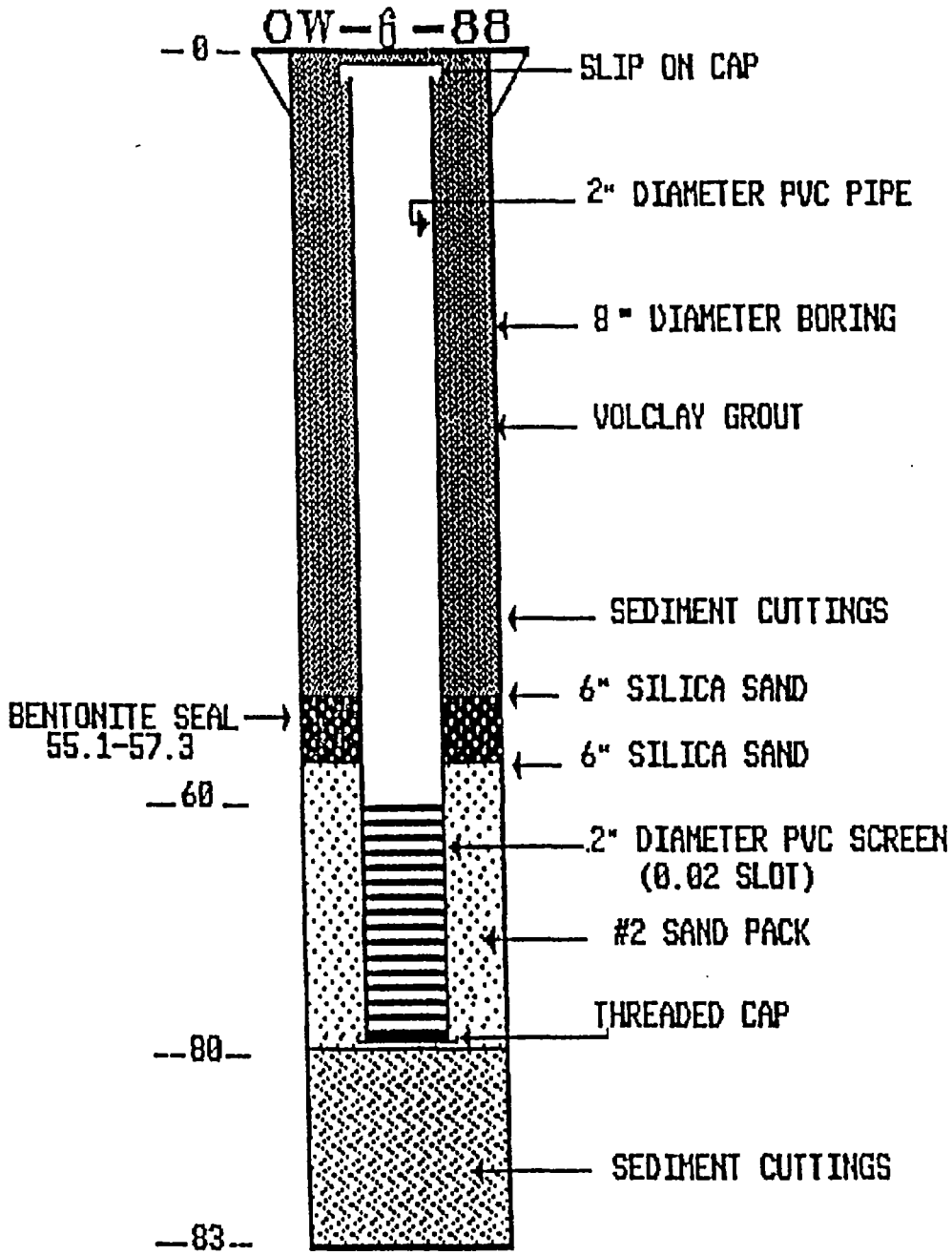
HydroSolutions Of California, Inc.

BPACC00830



HydroSolutions Of California, Inc.

BPACC00831



HydroSolutions Of California, Inc.

BPACC00832

Table 1. Well Completion Report Summary

WELL	TOTAL DEPTH	WELL DEPTH	PERF. INT.	DEPTH TO G.W.
OW-1-88	85	80	60-80	69
OW-2-88	87	85	65-85	73
OW-3-88	83	80	60-80	70
OW-4-88	84	80	60-80	70
OW-5-88	90	80	60-80	70
0W-6-88	83	80	60-80	70

Note: Observation wells drilled with an 8 inch diameter hollow stem auger

SITE LOCATION: 1225 W. 196th St.
Torrance, Calif.

DRILLING AGENCY: Drill-line

DRILLING EQUIPMENT: 8" Hollow Stem Auger

LOGGED BY: Stephen Baker

NUMBER OF SAMPLES COLLECTED: 16

PROJECT NO.: 88077-01

DATE STARTED: 6-22-88

DATE FINISHED: 6-22-88

TOTAL DEPTH: 87 FEET

WATER DEPTH: 69 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-1-88
5		SILT (MC), (9,12,31)	slightly moist, brown, very fine grained sand, black streaks, some fine sand, slickenside, no odor
10		SILTY CLAY (CL), (9,14,25)	slightly moist, brown, some 1/16" black ang sand, silt, sliken-side, no odor
15		SILT (ML), (6,11,13)	slighty moist, brown, very fine grained sand, no odor
20		SILT (ML), (12,12,15)	slightly moist, brown, dark brown nodules, slickenside, no odor
25		SILT (ML), (7,7,22)	slightly moist, brown; CLAYEY SILTS (ML), moist, light brown, dark brown clayey, no odor
30		SILT (ML), (6,21,25)	slightly moist, brown, some darker brown, no odor
35		SAND (SP), (13,30,42)	slightly moist, light brown, sliken-no odor
40		SAND (SP), (8,11,11)	slightly moist, light brown, sliken-side, no odor, SAND (SW), slightly moist, brown, light fine-light grained sand, iron bands

BPACC00834

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W. 196th St.
Torrance, Calif.

DRILLING AGENCY: Drill-line

DRILLING EQUIPMENT: 8" Hollow Stem Auger

LOGGED BY: Stephen Baker

NUMBER OF SAMPLES COLLECTED: 16

PROJECT NO.: 88077-01

DATE STARTED: 6-22-88

DATE FINISHED: 6-22-88

TOTAL DEPTH: 87 FEET

WATER DEPTH: 69 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-1-88
45		CLAYEY SILT (ML), (8,10,13)	slightly moist, brown, orange brown nodules, stratefications of dark material, very fine grained sand, iron stains, no odor
50		SILT (ML), (15,17,26)	slightly moist, grey brown, red brown stained zones, very fine grained sand, stratefication of iron stained nodules, no odor
55		SILT (ML), (10,30,30)	slighty moist, grey brown, red brown stained zones; SAND (ML), slightly moist, brown grey, very fine grained sand, some iron stain, no odor
60		SAND (ML), (8,21,50)	moist, grey brown, very fine grained sand, yellow and dark brown stain, no odor
65		SAND (SW), (9,17,26)	slightly moist, brown, fine-medium grained sand, micaceus, quartz, stratified with thin dark zones and iron stained streaks, some clay streaks, no odor
70		SAND (ML), (9,22,38)	moist, grey brown, dark grey, orange brown, streaks, micaceous, no odor, saturated zone (???) 65-70? lb" CLAY (CL), moist, brown at 70' sedment noist beneath

BPACC00835

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W. 196th St. Torrance, Calif.	PROJECT NO.: 88077-01
DRILLING AGENCY: Drill-line	DATE STARTED: 6-22-88
DRILLING EQUIPMENT: 8" Hollow Stem Auger	DATE FINISHED: 6-22-88
LOGGED BY: Stephen Baker	TOTAL DEPTH: 87 FEET
NUMBER OF SAMPLES COLLECTED: 16	WATER DEPTH: 69 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-1-88
75		SAND (SP), (30,50,)	saturated, brown, fine grained sand, micaceous, lower section of sample indicates stratification along an incline, bottom of sample moist
80		SAND (SP) & (5,15,35)	SILT (ML), moist, brown dark brown, highly stratified, micaceous silts, fine grained sand, medium grained sand, no odor

This information should not be used for any engineering purposes.

Boring constructed into a 2" diameter groundwater monitoring well.

BPACC00836

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W.196th St.
Torrance, Calif.

DRILLING AGENCY: Drill-line

DRILLING EQUIPMENT: 8" Hollow Stem Auger

LOGGED BY: Stephen Baker

NUMBER OF SAMPLES COLLECTED: 16

PROJECT NO.: 88077-01

DATE STARTED: 6-27-88

DATE FINISHED: 6-27-88

TOTAL DEPTH: 83 FEET

WATER DEPTH: 70 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-3-88
5		SANDY SILT (ML), dense, slightly moist, (7,16,17)	brown, some fine grained sand, some dark brown nodules, no odor
10		SILT (ML), (8,18,22)	dense, slightly moist, brown, slightly clayey, light brown nodules, no odor
15		SILT (ML), (6,7,13)	medium dense, slightly moist, brown, very fine sand, silt
20		SILT (ML), (10,18,22)	very dense, moist, brown, micaceous, iron stains, some dark brown, no odor
25		SILT (ML), (8,16,21)	dense, moist, brown, micaceous, some very fine sand, no odor
30		SAND (SP), (12,23,30)	very dense, moist, brown, fine grained sand, quartz, mica, no odor
35		SILT (ML), (7,10,23)	dense, moist, brown, micaceous, no odor
40		SILT, (ML), (5,10,22)	dense, moist, light brown, iron stains, no odor

BPACC00837

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W.196th St.
Torrance, Calif.

DRILLING AGENCY: Drill-line

DRILLING EQUIPMENT: 8" Hollow Stem Auger

LOGGED BY: Stephen Baker

NUMBER OF SAMPLES COLLECTED: 16

PROJECT NO.: 88077-01

DATE STARTED: 6-27-88

DATE FINISHED: 6-27-88

TOTAL DEPTH: 83 FEET

WATER DEPTH: 70 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-3
45		SILT (ML), (30,34,27)	very dense, slightly moist, light brown, medium to very coarse grained sand; CLAYEY SILT (ML), moist, brown, clayey, no odor
50		SILT (ML), (9,13,25)	dense, slightly moist, brown, yellow-brown, slickenside, some mica, no odor
55		SILT (ML), (8,22,30)	very dense, slightly moist, brown, yellow-brown, micaceous, very fine grained sand, light grey nodules, lenticular iron stains, no odor
60		SILT (ML), (8,20,23)	dense, slightly moist, light grey, red-brown streaks, micaceous, iron stains, no odor
65		SILT (ML), (12,25,23)	dense, moist, brown, very fine grained sand, some dark grey streaks, no odor
70		SILT (ML), (20,42,45)	very dense, very moist, brown, very fine grained sand, no odor

BPACC00838

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W.196th St.
Torrance, Calif.

DRILLING AGENCY: Drill-line

DRILLING EQUIPMENT: 8" Hollow Stem Auger

LOGGED BY: Stephen Baker

NUMBER OF SAMPLES COLLECTED: 16

PROJECT NO.: 88077-01

DATE STARTED: 6-27-88

DATE FINISHED: 6-27-88

TOTAL DEPTH: 83 FEET

WATER DEPTH: 70 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-3
75		SAND (SP), (15,21,30)	very dense, saturated, brown, very fine to fine grained, silty, micaceous; SILTY CLAY (CL), brown, some red-brown, silty, no odor
80		SAND (SP), (20,35,30)	very dense, saturated, brown, very fine to fine grained, silty, micaceous: SILT (ML), brown, grey-brown, micaceous, no odor

This information should not be used for any engineering purposes.

Boring constructed into a 2" diameter groundwater monitoring well.

BPACC00839

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W.196th St.
Torrance, Calif.

DRILLING AGENCY: Drill-line

DRILLING EQUIPMENT: 8" Hollow Stem Auger

LOGGED BY: Stephen Baker

NUMBER OF SAMPLES COLLECTED: 16

PROJECT NO.: 88077-01

DATE STARTED: 6-22-88

DATE FINISHED: 6-22-88

TOTAL DEPTH: 87 FEET

WATER DEPTH: 73 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-2-88
5		SANDY SILT (ML), very dense, slightly moist, (8,28,25)	brown, some fine grained sand, no odor
10		CLAY SILTY (ML), dense, moist, brown, clayey, (8,16,18)	slickensides, dark brown nodule, no odor, some limonite stains
15		SAND (ML), dense, moist, brown, very fine (6,16,28)	grained sand, silty, no odor
20		SILT (ML), medium dense, moist, brown, (6,9,20)	very fine grained sand, no odor
25		SILTY CLAY (CL) dense, moist, brown, silty, (8,16,21)	slickenside, no odor
30		SAND (SW), very dense, slightly moist, brown, (10,30,36)	very fine to fine grained sand, silty, no odor
35		SILT (ML), dense, moist, brown, clayey, (8,18,22)	slickenside, no odor
40		SAND (SW), dense, slightly moist, brown, (11,19,30)	very fine to fine grained sand, shell fragments, limonite stains, no odor

BPACC00840

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W.196th St. Torrance, Calif.	PROJECT NO.: 88077-01
DRILLING AGENCY: Drill-line	DATE STARTED: 6-22-88
DRILLING EQUIPMENT: 8" Hollow Stem Auger	DATE FINISHED: 6-22-88
LOGGED BY: Stephen Baker	TOTAL DEPTH: 87 FEET
NUMBER OF SAMPLES COLLECTED: 16	WATER DEPTH: 73 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-2-88
45		CLAY W/SHELL FRAGMENTS (CL), very stiff, (6,8,9) moist, brown, 60% fragments bedded horizontally, no odor	
50		SILTY CLAY (CL), medium dense, moist, brown, (11,6,17) red-brown, silty, slickenside, no odor	
55		SANDY SILT (ML), very dense, moist, brown, light (12,30,40) brown, red-brown, very fine grained sand, iron and limonite stains, no odor	
60		CLAYEY SILT (ML) dense moist, brown, grey clay, (6,12,20) some nodules of clay, micaceous, no odor	
65		SAND (SP), very dense, moist, brown, fine (8,19,33) grained sand, some stratification, brown, silt red-brown streaks, no odor	
70		SAND (SP), dense, moist, brown, yellow brown, (8,17,23) fine grained; SILT (ML), moist, red-brown, iron stains, no odor	

BPACC00841

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W.196th St.
Torrance, Calif.

DRILLING AGENCY: Drill-line

DRILLING EQUIPMENT: 8" Hollow Stem Auger

LOGGED BY: Stephen Baker

NUMBER OF SAMPLES COLLECTED: 16

PROJECT NO.: 88077-01

DATE STARTED: 6-22-88

DATE FINISHED: 6-22-88

TOTAL DEPTH: 87 FEET

WATER DEPTH: 73 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-2-88
75		SAND (SP), (11,17,25)	dense, saturated, brown, fine grained sand, micaceus, no odor
80		SAND (SP) (10,-,-)	saturated, brown, fine grained; SILT (ML), brown, micaceus; SAND (SP), brown, fine to medium grained, no odor
85		SAND (SP),	saturated, brown, medium grained, angular, no odor

This information should not be used for any engineering purposes.

Boring constructed into a 2" diameter groundwater monitoring well.

BPACC00842

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W.196th St.
Torrance, Calif.

DRILLING AGENCY: Drill-line

DRILLING EQUIPMENT: 8" Hollow Stem Auger

LOGGED BY: Stephen Baker

NUMBER OF SAMPLES COLLECTED: 16

PROJECT NO.: 88077-01

DATE STARTED: 6-24-88

DATE FINISHED: 6-24-88

TOTAL DEPTH: 84 FEET

WATER DEPTH: 70 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-4-88
5		SILTY CLAY (CL), (3,7,8)	stiff, moist, brown, silt, some dark brown nodules no odor
10		CLAYEY SILT (ML), (7,16,21)	dense, moist, brown, clayey, some dark brown nodules, no odor
15		SILT (ML), (17,13,15)	dense, moist, brown, some dark brown nodules, trace iron stains, slickenside, no odor
20		CLAY (CL), (4,12,18)	very stiff, moist, brown, iron stains, some light brown, trace medium grained sand, no odor
25		SAND (ML), (6,18,20)	dense, moist, brown, very fine grained, very silty, no odor
30		SAND (SP), (8,15,22)	dense, slightly moist, medium grained, sub-angular, quartz, some mica and feldspar, no odor
35		CLAYEY SILT, (ML), (4,7,9)	medium dense, moist, brown, clayey, some dark brown nodules, no odor
40		SAND (ML), (7,20,23)	dense, slightly moist, light brown, very fine grained, iron stains; CLAY (CL), moist, brown, silty, no odor

BPACC00843

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W.196th St.
Torrance, Calif.
DRILLING AGENCY: Drill-line

DRILLING EQUIPMENT: 8" Hollow Stem Auger
LOGGED BY: Stephen Baker

NUMBER OF SAMPLES COLLECTED: 16

PROJECT NO.: 88077-01

DATE STARTED: 6-24-88

DATE FINISHED: 6-24-88

TOTAL DEPTH: 84 FEET

WATER DEPTH: 70 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-4
45		SAND (SW), (7,18,20)	dense, slightly moist, light brown, brown, very fine to medium grained, some angular 1/4" pebbles, silty, no odor
50		SAND AND SHELL FRAGMENTS, (6,12,18)	dense, moist, light brown, very fine to medium grained, large thin shell fragments; SILTY CLAY (CL) moist, brown, silty, no odor
55		SILT (ML), (9,11,25)	dense, moist, grey brown, large, sperical iron stains, no odor
60		SILT (ML), (9,12,22)	dense, moist, brown, very fine sand silt, interbedded with thin red-brown, light grey, slightly clayey silt, no odor
65		SAND (SP), (13,25,30)	very dense, slightly moist, brown, fine grained, some dark brown, grey-brown streaks, no odor
70		SAND (SP), (12,26,40)	very dense, saturated, brown, fine grained, micaceous; SILT (ML), moist, brown, micaceous, no odor

BPACC00844

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W.196th St.
Torrance, Calif.
DRILLING AGENCY: Drill-line

DRILLING EQUIPMENT: 8" Hollow Stem Auger
LOGGED BY: Stephen Baker

NUMBER OF SAMPLES COLLECTED: 16

PROJECT NO.: 88077-01

DATE STARTED: 6-24-88

DATE FINISHED: 6-24-88

TOTAL DEPTH: 84 FEET

WATER DEPTH: 70 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-4
75		SAND (SP), (2,20,30)	very dense, saturated, brown, fine grained, mica, dark brown streaks, no odor
80		SAND (SP),	saturated, brown, fine grained, mica, no odor

This information should not be used for any engineering purposes.

Boring constructed into a 2" diameter groundwater monitoring well.

BPACC00845

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W.196th St.
Torrance, Calif.

DRILLING AGENCY: Drill-line

DRILLING EQUIPMENT: 8" Hollow Stem Auger

LOGGED BY: Stephen Baker

NUMBER OF SAMPLES COLLECTED: 14

PROJECT NO.: 88077-01

DATE STARTED: 6-29-88

DATE FINISHED: 6-29-88

TOTAL DEPTH: 90 FEET

WATER DEPTH: 70 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-5-88
5		SILTY CLAY (CL), (5,12,14)	very stiff, moist, brown, silty, some dark brown, no odor
10		SILTY SAND (ML), (11,11,11)	medium dense, very moist, brown, very fine grained sand, silt, mica, no odor
15		CLAYEY SILT, (ML), (8,12,6)	medium dense, moist, brown, some light brown, slightly micaceous, very fine grained sand, trace of medium grained sand, slickenside, no odor
20		CLAY (CL), (5,10,12)	very stiff, slightly moist, brown, some silt, slickenside, trace 1/16-1/18 inch diameter subangular pebbles, no odor
25		SAND (SP), (11,11,18)	medium dense, slightly moist, brown, fine grained, quartz, biotite, subangular, some light brown, no odor
30		SAND (SP), (11,27.29)	very dense, slightly moist, light brown, medium grained, subangular subrounded, mica, no odor
35		SAND (ML), (8,14,19)	dense, slightly moist, brown, very fine grained, quartz, mica, some light brown, no odor

BPACC00846

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W.196th St.
Torrance, Calif.

DRILLING AGENCY: Drill-line

DRILLING EQUIPMENT: 8" Hollow Stem Auger

LOGGED BY: Stephen Baker

NUMBER OF SAMPLES COLLECTED: 14

PROJECT NO.: 88077-01

DATE STARTED: 6-29-88

DATE FINISHED: 6-29-88

TOTAL DEPTH: 90 FEET

WATER DEPTH: 70 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-5
40		SAND (ML), (5,12,19)	dense, slightly moist, brown, light brown, red-brown, very fine to fine grained, several white tabular powder zones, 1/16 inch thick, within a one inch band of sand, no odor
45		SILT (ML), (10,11,16)	medium dense, moist, brown, some very fine grained, mica, very fine grained sand, red-brown, no odor
50		SILTY CLAY (CL), (6,12,21)	dense, moist, grey brown, silty, some mica, iron stained zones concentric rings, vertical and oblique, positions, tabular), no odor
55		SILTY CLAY (CL), (3,5,8)	stiff, moist, grey-brown, micaceous, iron stains, (random massive concentric rings), some yellow-brown, no odor
60		SAND (SP), (12,22,27)	very dense, slightly moist, grey-brown, fine grained, quartz, biotite, some brown zones, no odor
65		SAND (SP), (6,21,20)	dense, very moist, brown, fine grained, quartz, mica; CLAY (CL), moist, grey-brown, 3 inch thick, some yellow-brown, no odor

BPACC00847

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W.196th St.
Torrance, Calif.

DRILLING AGENCY: Drill-line

DRILLING EQUIPMENT: 8" Hollow Stem Auger

LOGGED BY: Stephen Baker

NUMBER OF SAMPLES COLLECTED: 14

PROJECT NO.: 88077-01

DATE STARTED: 6-29-88

DATE FINISHED: 6-29-88

TOTAL DEPTH: 90 FEET

WATER DEPTH: 70 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-5
70		SAND (SP), (7,11,26)	dense, saturated, brown, fine grained, subrounded, quartz, mica; CLAY (CL), moist, brown, silty, micaceous, iron stained, very fine grained sand, small pockets of very fine grained sand, no odor
75		NO SAMPLE,	below water level, not possible with equipment
80		NO SAMPLE	

This information should not be used for any engineering purposes.

Boring constructed into a 2" diameter groundwater monitoring well.

BPACC00848

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W.196th St.
Torrance, Calif.
DRILLING AGENCY: Drill-line

DRILLING EQUIPMENT: 8" Hollow Stem Auger
LOGGED BY: Stephen Baker

NUMBER OF SAMPLES COLLECTED: 16

PROJECT NO.: 88077-01

DATE STARTED: 6-27-88

DATE FINISHED: 6-28-88

TOTAL DEPTH: 83 FEET

WATER DEPTH: 70 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-6-88
5		CLAYEY SILT (ML), dense, moist, brown, (12,18,23) clayey, dark brown, nodules, slickenside, no odor	
10		CLAYEY SILT (ML), dense, scrap metal at (7,20,25) 10 feet, slightly moist, brown, clayey dark brown nodules, slickenside, no no odor	
15		SILT (ML), SILT, (ML), dense, slightly moist, (8,21,21) light brown, some red-brown, no odor	
20		SILT (ML), dense, moist, brown, some red-brown, (12,13,20) iron stains, no odor	
25		SILTY CLAY (CL), dense, moist, brown, dark brown (8,17,20) nodules, slickenside, silty, no odor	
30		SAND (SP), very dense, slightly moist, light (12,25.30) brown, fine grained, subangular quartz, mica, no odor	
35		SILT (ML), dense, slightly moist, brown, (10,17,25) some mica, no odor	
40		SAND AND SHELL FRAGMENTS (SP), dense, slightly (10,17,30) moist, light brown, very fine grained sand, micaceous, layer of shells; SAND (SP), slightly moist, very fine grained, no odor	

BPACC00849

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W.196th St.
Torrance, Calif.

DRILLING AGENCY: Drill-line

DRILLING EQUIPMENT: 8" Hollow Stem Auger

LOGGED BY: Stephen Baker

NUMBER OF SAMPLES COLLECTED: 16

PROJECT NO.: 88077-01

DATE STARTED: 6-27-88

DATE FINISHED: 6-28-88

TOTAL DEPTH: 83 FEET

WATER DEPTH: 70 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-6-88
45		SILTY CLAY (CL), (10,11,16)	medium dense, moist, brown, grey brown, some mica, very fine grained sand, iron stains, dark brown, nodules, no odor
50		CLAY (CL), (10,20,22)	dense, moist, brown, yellow-brown, layer of medium grained sand and shells, iron stains, slickenside no odor
55		CLAY (CL), (5,15,23)	moist, brown, silty; SILT (ML), moist, yellow brown, iron stains, micaceous, no odor
60		SILT (ML), (12,17,30)	dense, slightly moist, brown, light grey, thin lenses of fine grained sand, micaceous, no odor
65		SILT (ML), (8,16,25)	dense, slightly moist, brown, yellow brown, iron stains; Lenses of grey-brown, micaceous, clay, no odor
70		SAND (SP), (12,20,26)	dense, saturated, brown, fine grained, quartz; SILT (ML), very moist, brown, micaceous; SILTY CLAY (CL), moist, silty, red-brown, no odor

BPACC00850

HydroSolutions Of California, Inc.

SITE LOCATION: 1225 W.196th St.
Torrance, Calif.

DRILLING AGENCY: Drill-line

DRILLING EQUIPMENT: 8" Hollow Stem Auger

LOGGED BY: Stephen Baker

NUMBER OF SAMPLES COLLECTED: 16

PROJECT NO.: 88077-01

DATE STARTED: 6-27-88

DATE FINISHED: 6-28-88

TOTAL DEPTH: 83 FEET

WATER DEPTH: 70 FEET

DEPTH	LOG	DESCRIPTION	BORING: OW-6-88
75		SAND (SP),	very dense, saturated, brown, fine grained, quartz, angular-subrounded, micaceous, some red-brown, no odor
80		SAND (SP), (5,7,8)	medium dense, saturated brown, fine grained, quartz, some mica; SAND (ML), very moist, brown, very fine grained sand, quartz, micaceous, no odor

This information should not be used for any engineering purposes.

Boring constructed into a 2" diameter groundwater monitoring well.

BPACC00851

HydroSolutions Of California, Inc.

DRILL-LINE DIVISION
Pipeline Industries
11250 East Firestone Boulevard
Norwalk, California 90650

(213) 929-8176

JUNE 30, 1988

AMOCO CHEMICAL COMPANY
GROUNDWATER MANAGEMENT
P.O. BOX 3385
TULSA, OKLAHOMA 74102
ATTN: BOB HOCKMAN

INVOICE #: 2946
PROJECT# : TORRANCE
RIG # : 3 & 7

DRILLING SERVICES: JUNE 22nd thru 29th, 1988

MOB/DE MOB	$ 1260.00
RIG	6960.00
WELL MATERIALS	4620.00
GEOLOGIST	3320.00
WELL DEVELOPMENT	1680.00
AUX. EQUIPMENT	600.00
PERMITS	300.00
TOTAL	$18,740.00

FINAL REPORT ANF INVOICE TO FOLLOW

TERMS: NET DUE IN 30 DAYS FROM DATE OF INVOICE. A FINANCE CHARGE OF 1.5% PER MONTH WILL BE ADDED TO ALL OVERDUE BILLINGS.

PLEASE MAKE PAYMENT TO: DRILL LINE DIVISION
PIPELINE INDUSTRIES, INC.
11250 E. FIRESTONE BLVD.
NORWALK, CALIFORNIA 90650

DRILL-LINE DIVISION
Pipeline Industries
11250 East Firestone Boulevard
Norwalk, California 90650

(213) 929-8176

INVOICE

DATE: 8-15-88

CUSTOMER

AMOCO CHEMICAL CORPORATION
P.O. BOX 3385
TULSA, OKLAHOMA 74102

INVOICE NO. 3028
CUSTOMER REF. NO. _____
RIG NO. _____
PROJECT TORRANCE

BILLING PERIOD - FROM/TO

OPERATING RATE	$ _____ /HR.	HOURS: _____	$ _____
OPERATING RATE	$ _____ /HR.	HOURS: _____	$ _____
STANDBY RATE	$ _____ /HR.	HOURS: _____	$ _____
TRAVEL RATE	$ _____ /HR.	HOURS: _____	$ _____
EXTRA LABOR	$ _____ /HR.	HOURS: _____	$ _____

FINAL REPORT

TOTAL RIG CHARGES = $ 600.00

ADDITIONAL EQUIPMENT

STEAM CLEANER	(DAYS @ $ /DAY)	=	$ _____
GENERATOR & LIGHTS	(DAYS @ $ /DAY)	=	$ _____
CEMENT MIXER	(DAYS @ $ /DAY)	=	$ _____
AIR COMPRESSOR, JACK HAMMER	(DAYS @ $ /DAY)	=	$ _____

TOTAL ADDITIONAL EQUIPMENT = $ -0-

MATERIALS & SUPPLIES

PVC	(") SLOTTED, $ /FT. (FT.)	=	$ _____
PVC	(") BLANK $ /FT. (FT.)	=	$ _____
CAPS	(") (THD,D-) (SLIP) $ /CAP	=	$ _____
SAND	(SAXS) (SIZE) ($ /SACK)	=	$ _____
CEMENT	(SAX) ($ /SACK)	=	$ _____
MISCELLANEOUS		=	$ _____

MATERIALS & SUPPLIES TOTAL = $ -0-

INVOICE TOTAL = $ 600.00

Please make payment to:

DRILL-LINE, DIVISION OF PIPELINE INDUSTRIES, INC.
11250 Firestone Boulevard, Norwalk, California ~~90650~~ 90650
For Inquires: (213) 929-8176

TERMS: Net due in 30 days from date of invoice. ~~All services provided by Drillinex are subject to a 10% discount if paid within 15 days.~~ A finance charge of 1.5% per month will be added to all overdue billings.

BPACC00853

Amoco Corporation
7201 East 38th Street (Space 7253)
Post Office Box 3385
Tulsa, Oklahoma 74102
Environmental and Energy Conservation
Environmental Affairs and
Safety Department
918-660-4424

Gene W. Schmidt
Director–Groundwater Management

ENVIRONMENTAL CONSERVATION (CHEMICALS)
DEC 27 '88

	NOTE	HANDLE
RCV		
DMH	X	
JSS		
CJW		

FILE: Torrance Groundwater

December 9, 1988

GMS 88-1215

Rec 12.19.88
GWS
cc R.C. Vaseleski

W. T. Kerr
Amoco Chemical Company
1225 W. 196th Street
Torrance, CA 90502

Subject: Amoco Chemical Company Plant in Torrance, California; Analytical Results For Groundwater Samples and Recommendations For Soils Management During Tank Dike Modification

As shown in Attachment 1, volatile organic compounds (VOC) were detected in shallow soil samples collected from the dike and areas surrounding the system storage tanks. However, no VOC were detected in groundwater samples collected from onsite monitoring wells. The lack of groundwater contamination, coupled with the hNu results shown in Attachment 1, support the conclusion that the contamination did not result from a single spill event. And, is limited to soils shallower than six to seven feet deep. Thus, I believe that work can begin on the tank dike modifications.

As stated in Attachment 1 by Engineering Enterprises, Inc., the soils may be remediated "internally without any agency interaction." However, the soils removed during tank dike modification would have to be managed as a "designated waste" and disposed of in permitted waste management units.

Based on the Engineering Enterprise opinion and the shallow nature of the contamination, I believe that Amoco Chemical Company should remove the contaminated soils in the tank dike area. The excavation should then be filled with clean fill prior to installation of the concrete. It would not be prudent to install concrete on top of the contaminated soils because of potential future cleanup liability.

Thus, I recommend the following actions. As excavation for the tank dike modification proceeds, the soils should be screened for VOC with an hNu. Any soils showing VOC based on the hNu should be removed. If possible, excavation should proceed to a depth where the hNu does not detect VOC. However, tank stability should not be compromised in any way.

BPACC00854

ATTACHMENT 2

Any soils that show VOC based on the hNu should be placed on plastic or in a dumpster for storage prior to disposal at a permitted landfill. Mr. Mark Passarini of Amoco EA&S at 312-856-4860 should be contacted to determine where to dispose of the soils. And, as always, I am available to assist with these activities.

Bob Hockman

ELH:cib
88344ART0104
Attachment

cc: D. M. Hardesty - Chicago
C. F. Kirby - Joliet, IL
H. A. McCandles - Joliet, IL
J. Verrier - Joliet, IL
M. J. Passarini - Chicago
G. W. Schmidt/D. D. Beckmann - Tulsa

ENGINEERING
ENTERPRISES, INC.

WATER RESOURCES SPECIALISTS

21818 S. Wilmington Avenue, Suite 405 Long Beach, CA 90810 213/518-4597

TRANSMITTAL SHEET

To: Amoco Corporation
7201 East 38th Street
Space 7253
Tulsa, Oklahoma 74102

Date: November 10, 1988

Your Order No.:

Our Job No.: 512-345

Attention: Mr. Robert Hockman
Groundwater Management Section

Subject: Report of Shallow Soil Sampling
Amoco Chemical Facility
1225 196th Street
Torrance, California

We are sending you via: Federal Express the following: Draft report

This is ~~These are~~ for: your review and comments

No. of copies submitted: 1

Copies to:

Engineering Enterprises, Inc.

By: William E. Halbert /kc
William E. Halbert
Project Hydrogeologist

BPACC00856

DRAFT

REPORT OF SHALLOW
SOIL SAMPLING
AMOCO CHEMICAL FACILITY
1225 196TH STREET
TORRANCE, CALIFORNIA

DRAFT

ENGINEERING
ENTERPRISES, INC.

WATER RESOURCES SPECIALISTS

21818 S. Wilmington Avenue, Suite 405 Long Beach, CA 90810 213/518-4597

November 10, 1988

Amoco Corporation
7201 East 38th Street
Space 7253
P.O. Box 3385
Tulsa, Oklahoma 74102

Attention: Mr. Robert Hockman
Groundwater Management Section

Subject: Report of Shallow Soil Sampling
Amoco Chemical Facility
1225 196th Street
Torrance, California
Project No. 512-345

Dear Mr. Hockman:

Engineering Enterprises, Inc. (EEI) is pleased to provide you with this report outlining the results of our shallow soil sampling assessment at your chemical facility situated in Torrance, California.

If you have any questions regarding this report or require additional information, please do not hesitate to contact us. EEI appreciates the opportunity to be of service to Amoco Corporation.

Sincerely,

Stephen M. Testa
Vice President
West Coast Operations

SMT/mag

BPACC00858

REPORT OF SHALLOW SOIL SAMPLING

AMOCO CHEMICAL FACILITY

1225 196TH STREET

TORRANCE, CALIFORNIA

Submitted by:

Engineering Enterprises, Inc.
21818 S. Wilmington Avenue
Suite 405
Long Beach, California 90810

William E. Halbert
Project Hydrogeologist

Stephen M. Testa
Vice President
West Coast Operations

ENGINEERING ENTERPRISES, INC.

REPORT OF SHALLOW SOIL SAMPLING
AMOCO CHEMICAL FACILITY
1225 196TH STREET
TORRANCE, CALIFORNIA

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3.0	FIELD METHODOLOGY	1
4.0	SUBSURFACE CONDITIONS ENCOUNTERED	5
5.0	ANALYTICAL RESULTS	5
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LIST OF FIGURE

Figure	Description
1	Site Location Map
2	Boring Locations

LIST OF APPENDICES

Appendix	Description
A	Summary of Subsurface Conditions
B	Laboratory Reports and Chain-of-Custody Form

EEI ENGINEERING ENTERPRISES, INC.

BPACC00860

1.0 INTRODUCTION

Engineering Enterprises, Inc. (EEI) is pleased to provide you with this report outlining the results of our shallow soil sampling assessment at your chemical facility situated in Torrance, California (Figure 1).

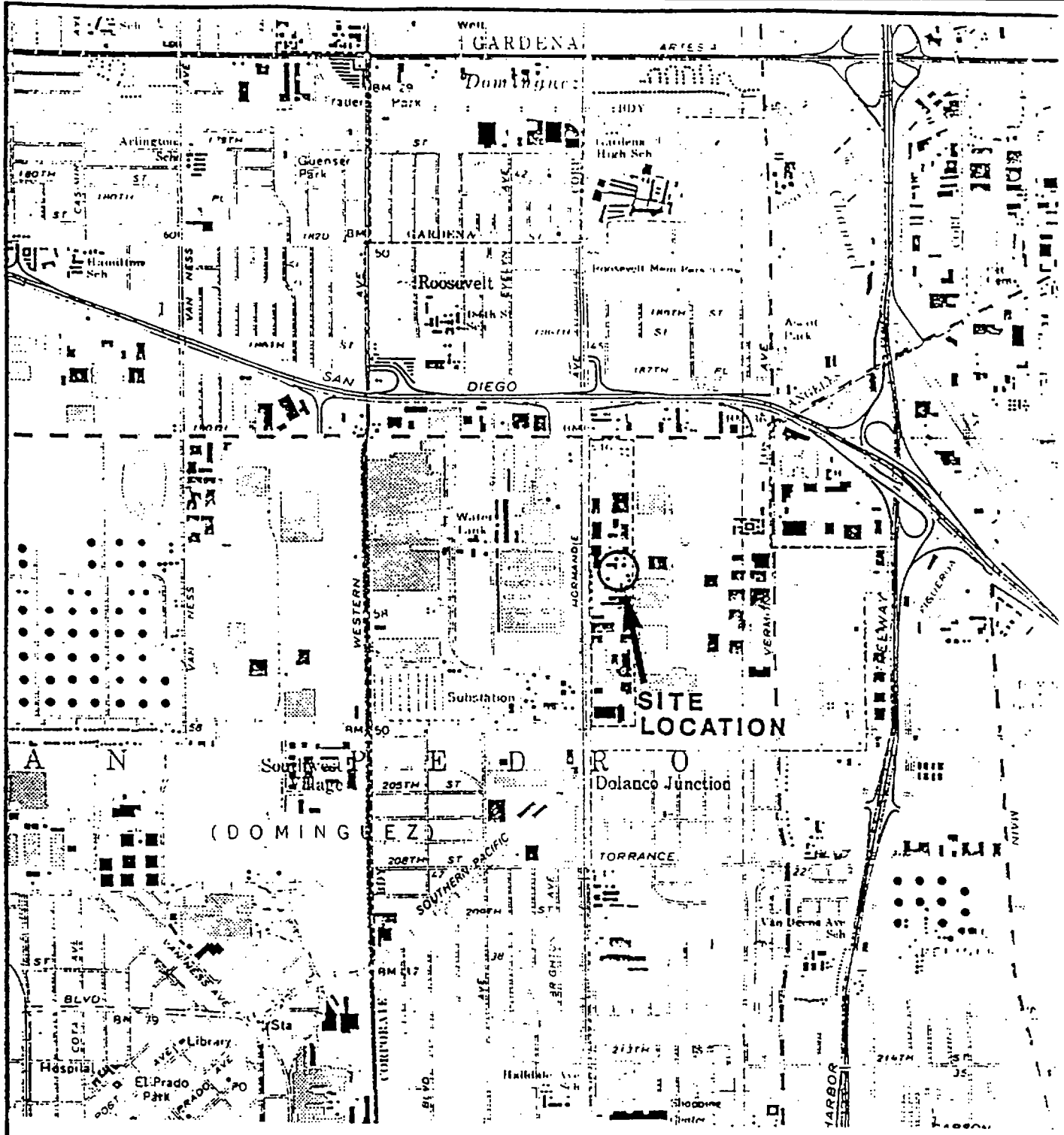
2.0 PURPOSE AND SCOPE

The purpose of this assessment was to assess concentrations of volatile organic compounds (VOC), specifically styrene, in shallow soils within bermed areas surrounding several above ground storage tanks at the facility. In order to accomplish this objective, the following scope of work was performed:

- Drilling and sampling of five shallow soil borings;
- Chemical analysis of selected soil samples; and
- Preparation of this report.

3.0 FIELD METHODOLOGY

Shallow soil sampling was on October 26, 1988 by an EEI geologist. Five soil borings were drilled with a hand auger in locations shown in Figure 2. The auger was advanced to the beginning of the designated sample interval, whereupon it was removed from the boring. Soils from immediately above each designated sample interval were screened for organic vapors using a Century Systems organic vapor analyzer, Model 128GC. Vapor readings were obtained by crumbling soil into a clean laboratory jar and measuring VOC's in the headspace. A manual drive sampler



DRAFT

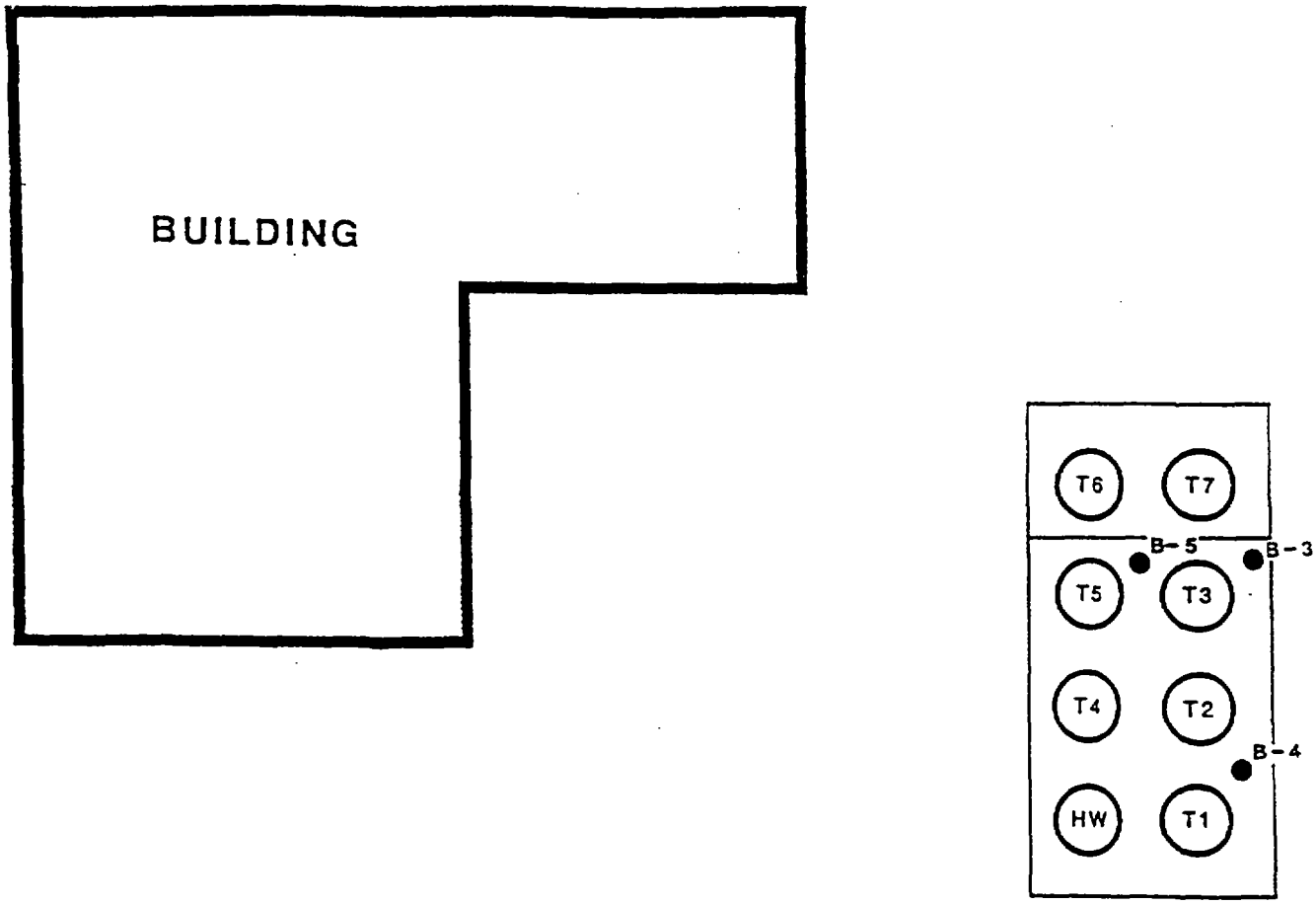
0 2000 4000
SCALE IN FEET

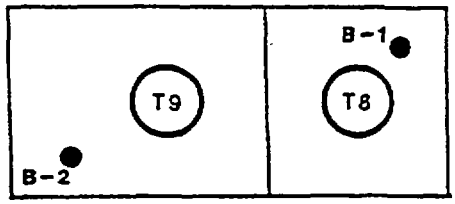
BPACC00862

SITE LOCATION MAP
AMCO CHEMICAL FACILITY
TORRANCE, CALIFORNIA

EEI ENGINEERING ENTERPRISES, IN

PROJECT NO. 512-345 FIGU





EXPLANATION

B-2 APPROXIMATE BORING LOCATION

T9 ABOVE GROUND STORAGE TANK

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BPACC00863

NOT TO SCALE

APPROXIMATE BORING LOCATIONS
AMOCO CHEMICAL FACILITY
TORRANCE, CALIFORNIA

EEI ENGINEERING ENTERPRISES, IN

PROJECT NO. 512-345 FIGUR

was then used to collect soil in a brass sample sleeve from the sampling interval. Description of subsurface conditions encountered are contained in Appendix A.

Soil samples were collected at one-foot intervals through the length of the borings. Following retrieval of the sample sleeve from the boring, the ends of the sleeve were covered with Teflon sheeting and plastic caps and sealed with PVC tape. A sample label was affixed to each sample which contained the following information: job number, boring number, sample number, collectors name and date of collection. Samples were then placed in an ice chest containing blue ice for transport to the analytical laboratory at the end of the field day. Chain-of-custody records were completed in the field and accompanied the samples to the laboratory.

To minimize cross contamination, all downhole equipment was washed in a dilute solution of trisodium phosphate, rinsed in both fresh and distilled water and dried. Equipment was washed both prior to sampling and between samples.

Samples were delivered to Chemical Research Laboratory in Garden Grove, California at the end of the field day. Four soil samples were selected for chemical analysis of VOC's by EPA Method 8240, based on field vapor readings. Laboratory results and copies of chromatograms are contained in Appendix B. Chain-of-custody records are contained in Appendix B.

4.0 SUBSURFACE CONDITIONS ENCOUNTERED

Soils encountered in the five borings were classified as silty sands. Organic vapor readings from soil samples ranged from 0.8 parts per million (ppm) in boring B-2 at a depth of three feet to 620 ppm in boring B-4 at two feet. Soil conditions are summarized in Appendix A.

5.0 ANALYTICAL RESULTS

Review of analytical results indicate styrene in soil samples retrieved from borings B-3 and B-5 in concentrations of 9 and 10 mg/kg (ppm), respectively. Detectable levels of ethylbenzene were reported in all four samples analyzed at concentrations ranging from 47 ppm to 720 ppm. Tetrachloroethene was also reported in boring B-1 at a concentration of 4 ppm.

6.0 DISCUSSION

The source(s) of the ethylbenzene reported in soil samples is unknown. This compound is not presently used onsite. In telephone conversations with Mr. Michael Hiatt, Lead Chemist for Chemical Research Laboratory, it was conveyed that ethylbenzene could possibly be the result of chemical decomposition of styrene. The Merck Index, Tenth Edition indicates that ethylbenzene is used in the conversion of the styrene monomer and as a resin solvent. This suggests that its occurrence with styrene is probably not unusual.

The source of tetrachloroethene found in boring B-1 at the one-foot depth is also uncertain. As with ethylbenzene, tetrachloroethene is not currently used onsite, although it's historical use at the Torrance facility is unknown. Property to the north of the site is reported to have been associated with the handling of paint and paint thinners and detectable amounts of tetrachloroethene in the soil have been reported.

There do not appear to be designated cleanup levels for the specific compounds rated above in soil. Therefore, cleanup of the contaminated soil may become an issue of short versus long-term liability for Amoco Corporation. The following discussion concerns only the above referenced chemicals in soil at the site and not the issue of groundwater contamination, if present.

In the short term, contaminated soil might be remediated to an internally set level without any agency interaction. This alternative would expedite the proposed construction at the facility but poses the problem of possible future regulatory action or possible property transfer obstacles. Because the chemicals of concern are highly mobile in the subsurface, they do pose a potential threat to groundwater and thus may be perceived by the California Regional Water Quality Control Board (CRWQCB) as a designated waste under the California Code of Regulations, Title 23, Subchapter 15, Section 2522(a). A "designated waste" is defined in Title 23, Subchapter 15, Section 2522(a) (1) of the CCR as a "non-hazardous waste which consists of or contains pollutants which, under ambient environmental conditions at the

waste management unit, could be released at concentrations in excess of applicable water quality objectives, or which could cause degradation of waters of the State". Section 2522(b) states that designated waste shall be discharged only at Class I or Class II waste management units. Soil containing crude oil has been considered by the State at other sites to be a designated waste.

The second alternative involves informing the Los Angeles County Department of Health Services (LACDOHS) and would require considerably more time, and perhaps more short-term expense than the first alternative. LACDOHS requires a Workplan for Site Characterization be submitted, approved and implemented. When completed to the satisfaction of LACDOHS, a cleanup level may then be negotiated. Under this second alternative, remediation would probably neccesitate cleanup of all soils onsite which contain compounds in concentrations above the negotiated level, whereas, under the first alternative only those soils within and beneath the bermed areas might be remediated. In contrast to the first alternative, long-term liability may be reduced by soliciting agency interaction.

7.0 CONCLUSIONS

Based on the information presented above the following conclusions are made:

- Ethylbenzene, styrene and tetrachloroethene are present in soils around at the site in concentrations exceeding drinking water action levels;

- Soils containing the above compounds may be characterized as a designated waste under CCR, Title 23, Subchapter 15, Section 2522(a); and
- Mitigation of soils containing the above compounds may be accomplished with or without agency involvement.

8.0 LIMITATIONS

The discussion and recommendations presented in this report are based on:

- The five test borings drilled at this site;
- The observations of EEI personnel during test borings and other field activities;
- The results of laboratory tests performed by Enseco/CRL Laboratories; and
- Our current understanding of regulatory requirements.

It is possible that variations in the soil conditions could exist beyond the points explored in this assessment.

The services performed by EEI have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the Los Angeles County area. No other warranty, expressed or implied, is made.

APPENDIX A

SUMMARY OF SUBSURFACE CONDITIONS

SUMMARY OF SUBSURFACE CONDITIONS

Boring Number	Depth (feet)	Field Vapor Reading (ppm)	Soil Description
B-1	0-1	110	SILTY SAND: dark grey; very fine some silt; trace clay; slightly moist
	1-2	40	
	2-3	42	
	3-4	4.5	greenish brown; little silt
	4-5	4.2	
B-2	0-1	16	SILTY SAND: dark grey; very fine to fine; little silt; dry
	1-2	0.8	
	2-3	0.8	
B-3	0-1	300	SILTY SAND: reddish brown; very fi to fine; some silt; trace clay; slightly moist
	1-2	310	
	2-3	20	green to greenish grey; little silt
	3-4	18	
	4-5	11	
B-4	0-1	360	SILTY SAND: dark grey; very fine t fine; some silt; trace clay; slightly moist
	1-2	620	
	2-3	240	greenish grey; little silt; dry
	3-4	120	
	4-5	30	
B-5	0-1	400	SILTY SAND: dark grey; very fine t fine; some silt; trace clay; slightly moist
	1-2	200	
	2-3	40	greenish grey; little silt; dry
	3-4	36	
	4-5	20	

DRAFT

APPENDIX B

LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORM

Enseco

CRL Environmental - South Coast
7440 Lincoln Way • Garden Grove, CA 92641
(213) 598-0458 • (714) 898-6370 • (800) LAB-1-CRL
FAX: (714) 891-5917

November 2, 1988

ENGINEERING ENTERPRISES, INC.
21818 Wilmington Avenue, Suite 405
Long Beach, CA 90810
ATTN: Mr. Bill Halbert

ANALYSIS NO.: 830101-001/004
ANALYSES: EPA Method 8240
DATE SAMPLED: 10/26/88
DATE SAMPLE REC'D: 10/26/88
PROJECT: 512-345

Enclosed with this letter is the report on the chemical and physical analyses on the samples from ANALYSIS NO: 830101-001/004 shown above.

The samples were received by CRL in a chilled state, intact, and with the chain-of-custody record attached. Sample seals were intact.

Solid samples are reported on an "as received" basis.

Results were faxed on October 31, 1988 at 9:15 A.M.

Please note that ND( ) means not detected at the detection limit expressed within the parentheses.

REVIEWED

APPROVED

BPACC00872

The Report Cover Letter is an integral part of this report.
This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclu use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without authorization is prohibi

CRL Environmental - South Coast
7440 Lincoln Way • Garden Grove, CA 92641
(213) 598-0458 • (714) 898-6370 • (800) LAB-1-CRL
FAX: (714) 891-5917

LABORATORY REPORT

ENGINEERING ENTERPRISES, INC.
21818 Wilmington Avenue, Suite 405
Long Beach, CA 90810
ATTN: Mr. Bill Halbert

Sample ID: S-01-01

ANALYSIS NO.: 830101-001
ANALYSES: EPA Method 8240
DATE SAMPLED: 10/26/88
DATE SAMPLE REC'D: 10/26/88
DATE ANALYZED: 10/28/88
SAMPLE TYPE: Solid
PROJECT: 512-345

EPA METHODS 624/8240 VOLATILE ORGANICS

	(ug/kg)		(ug/kg)
Chloromethane	ND(2,000.)	1,2-Dichloropropane	ND(1,000.)
Bromomethane	ND(2,000.)	Trans-1,3-Dichloropropene	ND(1,000.)
Vinyl Chloride	ND(2,000.)	Trichloroethene	ND(1,000.)
Chloroethane	ND(2,000.)	Dibromochloromethane	ND(1,000.)
Methylene Chloride	ND(1,000.)	1,1,2-Trichloroethane	ND(1,000.)
Acetone	ND(2,000.)	Benzene	ND(1,000.)
Carbon Disulfide	ND(1,000.)	cis-1,3-Dichloropropene	ND(1,000.)
1,1-Dichloroethene	ND(1,000.)	2-Chloroethylvinyl ether	ND(2,000.)
1,1-Dichloroethane	ND(1,000.)	Bromoform	ND(1,000.)
Trans-1,2-Dichloroethene	ND(1,000.)	4-Methyl-2-Pentanone	ND(2,000.)
Chloroform	ND(1,000.)	2-Hexanone	ND(2,000.)
1,2-Dichloroethane	ND(1,000.)	Tetrachloroethene	4,000.
2-Butanone	ND(2,000.)	1,1,2,2-Tetrachloroethane	ND(1,000.)
1,1,1-Trichloroethane	ND(1,000.)	Toluene	ND(1,000.)
Carbon Tetrachloride	ND(1,000.)	Chlorobenzene	ND(1,000.)
Vinyl Acetate	ND(2,000.)	Ethylbenzene	50,000.
Bromodichloromethane	ND(1,000.)	Styrene	ND(1,000.)
		Total Xylenes	ND(1,000.)

BPACC00873

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LABORATORY REPORT

ENGINEERING ENTERPRISES, INC.
21818 Wilmington Avenue, Suite 405
Long Beach, CA 90810
ATTN: Mr. Bill Halbert

Sample ID: S-03-05

ANALYSIS NO.: 830101-002
ANALYSES: EPA Method 8240
DATE SAMPLED: 10/26/88
DATE SAMPLE REC'D: 10/26/88
DATE ANALYZED: 10/29/88
SAMPLE TYPE: Solid
PROJECT: 512-345

EPA METHODS 624/8240 VOLATILE ORGANICS

	(ug/kg)		(ug/kg)
Chloromethane	ND(2,000.)	1,2-Dichloropropane	ND(1,000.)
Bromomethane	ND(2,000.)	Trans-1,3-Dichloropropene	ND(1,000.)
Vinyl Chloride	ND(2,000.)	Trichloroethene	ND(1,000.)
Chloroethane	ND(2,000.)	Dibromochloromethane	ND(1,000.)
Methylene Chloride	ND(1,000.)	1,1,2-Trichloroethane	ND(1,000.)
Acetone	ND(2,000.)	Benzene	ND(1,000.)
Carbon Disulfide	ND(1,000.)	cis-1,3-Dichloropropene	ND(1,000.)
1,1-Dichloroethene	ND(1,000.)	2-Chloroethylvinyl ether	ND(2,000.)
1,1-Dichloroethane	ND(1,000.)	Bromoform	ND(1,000.)
Trans-1,2-Dichloroethene	ND(1,000.)	4-Methyl-2-Pentanone	ND(2,000.)
Chloroform	ND(1,000.)	2-Hexanone	ND(2,000.)
1,2-Dichloroethane	ND(1,000.)	Tetrachloroethene	ND(1,000.)
2-Butanone	ND(2,000.)	1,1,2,2-Tetrachloroethane	ND(1,000.)
1,1,1-Trichloroethane	ND(1,000.)	Toluene	ND(1,000.)
Carbon Tetrachloride	ND(1,000.)	Chlorobenzene	ND(1,000.)
Vinyl Acetate	ND(2,000.)	Ethylbenzene	47,000.
Bromodichloromethane	ND(1,000.)	Styrene	9,000.
		Total Xylenes	ND(1,000.)

BPACC00874

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Enseco

CRL Environmental - South Coast
7440 Lincoln Way • Garden Grove, CA 92641
(213) 598-0458 • (714) 898-6370 • (800) LAB-1-CRL
FAX: (714) 891-5917

LABORATORY REPORT

ENGINEERING ENTERPRISES, INC.
21818 Wilmington Avenue, Suite 405
Long Beach, CA 90810
ATTN: Mr. Bill Halbert

ANALYSIS NO.: 830101-001/004
ANALYSES: EPA Method 8240
DATE SAMPLED: 10/26/88
DATE SAMPLE REC'D: 10/26/88
SAMPLE TYPE: Solid
PROJECT: 512-345

QA/QC SUMMARY

Date	Parameter(method)	Average Spike Recovery%	Acceptable Range%	Relative Percent Difference	Acceptabl Range%
10/28-29/88	1,1-Dichloroethene (EPA 8240)	113	59-172	1	22
10/28-29/88	Chlorobenzene (EPA 8240)	91	59-139	*25	21

*RPD value due to matrix effect. Check standard verifies acceptable syst performance.

BPACC00875

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ENGINEERING
ENTERPRISES, INC.

WATER RESOURCES SPECIALISTS

21818 S. Wilmington Avenue, Suite 405 Long Beach, CA 90810 213/518-4597

TRANSMITTAL SHEET

To: Amoco Corporation
7201 East 38th Street
Space 7253
P.O. Box 3385
Tulsa, Oklahoma 74102

Date: November 15, 1988

Your Order No.:

Our Job No.: 512-345

Attention: Mr. Robert Hockman
Groundwater Management Section

Subject: Report of Shallow Soil Sampling
Amoco Chemical Facility
1225 196th Street
Torrance, California

We are sending you via: Federal Express the following: report

~~This is~~ These are for: your review and files

BPACC00876

No. of copies submitted: 3

Copies to:

Engineering Enterprises, Inc.

By: W E Halbert
William E. Halbert
Project Hydrogeologist

REPORT OF SHALLOW
SOIL SAMPLING
AMOCO CHEMICAL FACILITY
1225 196TH STREET
TORRANCE, CALIFORNIA

BPACC00877

ENGINEERING
ENTERPRISES, INC.

WATER RESOURCES SPECIALISTS

21818 S. Wilmington Avenue, Suite 405 Long Beach, CA 90810 213/518-4597

November 10, 1988

Amoco Corporation
7201 East 38th Street
Space 7253
P.O. Box 3385
Tulsa, Oklahoma 74102

Attention: Mr. Robert Hockman
Groundwater Management Section

Subject: Report of Shallow Soil Sampling
Amoco Chemical Facility
1225 196th Street
Torrance, California
Project No. 512-345

Dear Mr. Hockman:

Engineering Enterprises, Inc. (EEI) is pleased to provide you with this report outlining the results of our shallow soil sampling assessment at your chemical facility situated in Torrance, California.

If you have any questions regarding this report or require additional information, please do not hesitate to contact us. EEI appreciates the opportunity to be of service to Amoco Corporation.

Sincerely,

Stephen M. Testa
Vice President
West Coast Operations

SMT/mag

BPACC00878

REPORT OF SHALLOW SOIL SAMPLING

AMOCO CHEMICAL FACILITY

1225 196TH STREET

TORRANCE, CALIFORNIA

Submitted by:

Engineering Enterprises, Inc.
21818 S. Wilmington Avenue
Suite 405
Long Beach, California 90810

REGISTERED GEOLOGIST
STEPHEN M. TESTA
3806
STATE OF CALIFORNIA

William E. Halbert
Project Hydrogeologist

Stephen M. Testa
Vice President
West Coast Operations

BPACC00879

EEI ENGINEERING ENTERPRISES, INC.

REPORT OF SHALLOW SOIL SAMPLING
AMOCO CHEMICAL FACILITY
1225 196TH STREET
TORRANCE, CALIFORNIA

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Figure	Description
1	Site Location Map
2	Boring Locations

LIST OF APPENDICES

Appendix	Description
A	Summary of Subsurface Conditions
B	Laboratory Reports and Chain-of-Custody Form

BPACC00880

ENGINEERING ENTERPRISES, INC.

1.0 INTRODUCTION

Engineering Enterprises, Inc. (EEI) is pleased to provide this report outlining the results of our shallow soil sampling assessment at the Amoco Chemical facility situated in Torrance, California (Figure 1).

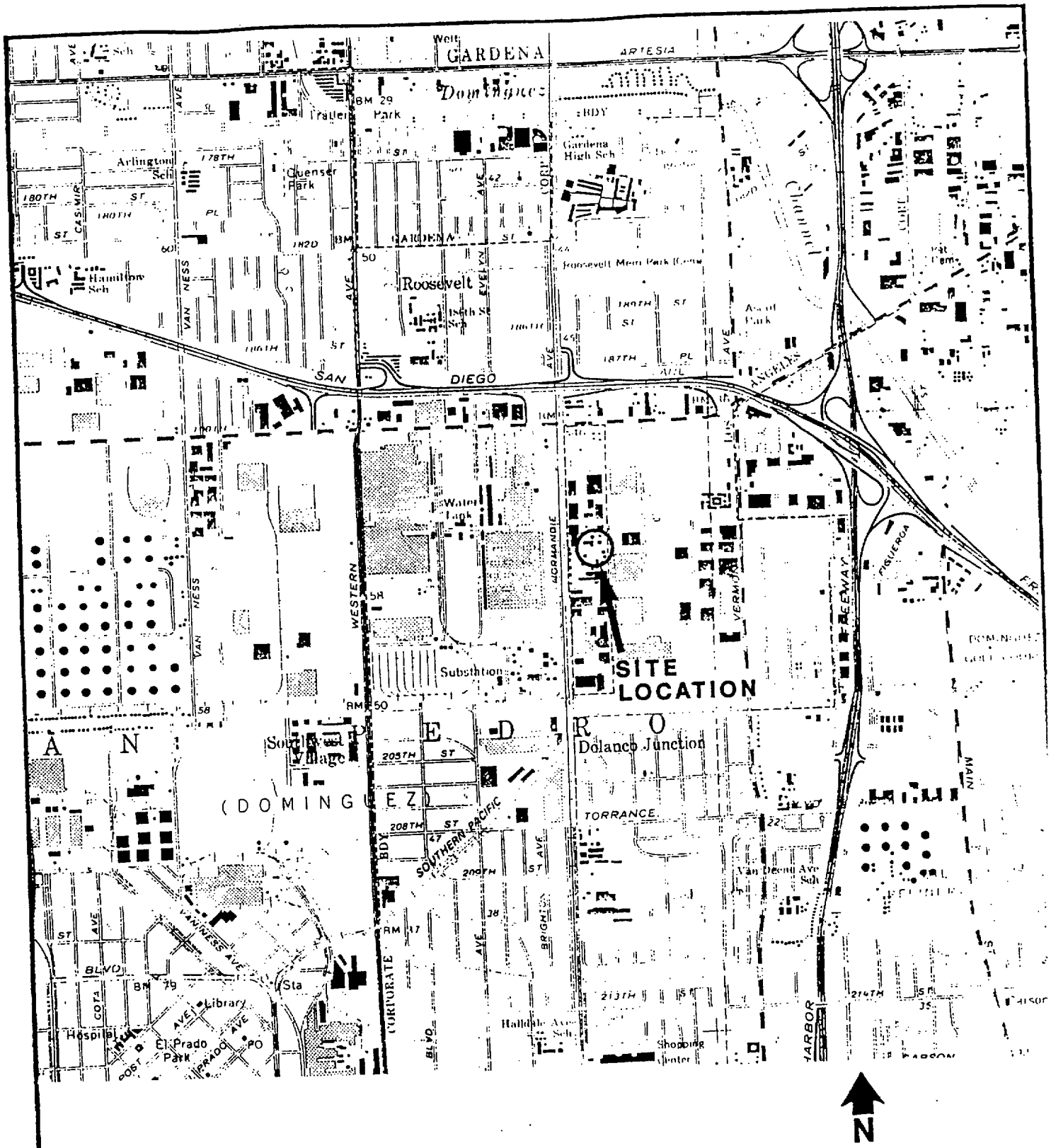
2.0 PURPOSE AND SCOPE

The purpose of this assessment was to assess concentrations of volatile organic compounds (VOC), specifically styrene, in shallow soils within bermed areas surrounding several above ground storage tanks at the facility. In order to accomplish this objective, the following scope of work was performed:

- Drilling and sampling of five shallow soil borings;
- Chemical analysis of selected soil samples; and
- Preparation of this report.

3.0 FIELD METHODOLOGY

Shallow soil sampling was conducted on October 26, 1988 by an EEI geologist. Five soil borings were drilled with a hand auger in locations shown in Figure 2. The auger was advanced to the beginning of the designated sample interval, whereupon it was removed from the boring. Soils from immediately above each designated sample interval were screened for organic vapors using a Century Systems organic vapor analyzer, Model 128 GC. Vapor readings were obtained by crumbling soil into a clean laboratory jar and measuring VOC's in the headspace. A manual drive sampler

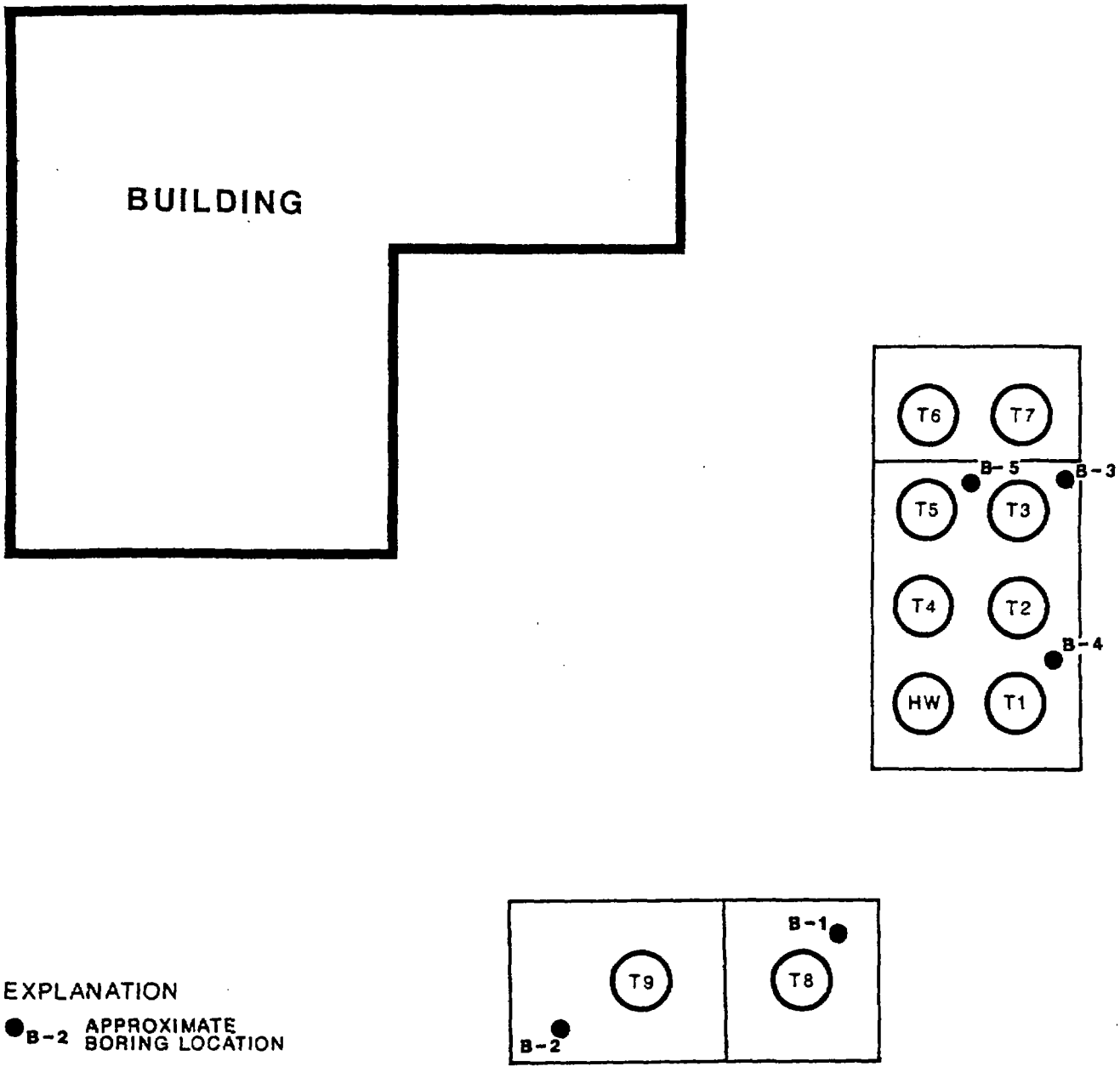


BPACC00882

SITE LOCATION MAP
AMCO CHEMICAL FACILITY
TORRANCE, CALIFORNIA

EEI ENGINEERING ENTERPRISES, INC.

PROJECT NO. 512-345 FIGURE



EXPLANATION

● B-2 APPROXIMATE BORING LOCATION

(T9) ABOVE GROUND STORAGE TANK

BPACC00883

NOT TO SCALE

APPROXIMATE BORING LOCATIONS
AMOCO CHEMICAL FACILITY
TORRANCE, CALIFORNIA

EEI ENGINEERING ENTERPRISES, INC.

was then used to collect soil in a brass sample sleeve from the sampling interval. Description of subsurface conditions encountered are contained in Appendix A.

Soil samples were collected at one-foot intervals through the length of the borings. Following retrieval of the sample sleeve from the boring, the ends of the sleeve were covered with Teflon sheeting and plastic caps and sealed with PVC tape. A sample label was affixed to each sample which contained the following information: job number, boring number, sample number, collectors name and date of collection. Samples were then placed in an ice chest containing blue ice for transport to the analytical laboratory at the end of the field day. Chain-of-custody records were completed in the field and accompanied the samples to the laboratory.

To minimize cross contamination, all downhole equipment was washed in a dilute solution of trisodium phosphate, rinsed in both fresh and distilled water and dried. Equipment was washed both prior to sampling and between samples.

Samples were delivered to Chemical Research Laboratory in Garden Grove, California at the end of the field day. Four soil samples were selected for chemical analysis of VOC's by EPA Method 8240, based on field vapor readings. Laboratory results and copies of chromatograms are contained in Appendix B. Chain-of-custody records are contained in Appendix B.

4.0 SUBSURFACE CONDITIONS ENCOUNTERED

Soils encountered in the five borings were classified as silty sands. Organic vapor readings from soil samples ranged from 0.8 parts per million (ppm) in boring B-2 at a depth of three feet to 620 ppm in boring B-4 at two feet. Soil conditions are summarized in Appendix A.

5.0 ANALYTICAL RESULTS

Review of analytical results indicate styrene in soil samples retrieved from borings B-3 and B-5 in concentrations of 9 and 10 mg/kg (ppm), respectively. Detectable levels of ethylbenzene were reported in all four samples analyzed at concentrations ranging from 47 ppm to 720 ppm. Tetrachloroethene was also reported in boring B-1 at a concentration of 4 ppm.

6.0 DISCUSSION

The source(s) of the ethylbenzene reported in soil samples is unknown. This compound is not presently used onsite. In telephone conversations with Mr. Michael Hiatt, Lead Chemist for Chemical Research Laboratory, it was conveyed that ethylbenzene could possibly be the result of chemical decomposition of styrene. The Merck Index, Tenth Edition indicates that ethylbenzene is used in the conversion of the styrene monomer and as a resin solvent. This suggests that its occurrence with styrene is probably not unusual.

BPACC00885

The source of tetrachloroethene found in boring B-1 at the one-foot depth is also uncertain. As with ethylbenzene, tetrachloroethene is not currently used onsite, although it's historical use at the Torrance facility is unknown. Property to the north of the site is reported to have been associated with the handling of paint and paint thinners and detectable amounts of tetrachloroethene in the soil have been reported.

There do not appear to be designated cleanup levels for the specific compounds rated above in soil. Therefore, cleanup of the contaminated soil may become an issue of short versus long-term liability for Amoco Corporation. The following discussion concerns only the above referenced chemicals in soil at the site and not the issue of groundwater contamination, if present.

In the short term, contaminated soil might be remediated to an internally set level without any agency interaction. This alternative would expedite the proposed construction at the facility but poses the problem of possible future regulatory action or possible property transfer obstacles. Because the chemicals of concern are mobile in the subsurface, they do pose a potential threat to groundwater and thus may be perceived by the California Regional Water Quality Control Board (CRWQCB) as a designated waste under the California Code of Regulations, Title 23, Subchapter 15, Section 2522(a). A "designated waste" is defined in Title 23, Subchapter 15, Section 2522(a) (1) of the CCR as a "non-hazardous waste which consists of or contains pollutants which, under ambient environmental conditions at the

waste management unit, could be released at concentrations in excess of applicable water quality objectives, or which could cause degradation of waters of the State". Section 2522(b) states that designated waste shall be discharged only at Class I or Class II waste management units.

The second alternative involves informing the Los Angeles County Department of Health Services (LACDOHS) and would require considerably more time, and perhaps more short-term expense than the first alternative. LACDOHS requires a Workplan for Site Characterization be submitted, approved and implemented. When completed to the satisfaction of LACDOHS, a cleanup level may then be negotiated. Under this second alternative, remediation would probably neccesitate cleanup of all soils onsite which contain compounds in concentrations above the negotiated level, whereas, under the first alternative only those soils within and beneath the bermed areas might be remediated. In contrast to the first alternative, long-term liability may be reduced by soliciting agency interaction.

7.0 CONCLUSIONS

Based on the information presented above, the following conclusions are made:

- Ethylbenzene, styrene and tetrachloroethene are present in soils at the site;
- Soils containing the above compounds may be characterized as a designated waste under CCR, Title 23, Subchapter 15, Section 2522(a); and
- Mitigation of soils containing the above compounds may be accomplished with or without agency involvement.

8.0 LIMITATIONS

The discussion and recommendations presented in this report are based on:

- The five test borings drilled at this site;
- The observations of EEI personnel during test borings and other field activities;
- The results of laboratory tests performed by Enseco/CRL Laboratories; and
- Our current understanding of regulatory requirements.

It is possible that variations in the soil conditions could exist beyond the points explored in this assessment.

The services performed by EEI have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the Los Angeles County area. No other warranty, expressed or implied, is made.

APPENDIX A

SUMMARY OF SUBSURFACE CONDITIONS

SUMMARY OF SUBSURFACE CONDITIONS

Boring Number	Depth (feet)	Field Vapor Reading (ppm)	Soil Description
B-1	0-1	110	SILTY SAND: dark grey; very fine some silt; trace clay; slightly moist
	1-2	40	
	2-3	42	
	3-4	4.5	greenish brown; little silt
	4-5	4.2	
B-2	0-1	16	SILTY SAND: dark grey; very fine to fine; little silt; dry
	1-2	0.8	
	2-3	0.8	
B-3	0-1	300	SILTY SAND: reddish brown; very fine to fine; some silt; trace clay; slightly moist
	1-2	310	
	2-3	20	green to greenish grey; little silt
	3-4	18	
	4-5	11	
B-4	0-1	360	SILTY SAND: dark grey; very fine to fine; some silt; trace clay; slightly moist
	1-2	620	
	2-3	240	greenish grey; little silt; dry
	3-4	120	
	4-5	30	
B-5	0-1	400	SILTY SAND: dark grey; very fine to fine; some silt; trace clay; slightly moist
	1-2	200	
	2-3	40	greenish grey; little silt; dry
	3-4	36	
	4-5	20	

BPACC00890

APPENDIX B

LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORM

Enseco

CRL Environmental - South Coast
7440 Lincoln Way • Garden Grove, CA 92641
(213) 598-0458 • (714) 898-6370 • (800) LAB-1-CRL
FAX: (714) 891-5917

November 2, 1988

ENGINEERING ENTERPRISES, INC.
21818 Wilmington Avenue, Suite 405
Long Beach, CA 90810
ATTN: Mr. Bill Halbert

ANALYSIS NO.: 830101-001/004
ANALYSES: EPA Method 8240
DATE SAMPLED: 10/26/88
DATE SAMPLE REC'D: 10/26/88
PROJECT: 512-345

Enclosed with this letter is the report on the chemical and physical analyses on the samples from ANALYSIS NO: 830101-001/004 shown above.

The samples were received by CRL in a chilled state, intact, and with the chain-of-custody record attached. Sample seals were intact.

Solid samples are reported on an "as received" basis.

Results were faxed on October 31, 1988 at 9:15 A.M.

Please note that ND( ) means not detected at the detection limit expressed within the parentheses.

Tim

REVIEWED

Greg Kimble

APPROVED

BPACC00892

The Report Cover Letter is an integral part of this report.
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Enseco

CRL Environmental - South Coast
7440 Lincoln Way • Garden Grove, CA 92641
(213) 598-0458 • (714) 898-6370 • (800) LAB-1-CRL
FAX: (714) 891-5917

LABORATORY REPORT

ENGINEERING ENTERPRISES, INC.
21818 Wilmington Avenue, Suite 405
Long Beach, CA 90810
ATTN: Mr. Bill Halbert

Sample ID: S-01-01

ANALYSIS NO.: 830101-001
ANALYSES: EPA Method 8240
DATE SAMPLED: 10/26/88
DATE SAMPLE REC'D: 10/26/88
DATE ANALYZED: 10/28/88
SAMPLE TYPE: Solid
PROJECT: 512-345

EPA METHODS 624/8240 VOLATILE ORGANICS

	(ug/kg)		(ug/kg)
Chloromethane	ND(2,000.)	1,2-Dichloropropane	ND(1,000.)
Bromomethane	ND(2,000.)	Trans-1,3-Dichloropropene	ND(1,000.)
Vinyl Chloride	ND(2,000.)	Trichloroethene	ND(1,000.)
Chloroethane	ND(2,000.)	Dibromochloromethane	ND(1,000.)
Methylene Chloride	ND(1,000.)	1,1,2-Trichloroethane	ND(1,000.)
Acetone	ND(2,000.)	Benzene	ND(1,000.)
Carbon Disulfide	ND(1,000.)	cis-1,3-Dichloropropene	ND(1,000.)
1,1-Dichloroethene	ND(1,000.)	2-Chloroethylvinyl ether	ND(2,000.)
1,1-Dichloroethane	ND(1,000.)	Bromoform	ND(1,000.)
Trans-1,2-Dichloroethene	ND(1,000.)	4-Methyl-2-Pentanone	ND(2,000.)
Chloroform	ND(1,000.)	2-Hexanone	ND(2,000.)
1,2-Dichloroethane	ND(1,000.)	Tetrachloroethene	4,000.
2-Butanone	ND(2,000.)	1,1,2,2-Tetrachloroethane	ND(1,000.)
1,1,1-Trichloroethane	ND(1,000.)	Toluene	ND(1,000.)
Carbon Tetrachloride	ND(1,000.)	Chlorobenzene	ND(1,000.)
Vinyl Acetate	ND(2,000.)	Ethylbenzene	50,000.
Bromodichloromethane	ND(1,000.)	Styrene	ND(1,000.)
		Total Xylenes	ND(1,000.)

BPACC00893

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FAX: (714) 891-5917

LABORATORY REPORT

ENGINEERING ENTERPRISES, INC.
21818 Wilmington Avenue, Suite 405
Long Beach, CA 90810
ATTN: Mr. Bill Halbert

Sample ID: S-03-05

ANALYSIS NO.: 830101-002
ANALYSES: EPA Method 8240
DATE SAMPLED: 10/26/88
DATE SAMPLE REC'D: 10/26/88
DATE ANALYZED: 10/29/88
SAMPLE TYPE: Solid
PROJECT: 512-345

EPA METHODS 624/8240 VOLATILE ORGANICS

	(ug/kg)		(ug/kg)
Chloromethane	ND(2,000.)	1,2-Dichloropropane	ND(1,000.)
Bromomethane	ND(2,000.)	Trans-1,3-Dichloropropene	ND(1,000.)
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Chloroethane	ND(2,000.)	Dibromochloromethane	ND(1,000.)
Methylene Chloride	ND(1,000.)	1,1,2-Trichloroethane	ND(1,000.)
Acetone	ND(2,000.)	Benzene	ND(1,000.)
Carbon Disulfide	ND(1,000.)	cis-1,3-Dichloropropene	ND(1,000.)
1,1-Dichloroethene	ND(1,000.)	2-Chloroethylvinyl ether	ND(2,000.)
1,1-Dichloroethane	ND(1,000.)	Bromoform	ND(1,000.)
Trans-1,2-Dichloroethene	ND(1,000.)	4-Methyl-2-Pentanone	ND(2,000.)
Chloroform	ND(1,000.)	2-Hexanone	ND(2,000.)
1,2-Dichloroethane	ND(1,000.)	Tetrachloroethene	ND(1,000.)
2-Butanone	ND(2,000.)	1,1,2,2-Tetrachloroethane	ND(1,000.)
1,1,1-Trichloroethane	ND(1,000.)	Toluene	ND(1,000.)
Carbon Tetrachloride	ND(1,000.)	Chlorobenzene	ND(1,000.)
Vinyl Acetate	ND(2,000.)	Ethylbenzene	47,000.
Bromodichloromethane	ND(1,000.)	Styrene	9,000.
		Total Xylenes	ND(1,000.)

BPACC00894

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Enseco

CRL Environmental - South Coast
7440 Lincoln Way • Garden Grove, CA 92641
(213) 598-0458 • (714) 898-6370 • (800) LAB-1-CRL
FAX: (714) 891-5917

LABORATORY REPORT

ENGINEERING ENTERPRISES, INC.
21818 Wilmington Avenue, Suite 405
Long Beach, CA 90810
ATTN: Mr. Bill Halbert

Sample ID: S-04-02

ANALYSIS NO.: 830101-003
ANALYSES: EPA Method 8240
DATE SAMPLED: 10/26/88
DATE SAMPLE REC'D: 10/26/88
DATE ANALYZED: 10/28/88
SAMPLE TYPE: Solid
PROJECT: 512-345

EPA METHODS 624/8240 VOLATILE ORGANICS

	(ug/kg)		(ug/kg)
Chloromethane	ND(5,000.)	1,2-Dichloropropane	ND(2,000.)
Bromomethane	ND(5,000.)	Trans-1,3-Dichloropropene	ND(2,000.)
Vinyl Chloride	ND(5,000.)	Trichloroethene	ND(2,000.)
Chloroethane	ND(5,000.)	Dibromochloromethane	ND(2,000.)
Methylene Chloride	ND(2,000.)	1,1,2-Trichloroethane	ND(2,000.)
Acetone	ND(5,000.)	Benzene	ND(2,000.)
Carbon Disulfide	ND(2,000.)	cis-1,3-Dichloropropene	ND(2,000.)
1,1-Dichloroethene	ND(2,000.)	2-Chloroethylvinyl ether	ND(5,000.)
1,1-Dichloroethane	ND(2,000.)	Bromoform	ND(2,000.)
Trans-1,2-Dichloroethene	ND(2,000.)	4-Methyl-2-Pentanone	ND(5,000.)
Chloroform	ND(2,000.)	2-Hexanone	ND(5,000.)
1,2-Dichloroethane	ND(2,000.)	Tetrachloroethene	ND(2,000.)
2-Butanone	ND(5,000.)	1,1,2,2-Tetrachloroethane	ND(2,000.)
1,1,1-Trichloroethane	ND(2,000.)	Toluene	ND(2,000.)
Carbon Tetrachloride	ND(2,000.)	Chlorobenzene	ND(2,000.)
Vinyl Acetate	ND(5,000.)	Ethylbenzene	140,000.
Bromodichloromethane	ND(2,000.)	Styrene	ND(2,000.)
		Total Xylenes	ND(2,000.)

BPACC00895

The Report Cover Letter is an integral part of this report.
This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without authorization is prohibited.

Enseco

CRL Environmental - South Coast
7440 Lincoln Way • Garden Grove, CA 92641
(213) 598-0458 • (714) 898-6370 • (800) LAB-1-CRL
FAX: (714) 891-5917

LABORATORY REPORT

ENGINEERING ENTERPRISES, INC.
21818 Wilmington Avenue, Suite 405
Long Beach, CA 90810
ATTN: Mr. Bill Halbert

Sample ID: S-05-01

ANALYSIS NO.: 830101-004
ANALYSES: EPA Method 8240
DATE SAMPLED: 10/26/88
DATE SAMPLE REC'D: 10/26/88
DATE ANALYZED: 10/28/88
SAMPLE TYPE: Solid
PROJECT: 512-345

EPA METHODS 624/8240 VOLATILE ORGANICS

	(mg/kg)		(mg/kg)
Chloromethane	ND(20.)	1,2-Dichloropropane	ND(10.)
Bromomethane	ND(20.)	Trans-1,3-Dichloropropene	ND(10.)
Vinyl Chloride	ND(20.)	Trichloroethene	ND(10.)
Chloroethane	ND(20.)	Dibromochloromethane	ND(10.)
Methylene Chloride	ND(10.)	1,1,2-Trichloroethane	ND(10.)
Acetone	ND(20.)	Benzene	ND(10.)
Carbon Disulfide	ND(10.)	cis-1,3-Dichloropropene	ND(10.)
1,1-Dichloroethene	ND(10.)	2-Chloroethylvinyl ether	ND(20.)
1,1-Dichloroethane	ND(10.)	Bromoform	ND(10.)
Trans-1,2-Dichloroethene	ND(10.)	4-Methyl-2-Pentanone	ND(20.)
Chloroform	ND(10.)	2-Hexanone	ND(20.)
1,2-Dichloroethane	ND(10.)	Tetrachloroethene	ND(10.)
2-Butanone	ND(20.)	1,1,2,2-Tetrachloroethane	ND(10.)
1,1,1-Trichloroethane	ND(10.)	Toluene	ND(10.)
Carbon Tetrachloride	ND(10.)	Chlorobenzene	ND(10.)
Vinyl Acetate	ND(20.)	Ethylbenzene	720.
Bromodichloromethane	ND(10.)	Styrene	100.
		Total Xylenes	ND(10.)

BPACC00896

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7440 Lincoln Way • Garden Grove, CA 92641
(213) 598-0458 • (714) 898-6370 • (800) LAB-1-CRL
FAX: (714) 891-5917

LABORATORY REPORT

ENGINEERING ENTERPRISES, INC.
21818 Wilmington Avenue, Suite 405
Long Beach, CA 90810
ATTN: Mr. Bill Halbert

ANALYSIS NO.: 830101-001/004
ANALYSES: EPA Method 8240
DATE SAMPLED: 10/26/88
DATE SAMPLE REC'D: 10/26/88
SAMPLE TYPE: Solid
PROJECT: 512-345

QA/QC SUMMARY

Date	Parameter(method)	Average Spike Recovery%	Acceptable Range%	Relative Percent Difference	Acceptable Range%
10/28-29/88	1,1-Dichloroethene (EPA 8240)	113	59-172	1	22
10/28-29/88	Chlorobenzene (EPA 8240)	91	59-139	*25	21

*RPD value due to matrix effect. Check standard verifies acceptable system performance.

BPACC00897

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This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive

ENGINEERING ENTERPRISES, INC.
21818 WILMINGTON AVE., SUITE 405
LONG BEACH, CA 90810 (213)518-4597

CHAIN OF CUSTODY RECORD

LABORATORY: Chemical Research Laboratory
7440 Lincoln Way
Garden Grove, Ca.

PROJECT NO. 512-345

PURCHASE ORDER NO.

SAMPLERS:(signature) Jay Boughter

Phone No.

Phone No:

Remarks:

ANALYSES REQUESTED

SAMPLE NO.	DATE	TIME	Number of Containers	REMARKS
S-01-01	10/26/88		1	*8240 ~~Hold for verbal~~
S-01-02	↓		1	~~analysis request~~
S-01-03			1	
S-02-01			1	
~~[illegible]~~				
S-03-01			1	
S-03-02			1	
S-03-05			1	*8240
S-04-01			1	
S-04-02			1	*8240
S-04-03			1	
S-04-05			1	
S-05-01			1	*8240
S-05-03	↓		1	

* 10/27/88 - 8:20AM - ANALYTICAL REQUEST FOR 8240 ON NOTED SAMPLES PLACED BY BOB HOFFMAN OF AMOCO CHEM. CO. - [illegible]
24-48 HR TAT

PINK COPY: SAMPLER RETAINS YELLOW COPY: LABORATORY COPY

WHITE COPY: LABORATORY SIGNS AND RETURNS WITH ANALYTICAL RESULTS

BPACC00898

TOTAL NUMBER OF CONTAINERS 13

Relinquished by:(signature)	Received by:(signature)	Date/Time
Jay Boughter		10/26/88 4:30p
Relinquished by:(signature)	Received by:(signature)	Date/Time
Relinquished by:(signature)	Received by:(signature)	Date/Time
Relinquished by:(signature)	Received for laboratory by:(signature)	Date/Time

ENVIRONMENTAL CONSERVATION (CHEMICALS)

SEP 12 '89

	NOTE		NOTE
RCV		CJW	
JSS		DMH	
DBN		EEW	
CAO			
FILE:			

ENSR

Formerly ERT

September 11, 1989
File No: 0350-004

Mr. John M. Verrier
Environmental Specialist
Amoco Chemical Company
Highway I-55 and Route 6
Joliet, Illinois 60434

ENSR Consulting
and Engineering

19782 MacArthur Boulevard
Suite 365
Irvine, CA 92715
(714) 476-0321

RE: **Transmission of Modifications to the Environmental Assessment Sampling and Analysis Report for the Amoco Chemical Company Polystyrene Facility, Torrance, California**

Dear Mr. Verrier:

ENSR Consulting and Engineering is pleased to submit the text modifications to the Environmental Assessment Sampling and Analysis Report (SAR) for the subsurface soil investigation at the aforementioned facility. We have also corrected the Chain-of-Custody forms per Ms. Westfall's request. These will appear in the final version.

As requested, we have also included the following:

- A proposal and cost estimate to perform the Soil Vapor Extraction Test which we recommended in our discussions.

- Our interpretation and recommendations for complying with applicable environmental regulations. (It should be noted that ENSR does not provide legal services, and we therefore recommend that AMOCO seek legal consul before deciding how best to address their legal responsibilities regarding this issue.)

I will contact you next week to discuss the modifications to the SAR, our VES Testing proposal, and our recommendations. ENSR is pleased to provide environmental services to Amoco, and we look forward to continuing our work with you on this project.

Sincerely,
ENSR CONSULTING AND ENGINEERING

Richard O. Richter

Richard O. Richter, Ph.D., P.E.
Manager, Engineering & Geology

cc: William T. Kerr, Plant Superintendent
Gene Schmidt, Director of Ground Water Management
Beth Westfall, Environmental Programs Coordinator

0350-005\LET05.ROR

ENSR

REPORT MODIFICATIONS

ENVIRONMENTAL ASSESSMENT

SAMPLING AND ANALYSIS REPORT

FOR

AMOCO CHEMICAL COMPANY

POLYSTYRENE FACILITY

TORRANCE, CALIFORNIA

ENSR Consulting and Engineering

September, 1989

Document No. 0350-004.5

BPACC00901

EXECUTIVE SUMMARY

This Environmental Assessment Sampling and Analysis Report was prepared by ENSR Consulting and Engineering for Amoco Chemical Company. The purpose of this investigation was to characterize the nature and extent of volatile organic compounds (VOCs) in soils in Tank Area 1 and Tank Area 2 at the Amoco polystyrene facility at 1225 West 196th Street, Torrance, California.

Between June 28 through June 30, 1989 ENSR personnel conducted a field investigation. Fourteen soil borings were drilled, ranging in depths from 16.5 to 21.5 feet in the two tank areas. Two samples from each boring were analyzed for VOCs using EPA Method 8240.

The test areas are underlain by very fine-textured sandy materials with varying proportions of silt and clay. Uppermost free groundwater occurs at a depth of about 70 feet below ground surface and was not encountered during this study.

Field screening of soil samples revealed the presence of VOC vapors in varying concentrations at all fourteen soil boring locations. This finding suggests that site soils may be amenable to vapor extraction remediation.

Laboratory tests of soil samples indicate detectable concentrations of various combinations of styrene, ethylbenzene, toluene, trichloroethene (TCE), and perchloroethene (PCE) at nine boring locations. The highest concentrations of VOCs were detected in Tank Area 1, containing up to 330,000 ppb of sytrene, 65,000 ppb of ethylbenzene, 1,100 ppb of toluene, 46,000 ppb of TCE, and 2,400 ppb of PCE. In general, soil contamination is localized laterally and diminishes with depth. The bottom of the soil contamination was determined to be less than 20 feet, except at Boring B-13 at Tank Area 2 and Boring B-9 at Tank Area 1, where the vertical extents of contamination were not determined.

BPACC00902

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FIGURES

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FIGURE 3	TANK AREA 1 - TEST BORING LOCATIONS
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APPENDIX A	BORING LOGS
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APPENDIX C	LABORATORY REPORTS
APPENDIX D	AMBIENT TEMPERATURE HEADSPACE METHODOLOGY
APPENDIX E	AMBIENT TEMPERATURE HEADSPACE CHROMATOGRAMS

BPACC00904

1. INTRODUCTION

1.1 Purpose

Site assessment activities were performed for the purpose of characterizing soil contamination revealed during a prior environmental testing program at the Amoco Chemical Company polystyrene facility in Torrance, California. Specifically, the current investigation focused on delineating the nature and extent of contamination by styrene, ethylbenzene, perchloroethene, and other volatile organic compounds (VOCs) in shallow soils (surface to 20 feet below grade) in two above-ground storage tank areas.

1.2 Scope of Work

This investigation was conducted by ENSR Consulting and Engineering in June and July of 1989. Field work included drilling and geologic logging of fourteen (14) soil test borings to approximately 20 foot depths, collection of soil samples at 5-foot depth intervals in each boring, field testing for VOC vapors in the soils, selection of samples for laboratory analysis, and documentation and shipment of samples. Laboratory activities involved chemical analysis of selected soil samples for VOCs. Office work involved analysis and interpretation of field and laboratory results and the preparation of this report. All activities were performed in accordance with a project-specific sampling and analysis plan (ref. 1).

This investigation is limited to shallow soils (upper 20 feet) within the containment walls of the two on-site storage tank areas, and it is concerned exclusively with soil contamination by VOCs.

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2. BACKGROUND

2.1 Site Description

Amoco Chemical Company operates a polystyrene manufacturing facility located at 1225 West 196th Street in Torrance, California (Figure 1). The plant is surrounded by other industrial facilities, including a metal finishing shop (west), an equipment storage yard (north) that historically had been used as a paint manufacturing facility, a drilling equipment shop (southeast), and a redwood hot tub manufacturing facility (southwest). In addition, the property due east of the plant was the former site of a petroleum refinery.

Plant operations consist of formulating polystyrene product using styrene as a process raw material. The styrene is refined off site, transported to the plant by rail car, and bulk stored in above-ground diked areas designated Tank Area 1 and Tank Area 2 (Figure 2). No raw materials are generated on site.

2.2 Previous Investigations

Two previous subsurface investigations were conducted at the site, one involving groundwater (ref. 2) and the other soils (ref. 3). The groundwater investigation consisted of the installation and sampling of six monitoring wells around the site. The groundwater samples were analyzed for VOCs, with no detectable concentrations found.

The previous soils investigation consisted of five hand borings, 3 to 5 feet in depth, in the two tank containment areas. One sample from each boring was analyzed for VOCs. Results of the soil tests indicate that VOCs occur in varying concentrations in shallow soils at both tank areas, and that the highest VOC concentrations appear to occur in the shallowest samples. Detectable concentrations of VOCs in the soils are summarized by tank area

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below. (The units of measurement in the laboratory reports are converted from milligrams per kilogram (mg/kg) and micrograms per kilogram (μg/kg) to parts per billion (ppb)).

Tank Area 1	Ethylbenzene:	720,000 ppb at one foot, 140,000 ppb at 2 feet, 47,000 ppb at 5 feet
	Styrene:	100,000 ppb at one foot, 9,000 ppb at 5 feet
Tank Area 2	Ethylbenzene:	50,000 ppb at one foot
	PCE:	4,000 ppb at one foot

3. *SUBSURFACE INVESTIGATION*

3.1 Soil Boring and Sampling

During June 27-30, 1989, ENSR conducted a subsurface field investigation at the Amoco Chemical Company facility in Torrance, California. The investigation consisted of 14 soil borings, each drilled to a depth of between approximately 16.5 to 21.5 feet, with soil sampling at 5-foot depth intervals. All boring locations were previously determined and cleared for underground obstructions with an Amoco representative. Boring locations are depicted on Figures 3 and 4.

All soil borings were completed using a skid-mounted solid-stem auger specially designed for use in small or confined spaces inaccessible to standard truck-mounted equipment. A six-inch continuous flight solid-stem auger was used to complete the borings. Soil samples were collected using a standard hammer-driven, 18-inch long, 2.5-inch diameter, split-spoon sampler fitted with three 6-inch long brass sample tubes. Upon retrieval of the sampler, representative soil materials were described for physical characteristics and observable indications of contamination. Logs of borings are presented in Appendix A. The lead sample tube from the sampler was capped on both ends with Teflon tape under plastic end caps. The sample caps were then secured with plastic tape and identified with indelible ink. Each sample was labelled with boring number, sample depth, sample analyses, and date and time collected. The samples were then placed in a pre-cooled ice chest and transported with documented chain-of-custody forms to a state-certified laboratory for chemical analysis. Chain-of-custody documentation is provided in Appendix B. Laboratory reports are presented in Appendix C.

The drilling and sampling equipment was thoroughly decontaminated between each use. The augers and drilling bit were steam cleaned

with a high pressure steam cleaner. All associated rinse water was collected in a cleaning basin and drummed. The sampling equipment was decontaminated using a tap water rinse, a thorough scrubbing with tap water and trisodium phosphate detergent, a second tap water rinse, and a final rinse with distilled water.

Following the boring and sampling, the borings were backfilled with a neat concrete cement grout to ground surface. All drill cuttings and rinse waster were placed in 55-gallon steel drums which were labelled, sealed and stored on site in an Amoco approved secure location.

3.2 Sample Selection and Laboratory Analysis

Collected sample materials were screened in the field as a basis for selection for laboratory analysis. The screening method consisted of ambient temperature headspace analysis of soil materials by use of a portable gas chromatograph (GC) calibrated to styrene, ethylbenzene, benzene, toluene, and meta-xylene. Two samples from each boring were selected for laboratory analysis. The samples were analyzed for VOCs using EPA Test Method 8240. Samples were selected for laboratory analysis based on GC readings in an attempt to define the bottom of suspected contamination. Detailed methodology for headspace vapor measurements are presented in Appendix D. Instrument gas chromatograms are provided in Appendix E.

4. HYDROGEOLOGY

4.1 Regional

The Amoco facility is located in the Torrance Plain sub-unit of the West Coast Groundwater Basin, which is part of the Los Angeles Coastal Plain geomorphic province (ref. 4). Geologic materials underlying the facility consist of approximately 1200 feet of interbedded sands, gravels, silts, and clays of the Lakewood and San Pedro Formations, which contain the majority of useable regional groundwater resources. The Lakewood Formation occurs from ground surface to a depth of about 200 feet in the site vicinity, and is underlain by approximately 1,000 feet of the San Pedro Formation. The San Pedro Formation is, in turn, underlain by an undetermined thickness of the Pico Formation.

The principal aquifers underlying the site vicinity include the Gage Aquifer at the base of the Lakewood Formation, and the Lynwood and Silverado aquifers in the upper portions of the San Pedro Formation. From available information (ref. 4,5,6), all three aquifers are in a confined groundwater condition and have a generally eastward flow direction.

A regional shallow perched or semi-perched groundwater system occurs above the principal aquifers in an unconfined condition at depths between about 10 feet to 80 feet throughout the Torrance Plain (ref. 6). Flow direction in this system is generally eastward.

4.2 Local

Previous deep on-site drilling for purposes of groundwater monitoring indicates the upper 90 feet of geologic materials consist of varying proportions of interbedded clayey, silty, and sandy sediments (ref. 2). In general, the uppermost 20 to 30 feet are predominantly silty and clayey deposits with minor sand. In

most of these borings, predominantly sandy strata were noted from about 60 feet to 90 feet. The intervening strata between about 30 to 60 feet were described variably from boring to boring as containing either sandy, silty, or combinations of sandy and silty beds. Bedding appears to be lenticular and generally discontinuous and highly variable between these borings, such that correlation of stratigraphy or particular strata is not apparent. A possible exception is the occurrence of a shell bed or beds noted in three of the deep borings at 40 to 50 feet depth.

The current study included drilling of 14 shallow test borings to depths between 17.5 and 21.5 feet in exposed soils immediately surrounding the styrene tanks in the two tank areas. Observations of recovered sample materials generally confirmed the fine texture of near-surface sediments noted during the previous drilling program. While the ENSR boring logs indicate a somewhat coarser texture of these materials (i.e. more sandy, less clayey) than previously noted, the difference may be ascribed to differing field logging methods. In any case, the shallow sediments at the facility are consistently characterized as containing significant proportions of silt and clay with varying sand content.

Groundwater underlying the facility occurs in a shallow perched or semi-perched unconfined system, and in a system of deep confined aquifers. Uppermost free groundwater of the shallow unconfined system was noted during the previous drilling program to occur at depths ranging from 69 to 73 below ground surface (ref. 2), in the upper portion of the Lakewood Formation. Water levels in the deep regional aquifers underlying the facility are at a depth of about 100 feet (ref. 5) which reflect the potentiometric surface of confined groundwaters in the Gage Aquifer at the base of the Lakewood Formation, and in the Lynwood and Silverado Aquifers in the underlying San Pedro Formation.

5. ANALYTICAL RESULTS

5.1 Field Screening

Samples were collected at 5-foot depth intervals in all test borings. Representative soil materials from each sampling interval were field tested for organic vapor content as a means of assessing potential contamination and selecting samples for laboratory analysis. Organic vapors were analyzed for the specific chemical species styrene, benzene, toluene, meta-xylene, and ethylbenzene with a portable gas chromatograph calibrated to these compounds. The methodology used is described in Appendix D. Instrument chromatograms for all vapor analyses are presented in Appendix E. Field soil vapor analyses are summarized on Table 1, Soil Vapor Readings.

The most commonly detected vapors in the tested soil samples were styrene and ethylbenzene, which were detected in varying concentrations in most sample materials. These compounds were also the most commonly detected in the laboratory samples. However, a direct correlation between field vapor and laboratory analyses is not apparent. For example, the highest field vapor readings do not correspond directly with the highest laboratory results for particular samples. In many cases, laboratory results for a given compound or compounds were negative, although the field vapor analysis suggested the presence of the compound(s). This discrepancy is attributed to the occurrence of the compound(s) entirely in the vapor phase, which the laboratory method cannot detect. The laboratory method measures compounds existing in a free liquid state or adhered to soil particles.

5.2 Laboratory

Two soil samples from each boring were analyzed for VOCs using EPA Test Method 8240. This method of analysis uses mass spectrometry to identify and quantify VOCs. The detection limits for these

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compounds will vary for each sample run. The reason for this is that samples exhibiting evidence of visual/olfactory contamination are diluted, prior to analysis, in order to reduce the possibility of contaminating the analytical instrument. The samples, when necessary, are diluted by a factor of ten, thus increasing the detection limit by a factor of ten. The detection limits for these samples range from 50 parts per billion (ppb) to 5000 ppb.

Only eight samples of the 28 analyzed showed any detectable concentrations of VOCs as indicated on Table 2, Laboratory Results. (To simplify presentation of the data, the units of measurement in the laboratory reports are converted from micrograms per kilogram (μg/kg) to parts per billion (ppb)). Chemical species detected were toluene, ethylbenzene, styrene, perchloroethene (PCE), and trichloroethene (TCE). The highest levels were encountered in boring B-13.

6. DISCUSSION

6.1 General

A principal finding of ENSR's investigation is that the highest levels of VOCs occurred in Tank Area 1 soils, most notably near tanks T-2, T-3, and T-4. This finding agrees with the results from the previous investigation. VOC contamination diminished with depth in Tank Area 1 borings, and appears to have occurred in very localized areas. However, concentrations of styrene, ethylbenzene, TCE and PCE were detected in the 20-foot sample from Boring B-13, indicating that the total depth of contamination at that location was not determined. An additional concern at Tank Area 1 was the occurrence of TCE and PCE at 10 feet in Boring B-5 and in lower concentrations at 15 feet in Boring B-14. While TCE and PCE were detected at these locations, the base of contamination was delineated.

Soil samples from Tank Area 2 had lower levels of styrene, ethylbenzene, TCE and PCE, with no detectable toluene. In general, soil contamination in this area was more spatially limited, both vertically and horizontally. Borings B-2, B-3, and B-10 all had no detectable VOCs. TCE was detected in only two samples, B-1 at 10 feet (100 ppb) and B-11 at 10 feet (90 ppb), and PCE was detected in only one sample, B-11 at 10 feet (80 ppb). In both of the 15-foot samples from Borings B-1 and B-11, no VOCs were detected, indicating that the contamination was vertically confined to less than 15 feet in depth. An anomalous condition was apparent at boring B-9, where styrene and ethylbenzene increased in concentration with depth, to the total depth of the boring at 20 feet. Thus, the vertical extent of contamination at this location was not determined.

BPACC00914

6.2 Chlorinated VOCs

Two chlorinated solvents, TCE and PCE, were found in one or more of the soil samples from both of the tank areas. Their presence did not correlate with the aromatic VOCs, styrene and ethylbenzene.

In Tank Area 1, TCE and PCE were found in three of the eight borings, always decreasing in concentration with depth. In Borings B-5 and B-14, they were detected at 10 and 15 feet, respectively, but not at 20 feet. In Boring B-13, TCE they were both still measurable at 20 feet.

Compared to Tank Area 1, Tank Area 2 soils had much lower concentrations of TCE and PCE. TCE was found in two of the seven borings and PCE in only one. In Boring B-1, TCE was detected at 10 feet, but not at 15 feet. In Boring B-11, TCE and PCE were found at 10 feet, but not at 15 feet. Thus in Tank Area 2, the vertical extent of TCE and PCE contamination has been defined.

6.3 Soil Vapors

Styrene and ethylbenzene vapors occurred in most of the samples analyzed in the field with the GC. Benzene and toluene were less common. Meta-xylene vapors were not detected in any of the samples. In addition, one to four unidentified compounds were noted in all tested samples. Their retention times were similar to those found for chlorinated ethenes (TCE and PCE) in other investigations; however, since the GC was not calibrated for these compounds, their identity was not confirmed.

Identifiable VOCs were found in the field testing of the soil vapor samples much more often than they were detected in the laboratory analyses of the soil samples. The presumption is that either the substances occurred only in the vapor phase, which would be lost during laboratory sample preparation, or they occurred at soil concentrations below their laboratory detection limits.

7.0 CONCLUSIONS

ENSR Consulting and Engineering performed this environmental assessment at the Amoco Chemical Company Polystyrene Facility in Torrance, California in order to confirm and define the lateral and vertical extents of VOC contamination of soils in Tank Areas 1 and 2. Based upon field and laboratory data generated during our subsurface investigation, we have concluded the following.

- Geologic logs of the soil borings indicated that the top 20 feet of the soil column is comprised of fine grained sediments, with varying proportions of sands, silts, and clays.

- Field gas chromatography revealed that styrene, ethylbenzene, and several unidentified VOCs were present in the vapor phase in varying concentrations in all 14 borings at 5, 10, 15, and 20 feet below grade.

- Laboratory analysis of 28 selected soil samples indicated detectable VOC concentrations in only eight samples from six borings. VOCs found included styrene, ethylbenzene, toluene, perchloroethene (PCE), and trichloroethene (TCE). With one exception, concentrations decreased with depth.

- Comparison of the soil vapor and laboratory data indicates that VOCs are present in the vapor phase throughout the soils beneath Tank Areas 1 and 2, but that measurable soil contamination is limited to a few specific areas. The vertical extent of contamination was determined in all cases except at borings B-9 (Tank Area 2) and B-13 (Tank Area 1).

8. STUDY LIMITATIONS

This report, including the appendices attached thereto, describes the results of ENSR's soil sampling and analytical investigation to identify and define the potential presence of contamination involving or affecting the subject property. The conclusions and recommendations stated herein represent the application of a variety of engineering and technical disciplines to material facts and conditions associated with the subject property. Many of these facts and conclusions are subject to change over time; accordingly, the conclusions and recommendations must be viewed within this context.

ENSR has performed this investigation in a professional manner using that degree of skill and care exercised for similar projects under similar conditions by reputable and competent environmental consultants. ENSR shall not be responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time the evaluation was performed.

9.0 REFERENCES

1. ENSR Consulting and Engineering, Amoco Chemical Company Polystyrene Facility Environmental Assessment Sampling and Analysis Plan; June, 1989.

2. HydroSolutions of California, Field Drilling Report Amoco Chemical Company Plant, Torrance, California; July 22, 1988.

3. Unnamed Technical Report (source: Amoco Chemical); 1988.

4. California Department of Water Resources, Bulletin 104 Planned Utilization of the Groundwater Basins of the Coastal Plain of Los Angeles County; June, 1961.

5. Los Angeles County Department of Public Works; Coastal Plain Deep Aquifer Groundwater Contour Map, Fall, 1987.

6. Los Angeles County Flood Control District; Coastal Plain Shallow Aquifer Map, Fall, 1978

1. Throw out vapor values < 20 ppm

2. Chain-of-Custody Appendix incomplete & inaccurate (e.g. from B-3 is missing, B-13 & 14 gaps on-hold.

3. Not sure of 1,000 times. Yes, may be 100 or non-detectable. Won't know until we do risk assessment.

4. Still have to define "bottom" of contamination.

5. Landfilling may be prohibited by land bans if PCE & TCE are spe

6. Landfilling is not attractive from cost and constructability standpoints

7. There are really only alternatives: (1) vapor (two types) & (2) do nothing.

~~(2) do nothing~~

8. Before proceeding further let's: (1) define extent of deep contamination (limited field investigation say $10,000); (2) conduct risk assessment (limited type say $5-10,000); (3) define regulatory requirements (per RFP) via supplemental report; (4) final recommend. Also, tone down language in SAR; it's not a big problem.

MJP
8/14/89

BPACC00919

ENVIRONMENTAL CONSERVATION (CHEMICALS)

SEP 01 '89

	NOTE		NOTE
RCV		CJW	
JSS		DMH	
DBN		EEW	
CAO			
FILE:			

Gene W. Schmidt
Director–Groundwater Management

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Environmental and Energy Conservation
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918-660-4424

August 28, 1989

GMS 89-1227

R. O. Richter
ENSR Consulting and Engineering
19782 MacArthur Boulevard
Suite 365
Irving, CA 92715

Subject: Site Description for Environmental Assessment Report for the Amoco Chemical Company, Torrance, California Plant

The Torrance Plant site description is provided below:

Amoco Chemical Company operates a polystyrene manufacturing facility located at 1225 West 196th Street in Torrance, California (Figure 1). The plant is surrounded by other industrial facilities including a metal finishing shop (west), an equipment storage yard (north) that historically had been used as a paint manufacturing facility, a drilling equipment shop (southeast), and a redwood hot tub manufacturing facility (southwest). In addition, the property due east of the plant was the former site of a petroleum refinery.

Plant operations consist of formulating polystyrene product using styrene as a process raw material. The styrene is refined offsite, transported to the plant by rail car, and bulk-stored in above-ground diked areas designated Tank Area 1 and Tank Area 2 (Figure 2). No raw materials are generated onsite.

Respectfully,

Bob Hockman

ELH:cib
89240ART0075

cc: W. T. Kerr - Torrance, CA
E. E. Westfall - Chicago
J. M. Verrier - Joliet
G. W. Schmidt - Tulsa

AMOCO CHEMICAL COMPANY

Polystyrene Facility
Torrance, California

ENSR

Environmental Assessment Sampling and Analysis Report

ENSR Consulting and Engineering

(Formerly ERT)

July 1989

Document Number 0350-004.3

BPACC00921

DRAFT

ENVIRONMENTAL ASSESSMENT

SAMPLING AND ANALYSIS REPORT

FOR

AMOCO CHEMICAL COMPANY POLYSTYRENE FACILITY

TORRANCE, CALIFORNIA

ENSR Consulting and Engineering

July, 1989

Document No. 0350-004.3

EXECUTIVE SUMMARY

This Environmental Assessment Sampling and Analysis Report was prepared by ENSR Consulting and Engineering for Amoco Chemical Company. The purpose of this investigation was to characterize the nature and extent of volatile organic compounds (VOCs) in soils in Tank Area 1 and Tank Area 2 at the Amoco polystyrene facility at 1225 West 196th Street, Torrance, California.

Between June 28 through June 30, 1989 ENSR personnel conducted a field investigation. Fourteen soil borings were drilled, ~~to~~ ranging from 16.5 to 21.5 feet ~~depths~~ in depth in the two target areas. Two samples from each boring were analyzed for VOCs using EPA Method 8240.

The test areas are underlain by very fine-textured sandy materials with varying proportions of silt and clay. Uppermost free groundwater occurs at a depth of about 70 feet below ground surface and was not encountered during this study.

Field screening of soil samples~~materials~~ revealed the presence of VOC vapors in varying concentrations at all fourteen boring locations. This finding~~s~~ suggests that site soils may be amenable to vapor extraction remediation.

Laboratory tests of soil samples indicate detectable concentrations of styrene, ethylbenzene, toluene, trichloroethene (TCE), "various combinations of" and~~/or~~ perchloroethene (PCE) at nine boring locations.

The highest concentrations of VOCs were detected in Tank Area 1, containing up to 330,000 ppb of sytrene, 65,000 ppb of ethylbenzene, 1100 ppb of toluene, 46,000 ppb of TCE, and 2400 ppb of PCE. In general, soil contamination is localized laterally and diminishes substantially with depth. Bottom of contamination was determined to be less than 20 feet, except at Boring B-13 at Tank Area 2 and boring B-9 at Tank Area 1 where the bottom of contamination was not determined.

BPACC00923

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BPACC00924

FIGURES

FIGURE 1	SITE LOCATION MAP
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FIGURE 4	TANK AREA 2 - TEST BORING LOCATIONS
FIGURE 5	TANK AREA 1 - VOC CONCENTRATIONS IN SOIL
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APPENDIX C	LABORATORY REPORTS
APPENDIX D	AMBIENT TEMPERATURE HEADSPACE METHODOLOGY
APPENDIX E	AMBIENT TEMPERATURE HEADSPACE CHROMATOGRAMS

BPACC00925

1. INTRODUCTION

1.1 Purpose

Site assessment activities were performed for the purpose of characterizing soil contamination revealed during a prior environmental testing program at the Amoco Chemical Company polystyrene facility in Torrance, California. Specifically, the current investigation focused on delineating the nature and extent of contamination by styrene, ethylbenzene, perchloroethene, and potentially other volatile organic compounds (VOCs) in shallow soils in two above-ground ~~styrene~~ storage tank areas. This information is required for planning possible soil remediation and construction improvement activities in the storage tank areas.

1.2 Scope of Work

This investigation was conducted by ENSR Consulting and Engineering in June and July of 1989. Field work included drilling and geologic logging of fourteen (14) soil test borings to approximately 20 foot depths, collection of soil samples at 5-foot depth intervals in each boring, field testing for VOC vapors in the soils, selection of samples for laboratory analysis, and documentation and shipment of samples. Laboratory activities involved chemical analysis of selected soil samples for ~~previously identified~~ volatile organic compounds. ? other Office work involved analysis and interpretation of field and laboratory results. ~~with estimates of the volume and configuration of the affected soil mass and possible remedial options~~. when? All activities were performed in accordance with a project-specific sampling and analysis plan (ref. 1).

specify 20', diked area

what is shallow vs deep.

This investigation is limited to shallow soils in the immediate vicinity of above-ground storage tanks in the two onsite storage tank areas and is concerned exclusively with soil contamination by

diked area

volatile organic compounds. Deep soil and groundwater conditions were not tested, and the occurrence of chemical substances other than volatile organic compounds was not addressed.

what occurance?

2. BACKGROUND

2.1 Site Description

Amoco Chemical Company operates a polystyrene manufacturing facility located at 1225 West 196th Street in Torrance, California. The plant location is shown on Figure 1, Site Location Map. Plant operations consist of ~~formulating polystyrene product~~ using styrene as a process raw material. Raw styrene is bulk-stored ~~in two above-ground storage tank areas designated Tank Area 1 and Tank Area 2, as depicted on Figure 2, Site Plan.~~

2.2 Previous Investigations

Previous environmental studies (ref. 2, 3) revealed the presence of styrene, ethylbenzene, and perchloroethene (PCE) in Tank Area 1 and Tank Area 2 soils and the ~~apparent~~ absence of groundwater contamination. These prior studies consisted of laboratory analysis of four shallow soil samples, collected in various areas immediately surrounding the ~~styrene~~ storage tanks, and installation of six monitoring wells with laboratory testing of groundwater samples. Results of the soil tests indicate that ~~several~~ volatile organic compounds (VOCs) occur in varying concentrations in shallow soils at both tank areas, and that the highest VOC concentrations ~~appear to~~ occur in the shallowest samples. Previous test results are summarized by tank area below. (The units of measurement in the laboratory reports are converted from milligrams per kilogram (mg/kg) and micrograms per kilogram (µg/kg) to parts per billion (ppb)).

Tank Area 1	Ethylbenzene:	720,000 ppb at one foot, 140,000 ppb at 2 feet, 47,000 ppb at 5 feet
	Styrene:	100,000 ppb at one foot, 9,000 ppb at 5 feet
Tank Area 2	Ethylbenzene:	50,000 ppb at one foot
	PCE:	4,000 ppb at one foot

3. SUBSURFACE INVESTIGATION

3.1 Soil Boring and Sampling

During June 27-30, 1989, ENSR conducted a subsurface field investigation at the Amoco Chemical Company facility in Torrance, California. The investigation consisted of 14 soil borings, each drilled to a depth of between approximately 16.5 to 21.5 feet, with ~~accompanied~~ soil sampling at five-foot depth intervals. All boring locations were previously determined and cleared for underground obstructions with an Amoco representative. Boring locations are depicted on Figures 3 and 4. leave in

All soil borings were completed using a skid-mounted ~~hollow-stem~~ solid-stem auger specially designed for use in small or confined spaces inaccessible to standard truck-mounted equipment. A six-inch continuous flight solid-stem auger was used to complete the borings. Soil samples were collected using a standard hammer-driven 18-inch long, 2.5-inch diameter split-spoon sampler fitted with three six-inch long brass sample tubes. Upon retrieval of the sampler, representative soil materials were described for physical characteristics and observable indications of contamination. Logs of borings are presented in Appendix A. The lead sample tube from the sampler was capped on both ends with Teflon tape under plastic end caps. The sample caps were then secured with plastic tape and identified with indelible ink. Each sample was labelled with boring number, sample depth, sample analyses, and date and time collected. The samples were then placed in a pre-cooled ice chest and transported with documented chain-of-custody forms to a state-certified laboratory for chemical analysis. Chain-of-custody documentation is provided in Appendix B. Laboratory reports are presented in Appendix C.

The drilling and sampling equipment was thoroughly decontaminated between each use. The augers and drilling bit were steam cleaned with a high pressure steam cleaner, and all associated waste water

where did water go?

was confined in a cleaning basin. The sampling equipment was decontaminated using a tap water rinse, a thorough scrubbing with tap water and trisodium phosphate detergent, a second tap water rinse, and a final rinse with distilled water.

Following the boring and sampling, the borings were backfilled with a neat concrete cement grout to ground surface. All drill cuttings were placed in sealed 55-gallon steel drums which were labelled and stored onsite in an Amoco approved secure location.

3.2 Sample Selection and Laboratory Analysis

Collected sample materials were screened in the field as a basis for selection for laboratory analysis. The screening method consisted of ambient temperature headspace analysis of soil materials by use of a portable gas chromatograph (GC) calibrated to styrene, ethylbenzene, benzene, toluene, and xylene. Two samples from each boring were selected for laboratory analysis of volatile organic compounds by EPA Test Method 8240. Samples were selected for laboratory analysis based on GC readings in an attempt to define the bottom of suspected contamination. Detailed methodology for headspace vapor measurements are presented in Appendix D. Instrument gas chromatograms are provided in Appendix E.

unclear

4. HYDROGEOLOGY

4.1 Regional

The Amoco facility is located in the Torrance Plain sub-unit of the West Coast Groundwater Basin, which is part of the Los Angeles Coastal Plain geomorphic province (ref. 4). Geologic materials underlying the facility consist of approximately 1200 feet of interbedded sands, gravels, silts, and clays of the Lakewood and San Pedro Formations, which contain the majority of useable regional groundwater resources. The Lakewood Formation occurs from ground surface to a depth of about 200 feet in the site vicinity, and is underlain by approximately 1,000 feet of the San Pedro Formation. The San Pedro Formation is, in turn, underlain by an undetermined thickness of the Pico Formation.

The principal aquifers underlying the site vicinity include the Gage Aquifer at the base of the Lakewood Formation, and the Lynwood and Silverado aquifers in the upper portions of the San Pedro Formation. From available information (ref. 4,5,6), all three aquifers are in a confined groundwater condition and have a generally eastward flow direction.

A regional shallow perched or semi-perched groundwater system occurs above the principal aquifers in an unconfined condition at depths between about 10 feet to 80 feet throughout the Torrance Plain (ref. 6). Flow direction in this system is generally eastward.

4.2 Local

Previous deep on-site drilling for purposes of groundwater monitoring indicates the upper 90 feet of geologic materials consist of varying proportions of interbedded clayey, silty, and sandy strata (ref. 2). In general, the uppermost 20 to 30 feet are predominantly silty and clayey deposits with minor sand. In most

of these borings, predominantly sandy strata were noted from about 60 feet to 90 feet. The intervening strata between about 30 to 60 feet were described variably from boring to boring as containing either sandy, silty, or combinations of sandy and silty beds. Bedding appears to be lenticular and generally discontinuous and highly variable between these borings, such that correlation of stratigraphy or particular strata is not apparent. A possible exception is the occurrence of a shell bed or beds noted in three of the deep borings at 40 to 50 feet depth.

The current study included drilling of 14 shallow test borings to depths between 17.5 and 21.5 feet in exposed soils immediately surrounding the styrene tanks in the two tank areas. Observations of recovered sample materials generally confirmed the fine texture of near-surface sediments noted during the previous drilling program. While the ENSR boring logs indicate a somewhat coarser texture of these materials (i.e. more sandy, less clayey) than previously noted, the difference may be ascribed to differing field logging methods. In any case, the shallow sediments at the facility are consistently characterized as containing significant proportions of silt and clay with varying sand content.

Groundwater underlying the facility occurs in a shallow perched or semi-perched unconfined system, and in a system of deep confined aquifers. Uppermost free groundwater of the shallow unconfined system was noted during the previous drilling program to occur at depths ranging from 69 to 73 below ground surface (ref. 2), in the upper portion of the Lakewood Formation. Water levels in the deep regional aquifers underlying the facility are at a depth of about 100 feet (ref. 5) which reflect the potentiometric surface of confined groundwaters in the Gage Aquifer at the base of the Lakewood Formation, and in the Lynwood and Silverado Aquifers in the underlying San Pedro Formation.

5. ANALYTICAL RESULTS

5.1 Field Screening

Samples were collected at 5-foot depth intervals in all test borings. Representative soil materials from each sampling interval were field tested for organic vapor content as a means of assessing potential contamination and selecting samples for laboratory analysis. Organic vapors were analyzed for the specific chemical species styrene, benzene, toluene, xylenes, and ethylbenzene with a portable gas chromatograph calibrated to these compounds. The methodology used is described in Appendix D. Instrument chromatographs for all vapor analyses are presented in Appendix E. Field soil vapor analyses are summarized on Table 1, Soil Vapor Readings.

The most commonly detected vapors in the tested soil samples were styrene and ethylbenzene, which were detected in varying concentrations in most sample materials. ~~This finding correlated generally with the results of laboratory analyses of soil samples, in that~~ These compounds were also the most commonly detected in the laboratory samples. However, a direct correlation between field vapor and laboratory analyses is not apparent. For example, the highest field vapor readings do not correspond directly with the highest laboratory results for particular samples. In many cases, laboratory results for a given compound or compounds were negative, although the field vapor analysis suggested the presence of the compound(s). This discrepancy is attributed to the occurrence of the compound(s) entirely in the vapor phase, which the laboratory method cannot detect. The laboratory method ~~is more sensitive to~~ measures compounds existing in a free liquid state or adhered to soil particles.

5.2 Laboratory

Two soil samples from each boring were analyzed for volatile organic compounds (VOCs) by EPA Test Method 8240. This method of analysis uses mass spectrometry to identify and quantify volatile organic compounds. The detection limits for these compounds will vary for each sample run. The reason for this is that samples exhibiting evidence of visual/olfactory contamination are diluted, prior to analysis, in order to reduce the possibility of contaminating the analytical instrument. The samples, when necessary, are diluted by a factor of ten, thus increasing the detection limit by a factor of ten. The detection limits for these samples range from 50 parts per billion (ppb) to 5000 ppb.

Only eight samples of the 28 analyzed showed any detectable concentrations of VOCs as indicated on Table 2, Laboratory Results. (To simplify presentation of the data, the units of measurement in the laboratory reports are converted from micrograms per kilogram (µg/kg) to parts per billion (ppb)). Chemical species detected were toluene, ethylbenzene, styrene, perchloroethene (PCE), and trichloroethene (TCE). The highest levels were encountered in boring B-13. Sample B-13-15 contained detectable amounts of the following: toluene (1,100 ppb), ethylbenzene (65,000 ppb), styrene (330,000 ppb), PCE (2,400 ppb), and TCE (46,000 ppb). Sample B-13-20 also showed significant levels of VOCs: ethylbenzene (20,000 ppb), styrene (100,000 ppb), PCE (1,400 ppb), TCE (6,800 ppb). Sample B-14-20 also had detectable levels of VOCs, but in lesser concentrations: ethylbenzene (130 ppb), styrene (190 ppb), PCE (75 ppb), and TCE (290 ppb). Only 100 ppb of TCE was detected in sample B-1-10. The only detectable compounds in samples B-5-10 and B-11-10 were PCE and TCE in the following amounts: B-5-10 contained 8000 ppb of PCE and 44,000 ppb of TCE, and sample B-11-10 contained 80 ppb of PCE and 90 ppb of TCE. The final samples from boring B-9 are from 15 and 20 feet. These samples contained detectable concentrations of ethylbenzene and styrene. Sample B-9-15 contained 700 ppb of ethylbenzene and 1200 ppb of

not sample

styrene, while sample B-9-20 contained 950 ppb of ethylbenzene and 4400 ppb of styrene.

6. DISCUSSION

6.1 General

A principal finding of ENSR's current investigation is that the highest levels of VOCs occur in Tank Area 1 soils, most notably near tanks T-2, T-3, and T-4. This finding agrees with previous shallow soil testing results. VOC contamination was found to diminish~~substantially~~ with depth in Tank Area 1 borings, and appears to occur in very localized areas. However, ~~significant~~ concentrations of styrene, ethylbenzene, TCE & PCE ~~and chlorinated solvents~~ were detected in the 20-foot sample from boring B-13, indicating that the total depth of contamination at that location is not known. An additional concern at Tank Area 1 is the occurrence of TCE & PCE ~~chlorinated solvents in high concentrations~~ at 10 feet depth at boring B-5 and in ~~substantially less~~ lower concentrations at 15 feet depth at boring B-14. While ~~the presence of solvents~~ TCE + PCE are present at these locations ~~is significant,~~ the base of contamination is delineated.

~~Soil samples from~~ The results for Tank Area 2 show ~~Conditions at Tank Area 2 are of lesser apparent concern, due to~~ lower levels of styrene, ethylbenzene, and TCE + PCE solvents, the non-detection of toluene, apparent isolation of contaminants in small areas, and generally shallower extent of contamination. ~~Solvents~~ TCE + PCE chlorin VO were noted in two small areas near borings B-1 and B-11 and ~~appear~~ are to be confined to less than 15 feet depth. An anomalous condition is apparent at boring B-9 where styrene and ethylbenzene occur in minor concentrations, increasing nominally with depth, to the total depth of the boring at 20 feet. The total depth of contamination at this location has therefore not been determined. conclu lab an

6.2 ~~Solvents~~ Chlorinated VOCs

~~TCE + PCE~~ chlorinated VOCs ~~The occurrence of chlorinated solvents has been confirmed from prior studies which noted PCE in shallow soil at Tank Area 2. In addition,~~ The ~~ENSR~~ investigation has revealed PCE and TCE ~~in significant concentrations~~ at two locations of Tank Area 1. These

are confined to less than 20 feet depth at boring B-5, but are present also at 20 feet at boring B-13 where the total depth of contamination has not been determined. TCE & PCE ~~Solvents~~ are found in samples ~~associated~~ with ~~high~~ styrene and ethylbenzene concentrations, ~~and with the only toluene detected in the current study~~, at boring B-13. However, TCE & PCE ~~solvents~~ occur independently ~~of other contaminants~~ at boring B-5. Therefore, TCE & PCE occur separately and ~~solvents occur as a separate entity and~~ apparently not in association with ~~other materials, such as~~ styrene or ethylbenzene.

6.3 Vapors

Styrene and ethylbenzene vapors occur in most field tested samples. Benzene and toluene were ~~noted~~ less common~~ly~~. Xylene vapors were not detected in any samples. In addition, one to four unidentified GC peak ~~vapors~~ were noted in all tested samples. The unidentified compounds ~~vapors~~ may be related to chlorinated solvents but this is not confirmed by laboratory testing, due either to the absence of these materials or their occurrence below the laboratory detection limit.

The source of soil vapors may be the result of fugitive emissions from the storage system in the vapor state, or liquid spillage. Vapors entering the soil from either source would infiltrate and migrate through preferentially permeable strata. A one-foot thick zone of plastic-like material was observed at the ground surface at boring B-11. It is presumed this has occurred as a result of spilled liquid self-polymerizing in the soil.

While chemically-identified vapors occurred in most samples, corresponding chemical species were not detected in all laboratory tested samples. ~~The presumption in cases where the materials were~~ not detected at the laboratory is that either the substances occurred only in the vapor phase, which would be lost during laboratory sample preparation, or occur at concentrations below the laboratory detection limit.

The presence of soil vapors (chemically-identified or unknowns), in all areas and depths tested indicates that site soils are permeable to vapor migration, and are potentially suitable for remediation by vapor extraction techniques.

7.0 CONCLUSIONS

ENSR Consulting and Engineering performed this environmental assessment at the Amoco Chemical Company Polystyrene Facility in Torrance, California in order to confirm and define the lateral and vertical extent of VOC contamination of soils in Tank Areas 1 and 2. Based upon field and laboratory data generated during our subsurface investigation, we have concluded the following.

- The soil borings indicate that the top 20 feet of the soil column are comprised of fine grained sediments, with varying proportions of sands, silts, and clays.

- Field gas chromatography revealed that styrene, ethylbenzene, and several unidentified VOCs were present in the vapor phase in varying concentrations in all 14 borings at 5, 10, 15, and 20 feet below grade.

- Laboratory analysis of 28 selected soil samples indicated detectable VOC concentrations in only eight samples from six borings. VOCs found included styrene, ethylbenzene, toluene, perchloroethene (PCE), and trichloroethene (TCE). With one exception, concentrations decreased with depth.

- Comparison of the soil vapor and laboratory data indicates that VOCs are present in the vapor phase throughout the soils beneath Tank Areas 1 and 2, but that measurable soil contamination is limited to a few specific areas. The vertical extent of contamination was determined in all cases except at borings B-9 (Tank Area 2) and B-13 (Tank Area 1).

- ~~The presence of soil vapors throughout the tank areas indicates that the soils are permeable to vapor migration and, therefore, possibly amenable to remediation through vapor extraction. However, the fine grained texture of the soils necessitates field testing to determine its suitability.~~

8. STUDY LIMITATIONS

This report, including the appendices attached thereto, describes the results of ENSR's soil sampling and analytical investigation to ~~identify the potential presence of a contamination problem~~ involving or affecting the subject property. The conclusions and recommendations stated herein represent the application of a variety of engineering and technical disciplines to material facts and conditions associated with the subject property. ~~and possible remedial measures~~. Many of these facts and conclusions are subject to change over time; accordingly, the conclusions and recommendations must be viewed with this context.

ENSR has performed this investigation in a professional manner using that degree of skill and care exercised for similar projects under similar conditions by reputable and competent environmental consultants. ENSR shall not be responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time the evaluation was performed.

9.0 REFERENCES

1. ENSR Consulting and Engineering, Amoco Chemical Company Polystyrene Facility Environmental Assessment Sampling and Analysis Plan; June, 1989.

2. HydroSolutions of California, Field Drilling Report Amoco Chemical Company Plant, Torrance, California; July 22, 1988.

3. Unnamed Technical Report (source: Amoco Chemical); 1988.

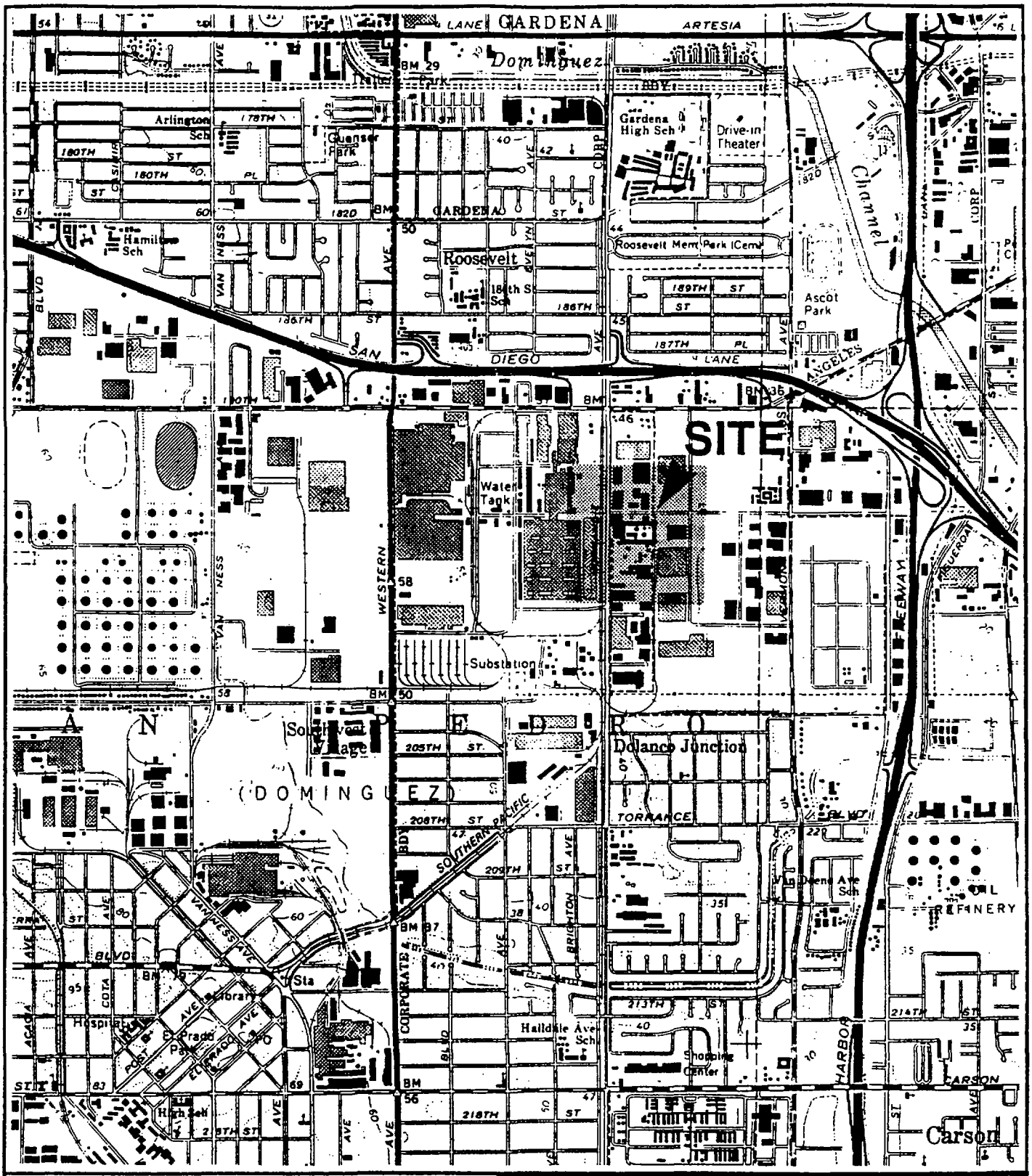
4. California Department of Water Resources, Bulletin 104 Planned Utilization of the Groundwater Basins of the Coastal Plain of Los Angeles County; June, 1961.

5. Los Angeles County Department of Public Works; Coastal Plain Deep Aquifer Groundwater Contour Map, Fall, 1987.

6. Los Angeles County Flood Control District; Coastal Plain Shallow Aquifer Map, Fall, 1978

FIGURES

Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Tank Area 1 - Soil Boring Locations
Figure 4	Tank Area 2 - Soil Boring Locations
Figure 5	Tank Area 1 - VOC Concentrations in Soil
Figure 6	Tank Area 2 - VOC Concentrations in Soil



REFERENCE: USGS 7.5 MINUTE SERIES
TORRANCE QUADRANGLE 1981

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N

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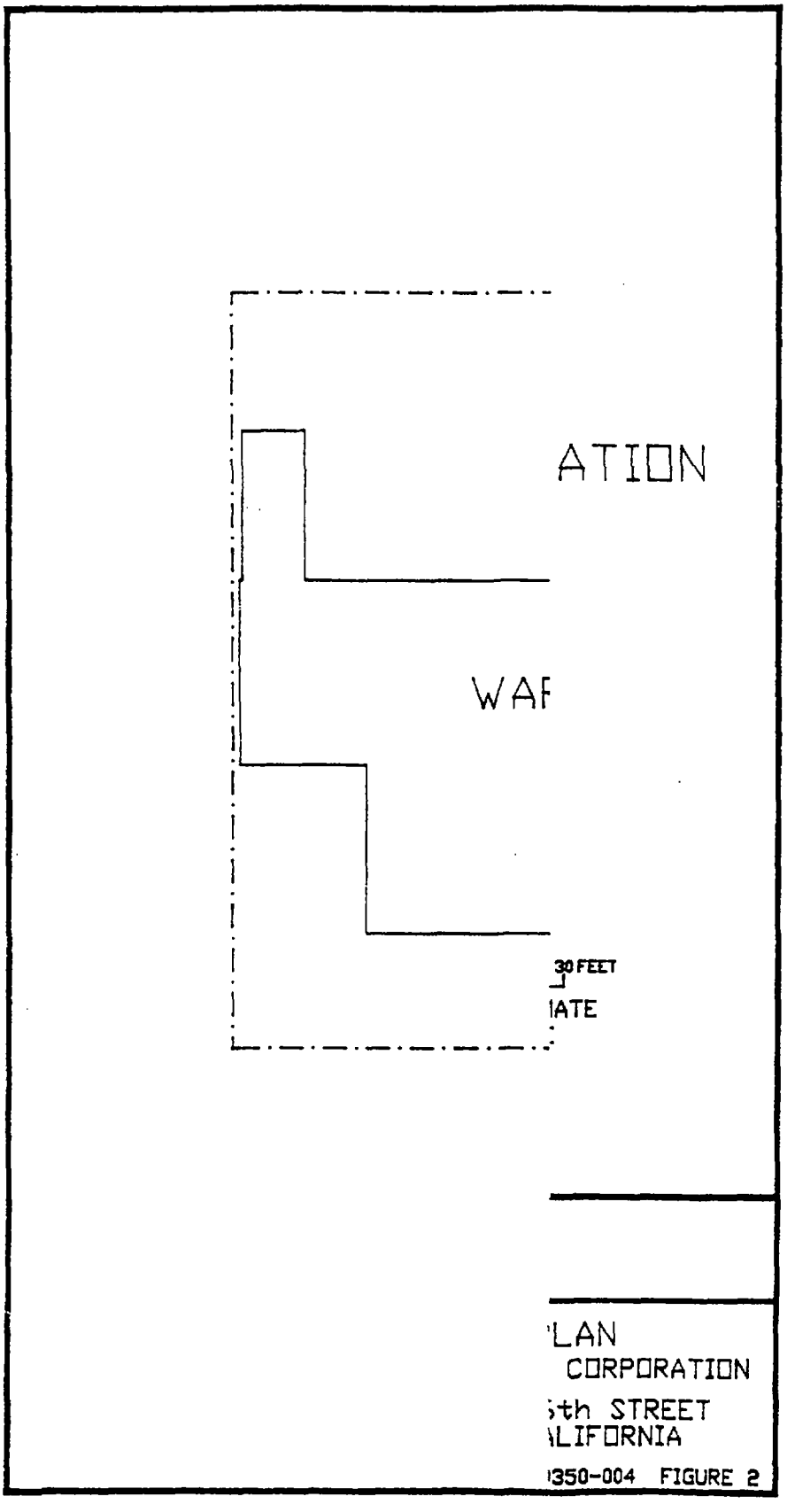
SCALE

ENSR

SITE LOCATION MAP
AMOCO CHEMICALS CORPORATION
1225 WEST 196th STREET
TORRANCE, CALIFORNIA

DRAWN BY: BM	DATE: 6/7/89	PROJECT NO.: 0350-004
CHK'D BY:	REVISED:	DWG.NO.: FIGURE 1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ILIFORNIA
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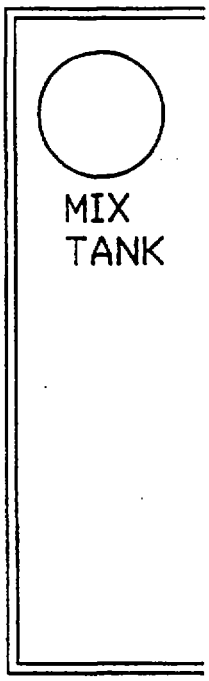
BPACC00944



EXPLANATION

LOCATIONS OF
TEST BORINGS

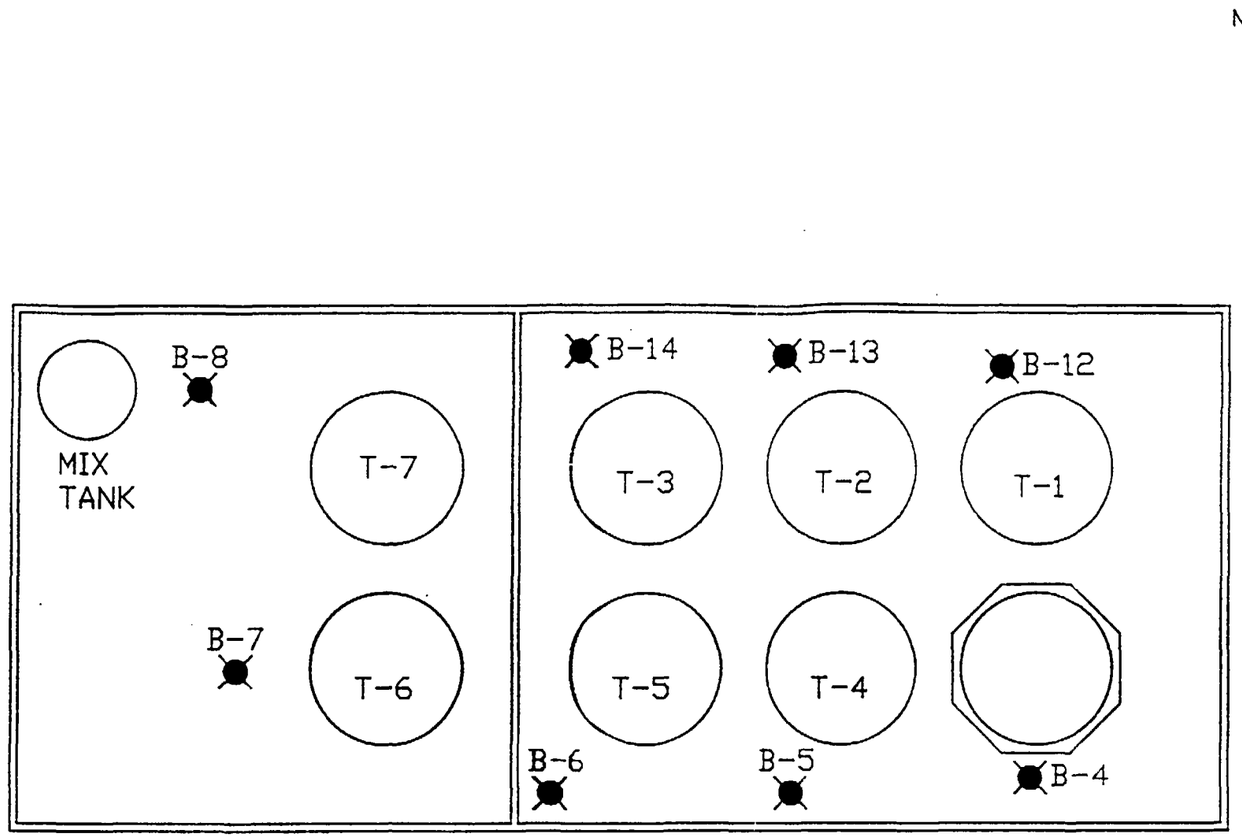
0 10 feet
APPROXIMATE
SCALE

ENSR

TANK AREA 1
TEST BORING LOCATIONS
AMOCO CHEMICAL COMPANY
1225 WEST 196th STREET
TORRANCE, CALIFORNIA

BPACC00945

/C.Keller PROJECT 0350-004 FIGURE 3



EXPLANATION

LOCATIONS OF TEST BORINGS

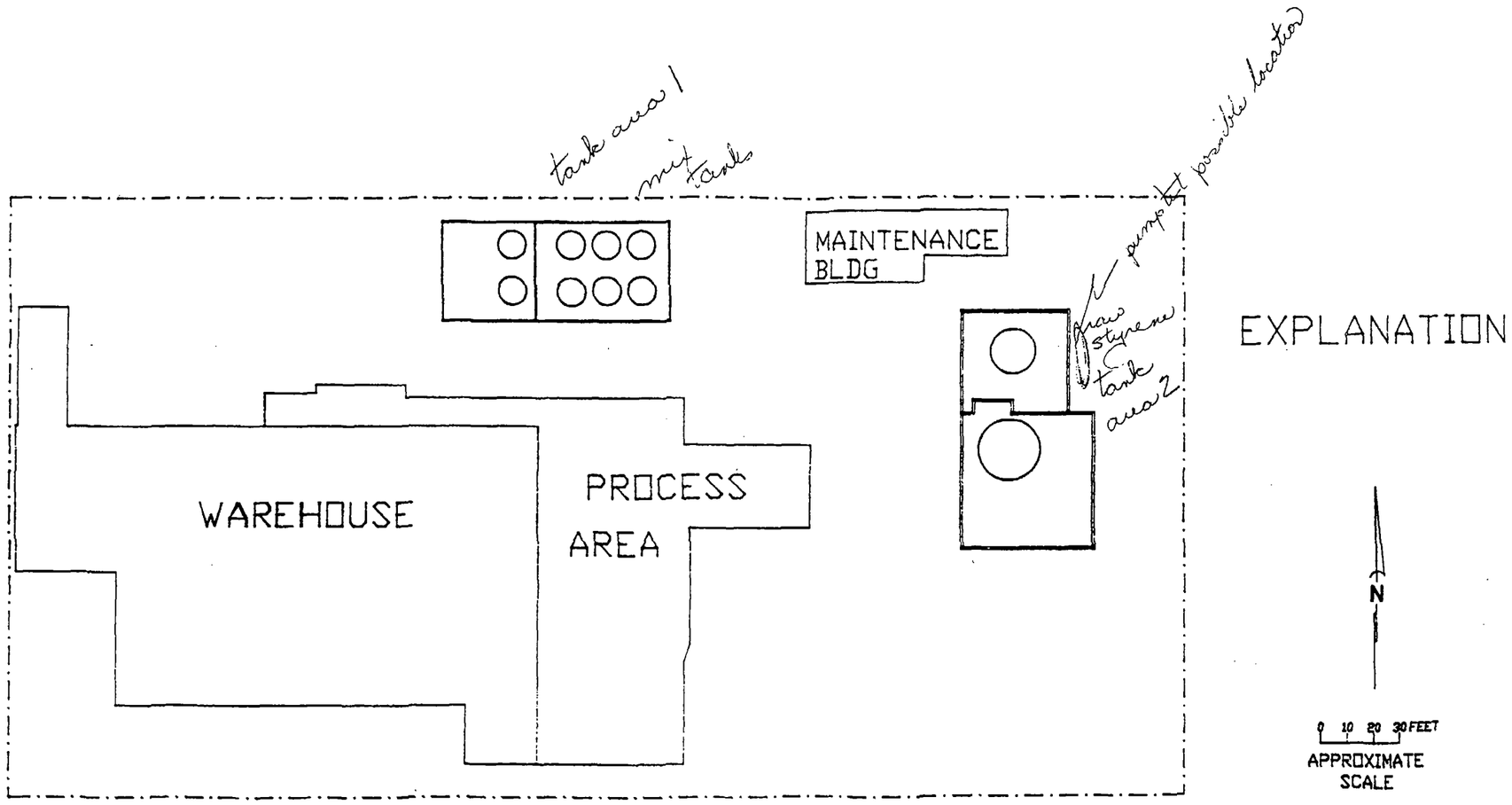
0 10 feet
APPROXIMATE SCALE

BPACC00946

ENSR

TANK AREA 1
TEST BORING LOCATIONS
AMOCO CHEMICAL COMPANY
1225 WEST 196th STREET
TORRANCE, CALIFORNIA

by:C.Keller PROJECT 0350-004 FIGURE 3



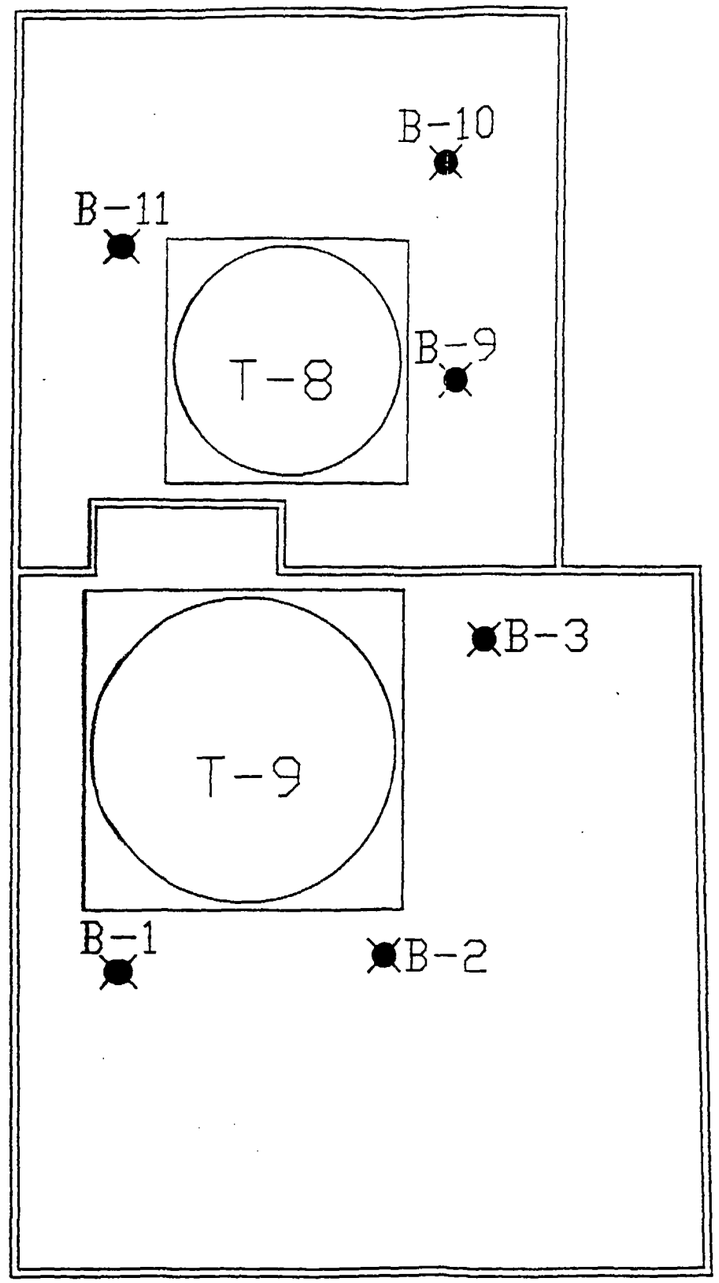
EXPLANATION

ENSR

SITE PLAN
AMOCO CHEMICALS CORPORATION
1225 WEST 196th STREET
TORRANCE, CALIFORNIA

by:C.Keller PROJECT 0350-004 FIGURE 2

BPACC00947



NORTH

EXPLANATION

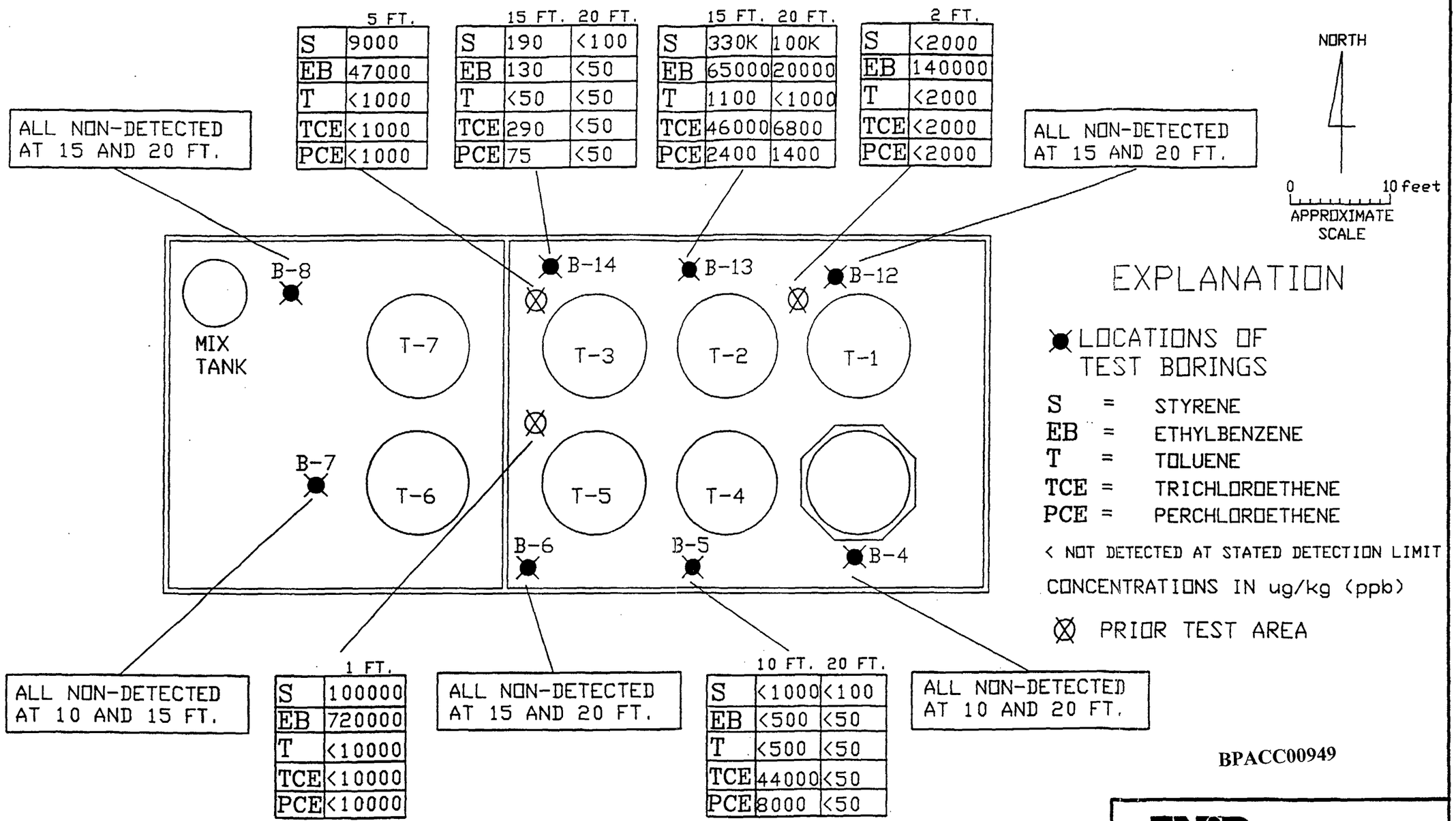
LOCATIONS OF TEST BORINGS

0 10 20 feet
APPROXIMATE SCALE

BPACC00948

ENSR

TANK AREA 2
TEST BORING LOCATIONS
AMOCO CHEMICAL COMPANY
1225 WEST 196th STREET
TORRANCE, CALIFORNIA
by:C.Keller PROJECT 0350-004 FIGURE 4

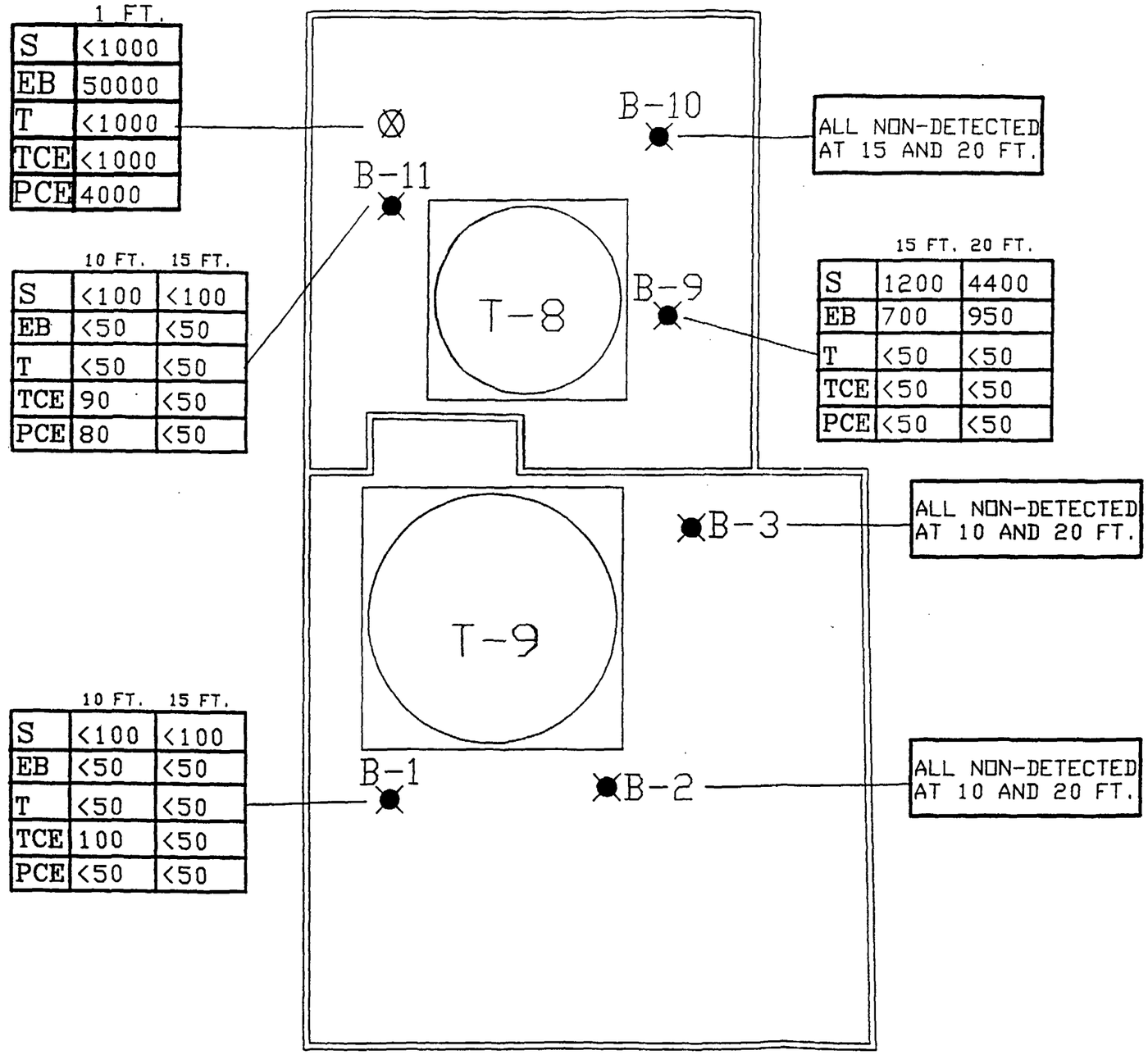


BPACC00949

ENSR

TANK AREA 1
VOC CONCENTRATIONS IN SOIL
AMOCO CHEMICAL COMPANY
1225 WEST 196th STREET
TORRANCE, CALIFORNIA

by:C.Keller PROJECT 0350-004 FIGURE 5



	1 FT.
S	<1000
EB	50000
T	<1000
TCE	<1000
PCE	4000

	10 FT.	15 FT.
S	<100	<100
EB	<50	<50
T	<50	<50
TCE	90	<50
PCE	80	<50

	15 FT.	20 FT.
S	1200	4400
EB	700	950
T	<50	<50
TCE	<50	<50
PCE	<50	<50

	10 FT.	15 FT.
S	<100	<100
EB	<50	<50
T	<50	<50
TCE	100	<50
PCE	<50	<50

NORTH

0 10 20 feet

APPROXIMATE SCALE

EXPLANATION

● LOCATIONS OF TEST BORINGS

S = STYRENE
EB = ETHYLBENZENE
T = TOLUENE
TCE = TRICHLOROETHENE
PCE = PERCHLOROETHENE

< NOT DETECTECTED AT STATED DETECTION LIMITS

CONCENTRATIONS IN ug/kg (ppb)

⊗ PRIOR TEST AREA

BPACC00950

ENSR

TANK AREA 2
VOC CONCENTRATIONS IN SOIL
AMOCO CHEMICAL COMPANY
1225 WEST 196th STREET
TORRANCE, CALIFORNIA

by:C.Keller PROJECT 0350-004 FIGURE 6

TABLES

Table 1	Soil Vapor Readings
Table 2	Laboratory Results

TABLE 1 SOIL VAPOR READINGS (in ppm)

SAMPLE #	STYRENE	B	T	X	E	# OF UNKNOWNS
B-1-5	ND	ND	ND	ND	ND	3
- 10	ND	ND	ND	ND	ND	3
- 15	ND	ND	ND	ND	ND	1
- 20	NA	NA	NA	NA	NA	NA
B-2-5	ND	ND	ND	ND	4.335	3
- 10	ND	ND	ND	ND	ND	2
- 15	ND	ND	ND	ND	ND	3
- 20	ND	ND	ND	ND	ND	3
B-3-5	NA	NA	NA	NA	NA	NA
- 10	6.761	ND	ND	ND	ND	3
- 15	2.856	ND	ND	ND	ND	ND
- 20	3.018	ND	ND	ND	ND	2
B-4-5	152.4	ND	ND	ND	459.0	1
- 10	3.084	ND	ND	ND	1.255	2
- 15	1.435	ND	ND	ND	.4025	1
- 20	325.9	ND	ND	ND	231.8	2
B-5-5	ND	ND	ND	ND	70.40	2
- 10	ND	ND	ND	ND	16.77	3
- 15	ND	ND	ND	ND	ND	1
- 20	1.909	ND	ND	ND	ND	2
B-6-5	239.8	1.297	ND	ND	321.1	2
- 10	3.354	ND	ND	ND	1.664	3
- 15	106.2	ND	ND	ND	206.5	2
- 20	4.494	ND	ND	ND	ND	2

sample to lab?

TABLE 1 SOIL VAPOR READINGS (in ppm) (CONTINUED)

SAMPLE #	STYRENE	B	T	X	E	# OF UNKNOWNS
B-7-5	65.94	ND	ND	ND	5.301	1
- 10	39.95	ND	ND	ND	4.628	2
- 15	27.85	ND	ND	ND	2.404	1
- 20	21.81	ND	ND	ND	1.938	1
B-8-5	268.1	1.455	.8947	ND	10.50	ND
- 10	225.8	ND	ND	ND	ND	2
- 15	36.57	ND	ND	ND	ND	2
- 20	20.44	ND	ND	ND	ND	3
B-9-5	ND	3.192	ND	ND	8.635	1
- 10	ND	3.262	ND	ND	13.77	1
- 15	130.8	ND	ND	ND	34.41	2
- 20	4.674	ND	ND	ND	.3938	3
B-10-5	1.947	ND	ND	ND	1.575	1
- 10	3.715	ND	ND	ND	6.397	3
- 15	2.943	ND	ND	ND	ND	2
- 20	1.441	ND	ND	ND	ND	3
B-11-5	61.64	ND	ND	ND	49.78	3
- 10	80.85	ND	ND	ND	76.33	3
- 15	11.81	ND	ND	ND	9.951	3
- 20	NA	NA	NA	NA	NA	NA

why no sample.

BPACC00953

TABLE 1 SOIL VAPOR READINGS (in ppm) (CONTINUED)

SAMPLE #	STYRENE	B	T	X	E	# OF UNKNOWNS
B-12-5	13.52	ND	ND	ND	323.8	1
- 10	3.035	ND	ND	ND	8.125	3
- 15	17.26	ND	ND	ND	40.33	2
- 20	51.74	ND	ND	ND	49.05	3
B-13-5	42.01	2.739	ND	ND	189.5	2
- 10	349.2	1.200	9.242	ND	330.6	3
- 15	189.5	ND	ND	ND	25.05	4
- 20	16.57	ND	ND	ND	1.188	3
B-14-5	40.79	5.404	ND	ND	321.4	4
- 10	57.17	ND	1.796	ND	294.9	4
- 15	282.5	2.176	1.374	ND	342.7	4
- 20	4.811	ND	ND	ND	ND	3

ND = NON DETECTED
NA = NOT ANALYZED
B = BENZENE
T = TOLUENE
X = META-XYLENE only meta? other places referred to as xylene - not just one isomer
E = ETHYLBENZENE
UNKNOWNS = UNIDENTIFIED ~~HYDROCARBON VAPORS~~ GC peaks

TABLE 2 LABORATORY RESULTS

(ppb)

SAMPLE #	toluene	ethylbenzene	styrene	PCE	TCE
B-1-10	ND	ND	ND	ND	100
B-1-15	ND	ND	ND	ND	ND
B-2-10	ND	ND	ND	ND	ND
B-2-15	ND	ND	ND	ND	ND
B-3-10	ND	ND	ND	ND	ND
B-3-15	ND	ND	ND	ND	ND
B-4-10	ND	ND	ND	ND	ND
B-4-20	ND	ND	ND	ND	ND
B-5-10	ND	ND	ND	8000	44000
B-5-20	ND	ND	ND	ND	ND
B-6-15	ND	ND	ND	ND	ND
B-6-20	ND	ND	ND	ND	ND
B-7-10	ND	ND	ND	ND	ND
B-7-15	ND	ND	ND	ND	ND
METHOD BLANK	ND	ND	ND	ND	ND
B-8-15	ND	ND	ND	ND	ND
B-8-20	ND	ND	ND	ND	ND
B-9-15	ND	700	1200	ND	ND
B-9-20	ND	950	4400	ND	ND
B-10-15	ND	ND	ND	ND	ND
B-10-20	ND	ND	ND	ND	ND
B-11-10	ND	ND	ND	80	90
B-11-15	ND	ND	ND	ND	ND
METHOD BLANK	ND	ND	ND	ND	ND
B-12-15	ND	ND	ND	ND	ND
B-12-20	ND	ND	ND	ND	ND
B-13-15	1100	65000	330000	2400	46000
B-13-20	ND	20000	100000	1400	6800
B-14-15	ND	130	190	75	290
B-14-20	ND	ND	ND	ND	ND

ND= not detected. Method detection limits are indicated on laboratory reports, Appendix C.

APPENDIX A

BORING LOGS

ENSR

ENSR CONSULTING & ENGINEERING

SUBSURFACE EXPLORATION

LITHOLOGIC LOG OF B-1

Client : AMOCO CHEMICAL CORPORATION
Project Name : AMOCO CHEMICAL
Project Location : TORRANCE, CA
Job Number : 0350-004-100 Boring No : B-1
Logged By : J. NORDENSTAM
Approved By : K. PITCHFORD, C.E.G.
Drilled By : DATUM EXPLORATION

DRILLING AND SAMPLING INFORMATION

Date Started : 6/27/89 Date Completed : 6/27/89
Method : HSA/CFA Total Depth : 21.5 FEET

WELL COMPLETION INFORMATION

Screen Dia : . Length : .
Slot Size : . Type : .
Casing Dia : . Length : .

DEPTH IN FEET	DESCRIPTION SURFACE ELEVATION : 945 FEET, USGS TORRANCE, CA	SAMPLE NO.	SAMPLE TYPE	RECOVERY (FEET)	BLOW COUNT	TIME	PID *	GRAPHIC LOG	WELL COMPLETION	WATER LEVEL
	Silty SAND (SM), black to brown, clayey, damp, very stiff, no odor									
5		5	SS	1.5	48	1006				
	continued SM, becomes tan									
10	Clayey SAND (SC) stiff, damp, tan, no odor	10	SS	1.5	29	1120				
	SILT (ML) light brown, damp, medium dense, no odor									
15		15	SS	1.5	18	1215				
20	continued SILT (ML) with minor gravel and clay	20	SS	1.5	22	1238				
	Bottom of boring at 21.5 feet. No free groundwater encountered. Boring backfilled with neat concrete cement to ground surface.									
25										
30										
35										
40										
45										
50										
55	* PID: PHOTO-IONIZATION DETECTOR VALUE (eV)									

BPACC00957

SAMPLER TYPE

SS - DRIVEN SPLIT SPOON RC - ROCK CORE
ST - PRESSED SHELBY TUBE CT - CONTINUOUS TUBE

BORING METHOD

HSA - HOLLOW STEM AUGER DC - DRIVING CASING
CFA - CONTINUOUS FLIGHT AUGERS MD - MUD DRILLING

ENSR

ENSR CONSULTING & ENGINEERING

SUBSURFACE EXPLORATION

LITHOLOGIC LOG OF B-2

Client : AMOCO CHEMICAL CORPORATION
Project Name : AMOCO CHEMICAL
Project Location : TORRANCE
Job Number : 0350-004-100 Boring No : B-2
Logged By : J. NORDENSTAM
Approved By : K. PITCHFORD, C. E. G.
Drilled By : DATUM EXPLORATION

DRILLING AND SAMPLING INFORMATION

Date Started : 6/27/89 Date Completed : 6/27/89
Method : HSA/CFA Total Depth : 21.5 FEET

WELL COMPLETION INFORMATION

Screen Dia : . Length : .
Slot Size : . Type : .
Casing Dia : . Length : .

DEPTH IN FEET	DESCRIPTION SURFACE ELEVATION : 45 FEET USGS TORRANCE, CA	SAMPLE NO.	SAMPLE TYPE	RECOVERY (FEET)	BLOW COUNT	TIME	PID *	GRAPHIC LOG	WELL COMPLETION	WATER LEVEL
	Silty CLAY (CL), medium stiff, damp, black, moderate odor.									
5		5	SS	1.0	41	1345				
	Silty SAND (SM), medium dense, dry, tan clayey, fine grained sand, silt, no odor.									
10		10	SS	1.0	20	1355				
	SILT (ML), stiff, damp, brown, no odor									
15		15	SS	1.0	18	1410				
	continued SILT (ML)									
20	CLAY (CL), stiff, dry, tan, concretions.	20	SS	1.0	20	1430				
	Total depth = 21.5 feet. No free groundwater encountered. Boring backfilled with neat concrete cement to ground surface									
25										
30										
35										
40										
45										
50										
55	* PID: PHOTO-IONIZATION DETECTOR VALUE (eV)									

BPACC00958

SAMPLER TYPE

SS - DRIVEN SPLIT SPOON RC - ROCK CORE
ST - PRESSED SHELBY TUBE CT - CONTINUOUS TUBE

BORING METHOD

HSA - HOLLOW STEM AUGER DC - DRIVING CASING
CFA - CONTINUOUS FLIGHT AUGERS MD - MUD DRILLING

ENSR

ENSR CONSULTING & ENGINEERING

SUBSURFACE EXPLORATION

LITHOLOGIC LOG OF B-3

Client : AMOCO CHEMICAL CORPORATION
Project Name : AMOCO CHEMICAL
Project Location : TORRANCE
Job Number : 0350-004-100 Boring No : B-3
Logged By : J. NORDENSTAM
Approved By : K. PITCHFORD, C. E. G.
Drilled By : DATUM EXPLORATION

DRILLING AND SAMPLING INFORMATION

Date Started : 6/27/89 Date Completed : 6/27/89
Method : HSA/CFA Total Depth : 21.5

WELL COMPLETION INFORMATION

Screen Dia : . Length : .
Slot Size : . Type : .
Casing Dia : . Length : .

DEPTH IN FEET	DESCRIPTION SURFACE ELEVATION : 45 FEET, USGS TORRANCE, CA	SAMPLE NO.	SAMPLE TYPE	RECOVERY (FEET)	BLOW COUNT	TIME	PID *	GRAPHIC LOG	WELL COMPLETION	WATER LEVEL
	SILT (ML) black to brown-green, damp, stiff, strong odor									
5		5	SS	1.0	25	1515				
	Clayey SAND (SC) tan, dry, medium stiff, no odor									
10		10	SS	1.0	35	1535				
	SILT (ML) brown, damp, soft, no odor									
15		15	SS	1.0	19	1550				
20		20	SS	1.0	20	1615				
	Bottom of boring at 21.5 feet. No free groundwater encountered Boring backfilled with neat concrete cement to ground surface									
25										
30										
35										
40										
45										
50										
55	* PID: PHOTO-IONIZATION DETECTOR VALUE (eV)									

BPACC00959

SAMPLER TYPE

SS - DRIVEN SPLIT SPOON RC - ROCK CORE
ST - PRESSED SHELBY TUBE CT - CONTINUOUS TUBE

BORING METHOD

HSA - HOLLOW STEM AUGER DC - DRIVING CASING
CFA - CONTINUOUS FLIGHT AUGERS MD - MUD DRILLING

ENSR

ENSR CONSULTING & ENGINEERING

SUBSURFACE EXPLORATION

LITHOLOGIC LOG OF B-4

Client : AMOCO CHEMICAL CORPORATION
Project Name : AMOCO CHEMICAL
Project Location : TORRANCE
Job Number : 0350-004-100 Boring No : B-4
Logged By : J. NORDENSTAM
Approved By : K. PITCHFORD, C. E. G.
Drilled By : DATUM EXPLORATION

DRILLING AND SAMPLING INFORMATION

Date Started : 6/28/89 Date Completed : 6/28/89
Method : CFA Total Depth : 21.5

WELL COMPLETION INFORMATION

Screen Dia : . Length : .
Slot Size : . Type : .
Casing Dia : . Length : .

DEPTH IN FEET	DESCRIPTION SURFACE ELEVATION : 45 FEET, USGS TORRANCE, CA	SAMPLE NO.	SAMPLE TYPE	RECOVERY (FEET)	BLOW COUNT	TIME	PID *	GRAPHIC LOG	WELL COMPLETION	WATER LEVEL
	Clayey SAND (SC), black, damp, soft, strong odor medium grained sand, silty.									
5		5	SS	1.0	36	0831				
	continued SC brown, slight odor									
10		10	SS	1.5	34	0855				
	Silty SAND (SM) soft, damp, brown, no odor									
15		15	SS	1.5	19	0920				
20	CLAY (CL) stiff, damp, light brown	20	SS	1.5	27	0952				
	Bottom of boring at 21.5 feet. No free groundwater encountered Boring backfilled with neat concrete cement to ground surface.									
25										
30										
35										
40										
45										
50										
55	* PID: PHOTO-IONIZATION DETECTOR VALUE (eV)									

BPACC00960

SAMPLER TYPE

SS - DRIVEN SPLIT SPOON RC - ROCK CORE
ST - PRESSED SHELBY TUBE CT - CONTINUOUS TUBE

BORING METHOD

HSA - HOLLOW STEM AUGER DC - DRIVING CASING
CFA - CONTINUOUS FLIGHT AUGERS MD - MUD DRILLING

ENSR

ENSR CONSULTING & ENGINEERING

SUBSURFACE EXPLORATION

LITHOLOGIC LOG OF B-5

Client : AMOCO CHEMICAL CORPORATION
Project Name : AMOCO CHEMICAL
Project Location : TORRANCE
Job Number : 0350-004-100 Boring No : B-5
Logged By : J. NORDENSTAM
Approved By : K. PITCHFORD, C. E. G.
Drilled By : DATUM EXPLORATION

DRILLING AND SAMPLING INFORMATION
Date Started : 6/28/89 Date Completed : 6/28/89
Method : CFA Total Depth : 21.5

WELL COMPLETION INFORMATION
Screen Dia : . Length : .
Slot Size : . Type : .
Casing Dia : . Length : .

DEPTH IN FEET	DESCRIPTION SURFACE ELEVATION : 45 FEET, USGS TORRANCE, CA	SAMPLE NO.	SAMPLE TYPE	RECOVERY (FEET)	BLOW COUNT	TIME	PID *	GRAPHIC LOG	WELL COMPLETION	WATER LEVEL
	Clayey SAND (SC) soft, black, strong odor.									
5	Sandy CLAY (CL), medium stiff, damp, brown, moderate odor.	5	SS	1.0	39	1100				
10	black-green, strong odor	10	SS	1.0	25	1117				
15	Silty SAND (SM/SC), soft, damp, brown, with very fine grained sand, no odor	15	SS	1.0	24	1130				
20		20	SS	1.0	25	1157				
25	Total depth = 21.5 feet. No free groundwater encountered Boring backfilled with neat concrete cement to ground surface									
30										
35										
40										
45										
50										
55	* PID: PHOTO IONIZATION DETECTOR VALUE (eV)									

BPACC00961

SAMPLER TYPE
SS - DRIVEN SPLIT SPOON RC - ROCK CORE
ST - PRESSED SHELBY TUBE CT - CONTINUOUS TUBE

BORING METHOD
HSA - HOLLOW STEM AUGER DC - DRIVING CASING
CFA - CONTINUOUS FLIGHT AUGERS MD - MUD DRILLING

ENSR

ENSR CONSULTING & ENGINEERING

SUBSURFACE EXPLORATION

LITHOLOGIC LOG OF B-6

Client : AMOCO CHEMICAL CORPORATION
Project Name : AMOCO CHEMICAL
Project Location : TORRANCE
Job Number : 0350-004-100 Boring No : B-6
Logged By : J. NORDENSTAM
Approved By : K. PITCHFORD, C. E. G.
Drilled By : DATUM EXPLORATION

DRILLING AND SAMPLING INFORMATION
Date Started : 6/28/89 Date Completed : 6/28/89
Method : CFA Total Depth : 21.5

WELL COMPLETION INFORMATION
Screen Dia : . Length : .
Slot Size : . Type : .
Casing Dia : . Length : .

SURFACE ELEVATION : 45 FEET, USGS TORRANCE, CA

DEPTH IN FEET	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	RECOVERY (FEET)	BLOW COUNT	TIME	PID *	GRAPHIC LOG	WELL COMPLETION	WATER LEVEL
	Clayey SAND (SC), soft, damp, black, strong odor.									
5	Clayey SAND (SC), medium dense, brown, moderate odor.	5	SS	0.5	28	1315				
10	slight odor	10	SS	1.0	29	1330				
	SILT (ML), soft, damp, brown, slight odor.									
15		15	SS	1.0	23	1347				
20	continued SILT (ML)	20	SS	1.0	26	1415				
	Total depth = 21.5 feet No free groundwater encountered Boring backfilled with neat concrete cement to ground surface									
25										
30										
35										
40										
45										
50										
55	* PID PHOTO-IONIZATION DETECTOR VALUE (eV)									

BPACC00962

SAMPLER TYPE
SS - DRIVEN SPLIT SPOON RC - ROCK CORE
ST - PRESSED SHELBY TUBE CT - CONTINUOUS TUBE

BORING METHOD
HSA - HOLLOW STEM AUGER DC - DRIVING CASING
CFA - CONTINUOUS FLIGHT AUGERS MD - MUD DRILLING

ENSR

ENSR CONSULTING & ENGINEERING

SUBSURFACE EXPLORATION

LITHOLOGIC LOG OF B-7

Client : AMOCO CHEMICAL CORPORATION
Project Name : AMOCO CHEMICAL
Project Location : TORRANCE
Job Number : 0350-004-100 Boring No : B-7
Logged By : J. NORDENSTAM
Approved By : K. PITCHFORD, C. E. G.
Drilled By : DATUM EXPLORATION

DRILLING AND SAMPLING INFORMATION

Date Started : 6/28/89 Date Completed : 6/28/89
Method : CFA Total Depth : 17.5 FEET

WELL COMPLETION INFORMATION

Screen Dia : . Length : .
Slot Size : . Type : .
Casing Dia : . Length : .

DEPTH IN FEET	DESCRIPTION SURFACE ELEVATION : 45 FEET, USGS TORRANCE, CA	SAMPLE NO.	SAMPLE TYPE	RECOVERY (FEET)	BLOW COUNT	TIME	PID *	GRAPHIC LOG	WELL COMPLETION	WATER LEVEL
	Clayey SAND (SC), soft, damp, black, strong odor									
5	Sandy CLAY (CL), medium dense, damp, brown, moderate odor	5	SS	0.5	37	1500				
10	continued (CL)	10	SS	1.5	22	1514				
	SILT (ML), soft, damp, brown.									
15		15	SS	1.0	18	1550				
20	Total depth = 17.5 feet. No free groundwater encountered Boring backfilled with neat concrete cement to ground surface.									
25										
30										
35										
40										
45										
50										
55	* PID: PHOTO-IONIZATION DETECTOR VALUE (eV)									

BPACC00963

SAMPLER TYPE

SS - DRIVEN SPLIT SPOON RC - ROCK CORE
ST - PRESSED SHELBY TUBE CT - CONTINUOUS TUBE

BORING METHOD

HSA - HOLLOW STEM AUGER DC - DRIVING CASING
CFA - CONTINUOUS FLIGHT AUGERS MD - MUD DRILLING

ENSR

ENSR CONSULTING & ENGINEERING

SUBSURFACE EXPLORATION

LITHOLOGIC LOG OF B-8

Client : AMOCO CHEMICAL COMPANY
Project Name : AMOCO CHEMICAL
Project Location : TORRANCE, CA
Job Number : 0350-004-100 Boring No : B-8
Logged By : J. NORDENSTAM
Approved By : M. WOOD, R.G.
Drilled By : DATUM EXPLORATION

DRILLING AND SAMPLING INFORMATION
Date Started : 6-29-89 Date Completed : 6-29-89
Method : HSA Total Depth : 21.5 FEET

WELL COMPLETION INFORMATION
Screen Dia : . Length : .
Slot Size : . Type : .
Casing Dia : . Length : .

SURFACE ELEVATION : 45 FEET, USGS TORRANCE, CA

DEPTH IN FEET	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	RECOVERY (FEET)	BLOW COUNT	TIME	PID *	GRAPHIC LOG	WELL COMPLETION	WATER LEVEL
	Silty, fine SAND (SM), clayey, damp, soft, slight odor									
5		5	SS	0.5	50+	0830				
10	continued (SM), moderate odor	10	SS	1.5	28	0845				
15	increase in sand size to fine - medium	15	SS	1.5	18	0905				
20	decrease in sand size to fine	20	SS	1.5	21	0925				
	Bottom of boring at 21.5 feet. No free groundwater encountered Boring backfilled with neat concrete cement to ground surface.									
25										
30										
35										
40										
45										
50										
55	* PID: PHOTO-IONIZATION DETECTOR VALUE (eV)									

BPACC00964

SAMPLER TYPE
SS - DRIVEN SPLIT SPOON RC - ROCK CORE
ST - PRESSED SHELBY TUBE CT - CONTINUOUS TUBE

BORING METHOD
HSA - HOLLOW STEM AUGER DC - DRIVING CASING
CFA - CONTINUOUS FLIGHT AUGERS MD - MUD DRILLING

ENSR

ENSR CONSULTING & ENGINEERING

SUBSURFACE EXPLORATION

LITHOLOGIC LOG OF B-9

Client : AMOCO CHEMICAL COMPANY
Project Name : AMOCO CHEMICAL
Project Location : TORRANCE, CA
Job Number : 0350-004-100 Boring No : B-9
Logged By : J. NORDENSTAM
Approved By : K. PITCHFORD, C. E. G.
Drilled By : DATUM EXPLORATION

DRILLING AND SAMPLING INFORMATION
Date Started : 6-29-89 Date Completed : 6-29-89
Method : HSA Total Depth : 21.5 FEET

WELL COMPLETION INFORMATION
Screen Dia : . Length : .
Slot Size : . Type : .
Casing Dia : . Length : .

DEPTH IN FEET	DESCRIPTION SURFACE ELEVATION : 45 FEET, USGS TORRANCE, CA	SAMPLE NO.	SAMPLE TYPE	RECOVERY (FEET)	BLOW COUNT	TIME	PID *	GRAPHIC LOG	WELL COMPLETION	WATER LEVEL
	Silty fine to medium SAND (SM), clayey, black, damp, soft									
5	same as above, moderate odor	5	SS	1.5	37	1040				
10	slight odor	10	SS	1.5	30	1105				
15	continued silty, clayey, fine to medium SAND (SM), no odor	15	SS	1.0	13	1145				
20	same as above	20	SS	1.5	31	1210				
	Bottom of boring at 21.5 feet. No free groundwater encountered. Boring backfilled with neat concrete cement to ground surface.									
25										
30										
35										
40										
45										
50										
55	* PID: PHOTO-IONIZATION DETECTOR VALUE (eV)									

BPACC00965

SAMPLER TYPE
SS - DRIVEN SPLIT SPOON RC - ROCK CORE
ST - PRESSED SHELBY TUBE CT - CONTINUOUS TUBE

BORING METHOD
HSA - HOLLOW STEM AUGER DC - DRIVING CASING
CFA - CONTINUOUS FLIGHT AUGERS MD - MUD DRILLING

ENSR

ENSR CONSULTING & ENGINEERING

SUBSURFACE EXPLORATION

LITHOLOGIC LOG OF B-10

Client : AMOCO CHEMICAL COMPANY
Project Name : AMOCO CHEMICAL
Project Location : TORRANCE, CA
Job Number : 0350-004-100 Boring No : B-10
Logged By : J. NORDENSTAM
Approved By : K. PITCHFORD, C. E. G.
Drilled By : DATUM EXPLORATION

DRILLING AND SAMPLING INFORMATION

Date Started : 6-29-89 Date Completed : 6-29-89
Method : HSA Total Depth : 21.5 FEET

WELL COMPLETION INFORMATION

Screen Dia : . Length : .
Slot Size : . Type : .
Casing Dia : . Length : .

DEPTH IN FEET	DESCRIPTION SURFACE ELEVATION : 45 FEET, USGS TORRANCE, CA	SAMPLE NO.	SAMPLE TYPE	RECOVERY (FEET)	BLOW COUNT	TIME	PID *	GRAPHIC LOG	WELL COMPLETION	WATER LEVEL
	Clayey fine SAND (SC), silty									
5	increase in sand size to fine - medium	5	SS	1.0	43	1340				
10	continued Silty, clayey fine - medium SAND (SC)	10	SS	1.0	44	1400				
15	same as above	15	SS	1.5	16	1420				
	Silty fine SAND (SM)									
20		20	SS	1.5	28	1500				
	Bottom of boring at 21.5 feet. No free groundwater encountered Boring backfilled with neat concrete cement to ground surface									
25										
30										
35										
40										
45										
50										
55	* PID: PHOTO-IONIZATION DETECTOR VALUE (eV)									

BPACC00966

SAMPLER TYPE

SS - DRIVEN SPLIT SPOON
ST - PRESSED SHELBY TUBE
RC - ROCK CORE
CT - CONTINUOUS TUBE

BORING METHOD

HSA - HOLLOW STEM AUGER
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

ENSR

ENSR CONSULTING & ENGINEERING

SUBSURFACE EXPLORATION

LITHOLOGIC LOG OF B-11

Client : AMOCO CHEMICAL COMPANY
Project Name : AMOCO CHEMICAL
Project Location : TORRANCE, CA
Job Number : 0350-004-100 Boring No : B-11
Logged By : J. NORDENSTAM
Approved By : K. PITCHFORD, C. E. G.
Drilled By : DATUM EXPLORATION

DRILLING AND SAMPLING INFORMATION

Date Started : 6-29-89 Date Completed : 6-29-89
Method : HSA Total Depth : 16.5 FEET

WELL COMPLETION INFORMATION

Screen Dia : . Length : .
Slot Size : . Type : .
Casing Dia : . Length : .

DEPTH IN FEET	DESCRIPTION SURFACE ELEVATION : 45 FEET, USGS TORRANCE, CA	SAMPLE NO.	SAMPLE TYPE	RECOVERY (FEET)	BLOW COUNT	TIME	PID *	GRAPHIC LOG	WELL COMPLETION	WATER LEVEL
	plastic upper 12 inches Silty fine SAND (SM), clayey, black, damp, soft strong odor									
5		5	SS	1.5	50+	1540				
	increase in sand size to fine - medium									
10	same as above	10	SS	1.5	36	1600				
15	same as above	15	SS	1.5	23	1630				
	Boring terminated at 16.5 feet due to auger refusal. No free groundwater encountered Boring backfilled with neat concrete cement to ground surface.									
20										
25										
30										
35										
40										
45										
50										
55	* PID: PHOTO-IONIZATION DETECTOR VALUE (eV)									

BPACC00967

SAMPLER TYPE

SS - DRIVEN SPLIT SPOON RC - ROCK CORE
ST - PRESSED SHELBY TUBE CT - CONTINUOUS TUBE

BORING METHOD

HSA - HOLLOW STEM AUGER DC - DRIVING CASING
CFA - CONTINUOUS FLIGHT AUGERS MD - MUD DRILLING

ENSR

ENSR CONSULTING & ENGINEERING

SUBSURFACE EXPLORATION

LITHOLOGIC LOG OF B-12

Client : AMOCO CHEMICAL COMPANY
Project Name : AMOCO CHEMICAL
Project Location : TORRANCE, CA
Job Number : 0350-004-100 Boring No : B-12
Logged By : C. KELLER
Approved By : K. PITCHFORD, C. E. G.
Drilled By : DATUM EXPLORATION

DRILLING AND SAMPLING INFORMATION
Date Started : 6-30-89 Date Completed : 6-30-89
Method : HSA Total Depth : 20 FEET

WELL COMPLETION INFORMATION
Screen Dia : . Length : .
Slot Size : . Type : .
Casing Dia : . Length : .

DEPTH IN FEET	DESCRIPTION SURFACE ELEVATION : 45 FEET, USGS TORRANCE, CA	SAMPLE NO.	SAMPLE TYPE	RECOVERY (FEET)	BLOW COUNT	TIME	PID *	GRAPHIC LOG	WELL COMPLETION	WATER LEVEL
	SILT (ML) dark green to black, wet to saturated, soft									
5	Sandy SILT (ML) dark green, dry to damp, hard	5	SS	0.5	50+	0830				
10		10	SS	1.0	31	0850				
15	continued Sandy SILT (ML), with increase in sand	15	SS	1.0	13	0930				
	Silty SAND (SM) tan to brown, dry to damp, loose to medium dense									
	SILT (ML) tan to brown, dry to damp, hard, contains some sand and clay	20	SS	1.0	24	0950				
20	Bottom of boring at 20 feet. No free groundwater encountered Boring backfilled with neat concrete cement to ground surface.									
25										
30										
35										
40										
45										
50										
55	* PID: PHOTO-IONIZATION DETECTOR VALUE (eV)									

BPACC00968

SAMPLER TYPE
SS - DRIVEN SPLIT SPOON RC - ROCK CORE
ST - PRESSED SHELBY TUBE CT - CONTINUOUS TUBE

BORING METHOD
HSA - HOLLOW STEM AUGER DC - DRIVING CASING
CFA - CONTINUOUS FLIGHT AUGERS MD - MUD DRILLING

ENSR

ENSR CONSULTING & ENGINEERING

SUBSURFACE EXPLORATION

LITHOLOGIC LOG OF B-13

Client : AMOCO CHEMICAL COMPANY
Project Name : AMOCO CHEMICAL
Project Location : TORRANCE, CA
Job Number : 0350-004-100 Boring No : B-13
Logged By : C. KELLER
Approved By : K. PITCHFORD, C. E. G.
Drilled By : DATUM EXPLORATION

DRILLING AND SAMPLING INFORMATION
Date Started : 6-30-89 Date Completed : 6-30-89
Method : HSA Total Depth : 20 FEET

WELL COMPLETION INFORMATION
Screen Dia : . Length : .
Slot Size : . Type : .
Casing Dia : . Length : .

DEPTH IN FEET	DESCRIPTION SURFACE ELEVATION : 45 FEET, USGS TORRANCE, CA	SAMPLE NO.	SAMPLE TYPE	RECOVERY (FEET)	BLOW COUNT	TIME	PID *	GRAPHIC LOG	WELL COMPLETION	WATER LEVEL
	Silty CLAY (CL), dark green, damp to moist, soft strong sweet odor									
5	Silty SAND (SM), clayey, dark green, damp, loose to medium dense, no odor	5	SS	1.5	19	1025				
10		10	SS	1.5	21	1045				
	Sandy SILT (ML), clayey, dark green, damp, medium dense									
15	contiunued SILT (ML) becomes reddish-brown	15	SS	1.5	39	1100				
	SAND (SM) brown, damp, loose to medium dense, some silt	20	SS	1.5	36	1130				
20	Bottom of boring at 20 feet. No free groundwater encountered Boring backfilled with neat concrete cement to ground surface.									
25										
30										
35										
40										
45										
50										
55	* PID: PHOTO-IONIZATION DETECTOR VALUE (eV)									

BPACC00969

SAMPLER TYPE
SS - DRIVEN SPLIT SPOON RC - ROCK CORE
ST - PRESSED SHELBY TUBE CT - CONTINUOUS TUBE

BORING METHOD
HSA - HOLLOW STEM AUGER DC - DRIVING CASING
CFA - CONTINUOUS FLIGHT AUGERS MD - MUD DRILLING

ENSR

ENSR CONSULTING & ENGINEERING

SUBSURFACE EXPLORATION

LITHOLOGIC LOG OF B-14

Client : AMOCO CHEMICAL COMPANY
Project Name : AMOCO CHEMICAL
Project Location : TORRANCE, CA
Job Number : 0350-004-100 Boring No : B-14
Logged By : C. KELLER
Approved By : K. PITCHFORD, C. E. G.
Drilled By : DATUM EXPLORATION

DRILLING AND SAMPLING INFORMATION
Date Started : 6-30-89 Date Completed : 6-30-89
Method : HSA Total Depth : 20 FEET

WELL COMPLETION INFORMATION
Screen Dia : . Length : .
Slot Size : . Type : .
Casing Dia : . Length : .

DEPTH IN FEET	DESCRIPTION SURFACE ELEVATION : 45 FEET, USGS TORRANCE, CA	SAMPLE NO.	SAMPLE TYPE	RECOVERY (FEET)	BLOW COUNT	TIME	PID *	GRAPHIC LOG	WELL COMPLETION	WATER LEVEL
	Silty fine SAND (SM), dark green, damp, soft									
5		5	SS	1.0	25	1215				
10	continued silty SAND (SM), with minor clay, moderate to strong odor	10	SS	1.5	37	1240				
15	Silty, fine to medium SAND (SM), brown, dry to damp, moderate to strong odor	15	SS	1.0	19	1320				
20		20	SS	1.5	34	1350				
	Bottom of boring at 20 feet. No free groundwater encountered Boring backfilled with neat concrete cement to ground surface.									
25										
30										
35										
40										
45										
50										
55	* PID: PHOTO-IONIZATION DETECTOR VALUE (eV)									

BPACC00970

SAMPLER TYPE
SS - DRIVEN SPLIT SPOON RC - ROCK CORE
ST - PRESSED SHELBY TUBE CT - CONTINUOUS TUBE

BORING METHOD
HSA - HOLLOW STEM AUGER DC - DRIVING CASING
CFA - CONTINUOUS FLIGHT AUGERS MD - MUD DRILLING

APPENDIX B

CHAIN-OF-CUSTODY FORMS

CHAIN OF CUSTODY RECORD

PAGE 1 OF 2

Client/Project Name	Project Location
[illegible]	TORRANCE
Project No.	**Field Logbook No.**
0350-004-100	
Sampler: (Signature)	**Chain of Custody Tape No.**
[signature]	

ANALYSES

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	EPA 8240	HOLD					REMARKS
B-1-5'	6/27/89			SOIL		X					
B-1-10'					X						
B-1-15'					X						
B-1-20'						X					
B-2-5'						X					
B-2-10'					X						
B-2-15'					X						
B-2-20'						X					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	6/27/89	5:53	Mark Weiner	6/27/89	5:56pm
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR Attn: Mark Wood
ENSR CORPORATION
19782 MacArthur Blvd., STE 365
Irvine, CA 92715
(714) 476-0321

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BPACC00972

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PAGE 1 OF 2

1974-3-84

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSES
AMOCO	Torrance CA	
Project No. 0350-004-100	Field Logbook No.	
Sampler: (Signature) Mark Wood	Chain of Custody Tape No.	

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	8240	Hold					REMARKS
B-4-5	6/28/89	~~6:00~~		SOIL		X					styrene/ethylbenzene
B-4-10					X						
B-4-15						X					
B-4-20					X						
B-5-5						X					
B-5-10					X						
B-5-15						X					
B-5-20					X						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Mark Wood	6/28/89	6:00			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature) Mark Weiner	Date 6/29/89	Time 6:00
Sample Disposal Method:			Disposed of by: (Signature)	Date	Time

SAMPLE COLLECTOR Attn Mark Wood
ENSR CORPORATION
19782 MacArthur Blvd., STE 365
Irvine, CA 92715
(714) 476-0321

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1974-3-84

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
AMOCO	Torrance CA
Project No. 0350-004-100	Field Logbook No.
Sampler: (*Signature*) Mark Wood	Chain of Custody Tape No.

ANALYSES

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	8240	Hold					REMARKS
B-6-5	6/28/89			Soil		X					
B-6-10						X					
B-6-15					X						
B-6-20					X						
B-7-5						X					
B-7-10					X						
B-7-15					X						

Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
Mark Wood	6/28/89	6:00			
Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Date	Time	Received for Laboratory: (*Signature*)	Date	Time
			[illegible]	6/22/89	6:30
Sample Disposal Method:	Disposed of by: (*Signature*)			Date	Time

SAMPLE COLLECTOR Mark M. Wood

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1974.3.84

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
AMOCO CHEMICAL	TORRANCE
Project No. 0350-004-100	Field Logbook No.
Sampler: (Signature)	Chain of Custody Tape No.

ANALYSES

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	EPA METHOD 8240	HOLD					REMARKS
B-8 5'	6/29/89	8:30		SOIL		X					
B-8 10'		8:45				X					
B-8 15'		9:05			X						
B-8 20'		9:25			X						
B-9 5'		10:40				X					
B-9 10'		11:05				X					
B-9 15'		11:45			X						
B-9 20'		12:10			X						

	Date	Time		Date	Time
Relinquished by: (Signature)	6/30	8:50 AM	Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)	6/30	8:52
Relinquished by: (Signature)			Received for Laboratory: (Signature)		
Sample Disposal Method:			Disposed of by: (Signature)		

SAMPLE COLLECTOR

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19782 MacArthur Blvd., STE 365
Irvine, CA 92715
(714) 476-0321

ANALYTICAL LABORATORY

DEL MAR

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1974-3-84

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
AMOCO CHEMICAL	[illegible]

Project No.	Field Logbook No.
0350-004-100	

Sampler: (*Signature*)	Chain of Custody Tape No.
John Nordenstam	

ANALYSES

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	EPA METHOD 8240	HOLD					REMARKS
B-10 5'	6-21-91	1:40		SOIL		X					
B-10 10'	↓	2:00		↓		X					
B-10 15'	↓	2:20		↓	X						
B-10 20'	↓	3:00		↓	X						
B-11 5'	↓	3:40		↓		X					
B-11 10'	↓	4:00		↓	X						
B-11 15'	↓	4:30		↓	X						

Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
John Nordenstam	6/30	850 AM			
Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*) E. [illegible]	Date 6/30	Time 8:52
Relinquished by: (*Signature*)	Date	Time	Received for Laboratory: (*Signature*)	Date	Time
Sample Disposal Method:	Disposed of by: (*Signature*)			Date	Time

SAMPLE COLLECTOR

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Irvine, CA 92715
(714) 476-0321

ANALYTICAL LABORATORY

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1974-3-84

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
AMOCO CHEMICAL Co.	TORRANCE, CA
Project No.	Field Logbook No.
0350-004-100	
Sampler: (*Signature*)	Chain of Custody Tape No.
Bill Lunn	

ANALYSES

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample							REMARKS
B-12-5	6/30/89			Soil							HOLD
B-12-10											
B-13-5											
B-13-10											
B-14-5											
B-14-10											

Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
Bill Lunn			E. Schydlik	6/30	4:30
Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
			Sue Spinner	6/30	4:30
Relinquished by: (*Signature*)	Date	Time	Received for Laboratory: (*Signature*)	Date	Time
Sample Disposal Method:	Disposed of by: (*Signature*)			Date	Time

SAMPLE COLLECTOR

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Irvine, CA 92715
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1974-3-84

APPENDIX C

LABORATORY REPORTS

Del Mar Analytical
18102 Sky Park South, Suite F • Irvine, CA 92714
(714) 261-1022 • FAX (714) 261-1228

JUL 21 1989

ENSR Corporation
19782 MacArthur Blvd., Suite 365
Irvine, CA 92715

Date Sampled: 06/27/89
Date Received: 06/27/89
Date Analyzed: 07/07/89
Date Reported: 07/10/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-1 @ 10'	9060917

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	100
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

Del Mar Analytical

Gary Steube
Laboratory Director

Method of Analysis: EPA 8240

Del Mar Analytical
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(714) 261-1022 · FAX (714) 261-1228

ENSR Corporation
19782 MacArthur Blvd., Suite 365
Irvine, CA 92715

Date Sampled: 06/27/89
Date Received: 06/27/89
Date Analyzed: 07/07/89
Date Reported: 07/10/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-1 @ 10'	9060917

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	100 %
Toluene-d8	103 %
4-Bromofluorobenzene	101 %

Del Mar Analytical

Gary Steube
Laboratory Director

Method of Analysis: EPA 8240

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Irvine, CA 92715

Date Sampled: 06/27/89
Date Received: 06/27/89
Date Analyzed: 07/07/89
Date Reported: 07/10/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-1 @ 15'	9060918

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

Del Mar Analytical

Gary Steube
Laboratory Director

Method of Analysis: EPA 8240

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Irvine, CA 92715

Date Sampled: 06/27/89
Date Received: 06/27/89
Date Analyzed: 07/07/89
Date Reported: 07/10/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-1 @ 15'	9060918

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. - None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	89 %
Toluene-d8	90 %
4-Bromofluorobenzene	90 %

Del Mar Analytical

Gary Steube
Laboratory Director

Method of Analysis: EPA 8240

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ENSR Corporation
19782 MacArthur Blvd., Suite 365
Irvine, CA 92715

Date Sampled: 06/27/89
Date Received: 06/27/89
Date Analyzed: 07/07/89
Date Reported: 07/10/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-2 @ 10'	9060919

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

Del Mar Analytical

Method of Analysis: EPA 8240

Gary Steube
Laboratory Director

Del Mar Analytical
18102 Sky Park South, Suite F • Irvine, CA 92714
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ENSR Corporation
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Date Sampled: 06/27/89
Date Received: 06/27/89
Date Analyzed: 07/07/89
Date Reported: 07/10/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-2 @ 10'	9060919

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	87 %
Toluene-d8	89 %
4-Bromofluorobenzene	87 %

Del Mar Analytical

Gary Steube
Laboratory Director

Method of Analysis: EPA 8240

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-2 @ 15'	9060920

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-2 @ 15'	9060920

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	92 %
Toluene-d8	89 %
4-Bromofluorobenzene	87 %

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-3 @ 10'	9060921

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

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Method of Analysis: EPA 8240

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-3 @ 10'	9060921

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	100 %
Toluene-d8	103 %
4-Bromofluorobenzene	101 %

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Date Reported: 07/10/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-3 @ 15'	9060922

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. - None Detected above stated Detection Limit

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-3 @ 15'	9060922

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	100 %
Toluene-d8	103 %
4-Bromofluorobenzene	101 %

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Method of Analysis: EPA 8240

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Date Received: 06/28/89
Date Analyzed: 07/10/89
Date Reported: 07/11/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-4-10	9060988

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. - None Detected above stated Detection Limit

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Method of Analysis: EPA 8240

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
B-4-10	9060988

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	88 %
Toluene-d8	85 %
4-Bromofluorobenzene	86 %

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-4-20	9060989

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. - None Detected above stated Detection Limit

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Sample Description	Sample Number
B-4-20	9060989

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. - None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	92 %
Toluene-d8	90 %
4-Bromofluorobenzene	88 %

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-5-10	9060990

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	500	8000
1,1,1-Trichloroethane	500	N.D.
Trichloroethene	500	44000
1,1-Dichloroethane	500	N.D.
1,2-Dichloroethane	500	N.D.
1,1-Dichloroethene	500	N.D.
trans-1,2 Dichloroethene	500	N.D.
Methylene Chloride	500	N.D.
Chloroform	500	N.D.
Bromodichloromethane	500	N.D.
Dibromochloromethane	500	N.D.
Bromoform	500	N.D.
Bromomethane	500	N.D.
Chloromethane	500	N.D.
Chloroethane	500	N.D.
Vinyl Chloride	500	N.D.
1,2-Dichloropropane	500	N.D.
1,3-Dichloropropenes	500	N.D.
Carbon Tetrachloride	500	N.D.
Trichlorofluoromethane	2500	N.D.
1,1,2-Trichloroethane	500	N.D.
1,1,2,2-Tetrachloroethane	500	N.D.
2-Chloroethylvinyl ether	500	N.D.

N.D. = None Detected above stated Detection Limit

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Method of Analysis: EPA 8240

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
B-5-10	9060990

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	500	N.D.
Toluene	500	N.D.
Ethylbenzene	500	N.D.
Chlorobenzene	500	N.D.
Xylenes (sum of 3 isomers)	500	N.D.
Acetone	2500	N.D.
2-Butanone	2500	N.D
Carbon Disulfide	1000	N.D.
Vinyl Acetate	1000	N.D.
4-Methyl-2-pentanone	1000	N.D.
2-Hexanone	1000	N.D.
Styrene	1000	N.D.

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	93 %
Toluene-d8	87 %
4-Bromofluorobenzene	87 %

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Date Reported: 07/11/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-5-20	9060991

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

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Method of Analysis: EPA 8240

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
B-5-20	9060991

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	95 %
Toluene-d8	87 %
4-Bromofluorobenzene	86 %

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Method of Analysis: EPA 8240

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Date Received: 06/28/89
Date Analyzed: 07/10/89
Date Reported: 07/11/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-6-15	9060992

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

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Method of Analysis: EPA 8240

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ENSR Constructors
19782 MacArthur Ave., Suite 365
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Date Sampled: 06/28/89
Date Received: 06/28/89
Date Analyzed: 07/10/89
Date Reported: 07/11/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
B-6-15	9060992

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. - None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	91 %
Toluene-d8	86 %
4-Bromofluorobenzene	89 %

Del Mar Analytical

Gary Steube
Laboratory Director

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Date Reported: 07/11/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-6-20	9060993

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
B-6-20	9060993

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. - None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	96 %
Toluene-d8	85 %
4-Bromofluorobenzene	83 %

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-7-10	9060994

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. - None Detected above stated Detection Limit

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Method of Analysis: EPA 8240

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Date Reported: 07/11/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
B-7-10	9060948

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	96 %
Toluene-d8	85 %
4-Bromofluorobenzene	83 %

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Method of Analysis: EPA 8240

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Date Reported: 07/11/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-7-15	9060995

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. - None Detected above stated Detection Limit

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Date Reported: 07/11/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
B-7-15	9060995

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. - None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	93 %
Toluene-d8	85 %
4-Bromofluorobenzene	86 %

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Date Analyzed: 07/12/89
Date Reported: 07/13/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-8-15	9061028

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

Del Mar Analytical

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Method of Analysis: EPA 8240

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Date Reported: 07/13/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
B-8-15	9061028

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	89 %
Toluene-d8	103 %
4-Bromofluorobenzene	103 %

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-8-20	9061029

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

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Sample Description	Sample Number
B-8-20	9061029

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	85 %
Toluene-d8	97 %
4-Bromofluorobenzene	104 %

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-9-15	9061030

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
B-9-15	9061030

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	700
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	1200

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	87 %
Toluene-d8	100 %
4-Bromofluorobenzene	110 %

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Date Reported: 07/13/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-9-20	9061031

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

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Method of Analysis: EPA 8240

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
B-9-20	9061031

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	950
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	4400

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	86 %
Toluene-d8	105 %
4-Bromofluorobenzene	105 %

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Method of Analysis: EPA 8240

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Date Analyzed: 07/12/89
Date Reported: 07/13/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-10-15	9061032

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

Del Mar Analytical

Method of Analysis: EPA 8240

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ENSR Constructors
19782 MacArthur Ave., Suite 365
Irvine, CA 92715

Date Sampled: 06/29/89
Date Received: 06/30/89
Date Analyzed: 07/12/89
Date Reported: 07/13/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
B-10-15	9061032

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. - None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	86 %
Toluene-d8	97 %
4-Bromofluorobenzene	105 %

Del Mar Analytical

Gary Steube
Laboratory Director

Method of Analysis: EPA 8240

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Date Reported: 07/13/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-10-20	9061033

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
B-10-20	9061033

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	88 %
Toluene-d8	98 %
4-Bromofluorobenzene	106 %

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-11-10	9061034

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	80
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	90
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
B-11-10	9061034

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. - None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	85 %
Toluene-d8	92 %
4-Bromofluorobenzene	105 %

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-11-15	9061035

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

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Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description	Sample Number
B-11-15	9061035

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	86 %
Toluene-d8	94 %
4-Bromofluorobenzene	108 %

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Attention: Bill Leever

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-12-15	9061078

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

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Attention: Bill Leever

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-12-15	9071078

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	88 %
Toluene-d8	94 %
4-Bromofluorobenzene	104 %

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Attention: Bill Leever

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-12-20	9061079

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

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Method of Analysis: EPA 8240

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Attention: Bill Leever

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-12-20	9071079

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. - None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	88 %
Toluene-d8	90 %
4-Bromofluorobenzene	105 %

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Attention: Bill Leever

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-13-15	9061080

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	1000	2400
1,1,1-Trichloroethane	1000	N.D.
Trichloroethene	1000	46000
1,1-Dichloroethane	1000	N.D.
1,2-Dichloroethane	1000	N.D.
1,1-Dichloroethene	1000	N.D.
trans-1,2 Dichloroethene	1000	N.D.
Methylene Chloride	1000	N.D.
Chloroform	1000	N.D.
Bromodichloromethane	1000	N.D.
Dibromochloromethane	1000	N.D.
Bromoform	1000	N.D.
Bromomethane	1000	N.D.
Chloromethane	1000	N.D.
Chloroethane	1000	N.D.
Vinyl Chloride	1000	N.D.
1,2-Dichloropropane	1000	N.D.
1,3-Dichloropropenes	1000	N.D.
Carbon Tetrachloride	1000	N.D.
Trichlorofluoromethane	5000	N.D.
1,1,2-Trichloroethane	1000	N.D.
1,1,2,2-Tetrachloroethane	1000	N.D.
2-Chloroethylvinyl ether	1000	N.D.

N.D. = None Detected above stated Detection Limit

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Attention: Bill Leever

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-13-15	9071080

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	1000	N.D.
Toluene	1000	1100
Ethylbenzene	1000	65000
Chlorobenzene	1000	N.D.
Xylenes (sum of 3 isomers)	1000	N.D.
Acetone	5000	N.D.
2-Butanone	5000	N.D
Carbon Disulfide	2000	N.D.
Vinyl Acetate	2000	N.D.
4-Methyl-2-pentanone	2000	N.D.
2-Hexanone	2000	N.D.
Styrene	2000	330000

N.D. - None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	85 %
Toluene-d8	84 %
4-Bromofluorobenzene	109 %

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Attention: Bill Leever

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-13-20	9061081

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	1000	1400
1,1,1-Trichloroethane	1000	N.D.
Trichloroethene	1000	6800
1,1-Dichloroethane	1000	N.D.
1,2-Dichloroethane	1000	N.D.
1,1-Dichloroethene	1000	N.D.
trans-1,2 Dichloroethene	1000	N.D.
Methylene Chloride	1000	N.D.
Chloroform	1000	N.D.
Bromodichloromethane	1000	N.D.
Dibromochloromethane	1000	N.D.
Bromoform	1000	N.D.
Bromomethane	1000	N.D.
Chloromethane	1000	N.D.
Chloroethane	1000	N.D.
Vinyl Chloride	1000	N.D.
1,2-Dichloropropane	1000	N.D.
1,3-Dichloropropenes	1000	N.D.
Carbon Tetrachloride	1000	N.D.
Trichlorofluoromethane	5000	N.D.
1,1,2-Trichloroethane	1000	N.D.
1,1,2,2-Tetrachloroethane	1000	N.D.
2-Chloroethylvinyl ether	1000	N.D.

N.D. = None Detected above stated Detection Limit

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Attention: Bill Leever

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-13-20	9071081

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	1000	N.D.
Toluene	1000	N.D.
Ethylbenzene	1000	20000
Chlorobenzene	1000	N.D.
Xylenes (sum of 3 isomers)	1000	N.D.
Acetone	5000	N.D.
2-Butanone	5000	N.D
Carbon Disulfide	2000	N.D.
Vinyl Acetate	2000	N.D.
4-Methyl-2-pentanone	2000	N.D.
2-Hexanone	2000	N.D.
Styrene	2000	100000

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	86 %
Toluene-d8	102 %
4-Bromofluorobenzene	105 %

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Date Reported: 07/14/89

Attention: Bill Leever

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-14-15	9061082

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	75
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	290
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

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(714) 261-1022 • FAX (714) 261-1228

ENSR Corporation
19782 MacArthur Blvd., Suite 365
Irvine, CA 92715

Date Sampled: 06/30/89
Date Received: 06/30/89
Date Analyzed: 07/14/89
Date Reported: 07/14/89

Attention: Bill Leever

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-14-15	9071082

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	130
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	190

N.D. - None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	87 %
Toluene-d8	96 %
4-Bromofluorobenzene	104 %

Del Mar Analytical

Gary Steube
Laboratory Director

Method of Analysis: EPA 8240

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Date Sampled: 06/30/89
Date Received: 06/30/89
Date Analyzed: 07/14/89
Date Reported: 07/14/89

Attention: Bill Leever

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-14-20	9061083

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

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Method of Analysis: EPA 8240

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Laboratory Director

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Date Sampled: 06/30/89
Date Received: 06/30/89
Date Analyzed: 07/14/89
Date Reported: 07/14/89

Attention: Bill Leever

Project: 0350-004-100, Amoco

Sample Description	Sample Number
Soil Sample B-14-20	9071083

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. - None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	88 %
Toluene-d8	99 %
4-Bromofluorobenzene	102 %

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Method of Analysis: EPA 8240

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ENSR Constructors
19782 MacArthur Ave., Suite 365
Irvine, CA 92715

Date Analyzed: 07/10/89
Date Reported: 07/11/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description
Method Blank

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. - None Detected above stated Detection Limit

Del Mar Analytical

Method of Analysis: EPA 8240

Gary Steube
Laboratory Director

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ENSR Constructors
19782 MacArthur Ave., Suite 365
Irvine, CA 92715

Date Analyzed: 07/10/89
Date Reported: 07/11/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description
Method Blank

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	N.D.
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. = None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	92 %
Toluene-d8	94 %
4-Bromofluorobenzene	99 %

Del Mar Analytical

Gary Steube
Laboratory Director

Method of Analysis: EPA 8240

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Date Analyzed: 07/12/89
Date Reported: 07/13/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description
Method Blank

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
trans-1,2 Dichloroethene	50	N.D.
Methylene Chloride	50	N.D.
Chloroform	50	N.D.
Bromodichloromethane	50	N.D.
Dibromochloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Chloromethane	50	N.D.
Chloroethane	50	N.D.
Vinyl Chloride	50	N.D.
1,2-Dichloropropane	50	N.D.
1,3-Dichloropropenes	50	N.D.
Carbon Tetrachloride	50	N.D.
Trichlorofluoromethane	250	N.D.
1,1,2-Trichloroethane	50	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
2-Chloroethylvinyl ether	50	N.D.

N.D. = None Detected above stated Detection Limit

Del Mar Analytical

Method of Analysis: EPA 8240

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ENSR Constructors
19782 MacArthur Ave., Suite 365
Irvine, CA 92715

Date Analyzed: 07/12/89
Date Reported: 07/13/89

Attention: Mark Wood

Project: 0350-004-100, Amoco

Sample Description
Method Blank

Volatile Organics by Mass Spectrometry

	Detection Limit ug/Kg	Sample Results ug/Kg
Benzene	50	N.D.
Toluene	50	N.D.
Ethylbenzene	50	N.D.
Chlorobenzene	50	N.D.
Xylenes (sum of 3 isomers)	50	N.D.
Acetone	250	450
2-Butanone	250	N.D
Carbon Disulfide	100	N.D.
Vinyl Acetate	100	N.D.
4-Methyl-2-pentanone	100	N.D.
2-Hexanone	100	N.D.
Styrene	100	N.D.

N.D. - None Detected above stated Detection Limit

Surrogate Recovery:

1,2-Dichloroethane-d4	91 %
Toluene-d8	106 %
4-Bromofluorobenzene	107 %

Del Mar Analytical

Gary Steube
Laboratory Director

Method of Analysis: EPA 8240

APPENDIX D

AMBIENT TEMPERATURE HEADSPACE METHODOLOGY

AMBIENT TEMPERATURE HEADSPACE METHODOLOGY

During drilling and upon completion of groundwater sample collection, soil samples were screened with a portable Photovac 10S50 gas chromatograph photo-ionization detector (GC). Ambient temperature headspace analysis consists of taking a portion of the soil into a glass jar, then sealing the jar with aluminum foil, allowing sufficient time for possible hydrocarbons to volatilize, and using the GC to analyze for volatile organic compounds.

Ambient temperature headspace is sampled by piercing the aluminum foil with a Hamilton gas type syringe and extracting 50 or 100 ul or air. An air sample was then injected directly into the Photovac 10S50 portable GC. Programs for direct injection were set to allow adequate sample time with event one from 8 to 10 seconds and event three from 10 to 120 seconds. Any deviations are noted on the chromatograms. After each direct injection indicating possible contamination, a purge of hydrocarbon-free air was run. For comparison and calibration, samples of styrene, benzene, toluene, ethylbenzene, and meta-xylene (approximately 10 ppm concentration in air), tetrachloethene and trichloroethene (approximately 5 ppm concentration in air) were run to provide a standard. These chromatograms are included in Appendix E for each soil sample screened.

APPENDIX E

AMBIENT TEMPERATURE HEADSPACE CHROMATOGRAMS

PHOTOVAC

SAMPLE LIBRARY 1 JUN 27 1989 11: 5
ANALYSIS # 9 9350-004-100
INTERNAL TEMP 25 SAMPLE
GAIN 20 5PPM STYRENE

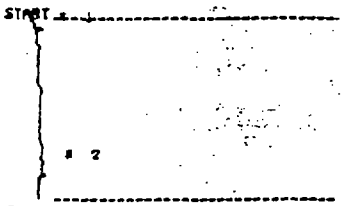
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	4	15.4	167.8 mVS
STYRENE	7	100.3	5.000 PPM

PHOTOVAC

#	COMPOUND	ID #	R.T.	LIMIT
	STYRENE	1	100.3	25.00 PPM

PHOTOVAC

START

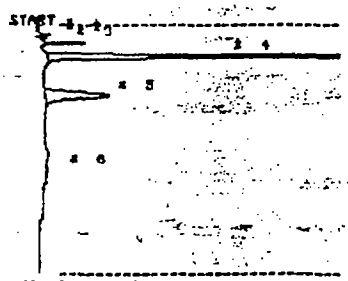


STOP @ 133.7
SAMPLE LIBRARY 1 JUN 27 1989 11: 5
ANALYSIS # 5 9350-004-100
INTERNAL TEMP 30 PURGE
GAIN 20 B1-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC

START



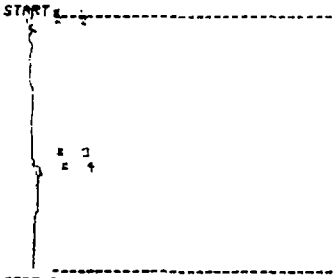
STOP @ 132.7
SAMPLE LIBRARY 1 JUN 27 1989 11:13
ANALYSIS # 10 9350-004-100
INTERNAL TEMP 30 SAMPLE
GAIN 20 B1-6

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	14.4	142.4 mVS
UNKNOWN	4	24.3	3.5 VS
UNKNOWN	5	35.5	1.0 VS

(B-1-5)

PHOTOVAC

START

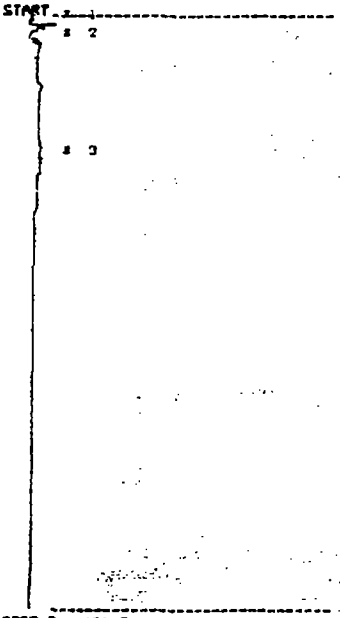


STOP @ 194.4
SAMPLE LIBRARY 1 JUN 27 1989 11:18
ANALYSIS # 11 9350-004-100
INTERNAL TEMP 31 PURGE
GAIN 20 B1-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	4	125.2	115.5 mVS

PHOTOVAC

START

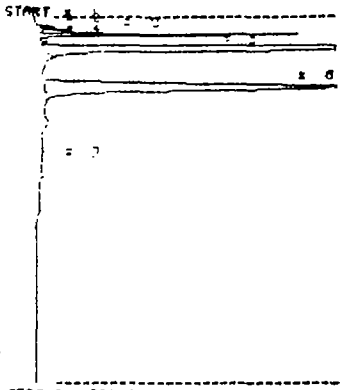


STOP @ 461.6
SAMPLE LIBRARY 1 JUN 27 1989 11:28
ANALYSIS # 12 9350-004-100
INTERNAL TEMP 30 SAMPLE
GAIN 20 B1 AMBIENT AIR

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC

START



STOP @ 281.4
SAMPLE LIBRARY 1 JUN 27 1989 11:47
ANALYSIS # 13 9350-004-100
INTERNAL TEMP 25 SAMPLE
GAIN 20 B1-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	14.2	1.0 VS
UNKNOWN	5	24.3	8.0 VS
UNKNOWN	6	55.1	5.5 VS

PHOTOVAC

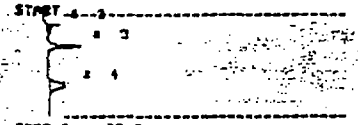
SAMPLE LIBRARY 2 JUN 27 1989 11:47
ANALYSIS # 13 9350-004-100
INTERNAL TEMP 25 SAMPLE
GAIN 20 B1-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	10.2	68.5 mVS
UNKNOWN	3	14.2	1.0 VS
UNKNOWN	5	24.3	4.0 VS
TOLUENE	6	55.1	10.85 PPM

(B-1-10)

PHOTOVAC

START

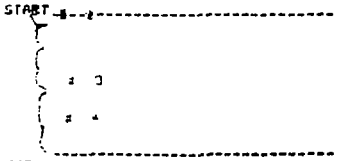


STOP @ 78.8
SAMPLE LIBRARY 1 JUN 27 1989 11:58
ANALYSIS # 14 9350-004-100
INTERNAL TEMP 25 PURGE
GAIN 20 B1-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	24.2	180.3 mVS
UNKNOWN	4	56.1	246.3 mVS

BPACC01042

PHOTOVAC



STOP @ 106.6
SAMPLE LIBRARY 1 JUN 28 1989 9:45
ANALYSIS # 9 0350-004-100
INTERNAL TEMP 27 SAMPLE
GAIN 20 B1-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	55.5	112.5 mUS

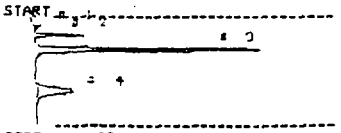
(B-1-15)

PHOTOVAC

STOP @ 105.2
SAMPLE LIBRARY 1 JUN 28 1989 9:55
ANALYSIS # 12 0350-004-100
INTERNAL TEMP 28 PURGE
GAIN 20 B2-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM

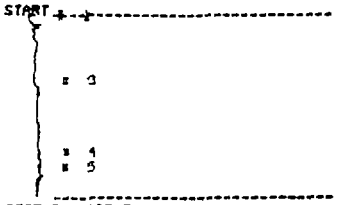
PHOTOVAC



STOP @ 83.9
SAMPLE LIBRARY 1 JUN 28 1989 10:22
ANALYSIS # 15 0350-004-100
INTERNAL TEMP 28 SAMPLE
GAIN 20 B2-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	14.5	160.4 mUS
UNKNOWN	3	25.7	1.5 US
UNKNOWN	4	38.3	628.3 mUS

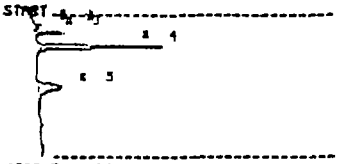
PHOTOVAC



STOP @ 109.5
SAMPLE LIBRARY 1 JUN 28 1989 9:48
ANALYSIS # 10 0350-004-100
INTERNAL TEMP 28 PURGE
GAIN 20 B2-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC

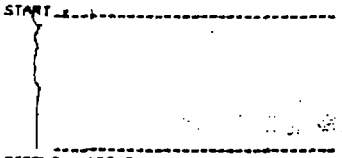


STOP @ 106.4
SAMPLE LIBRARY 1 JUN 28 1989 9:50
ANALYSIS # 13 0350-004-100
INTERNAL TEMP 23 SAMPLE
GAIN 20 B2-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	4	25.4	835.4 mUS
UNKNOWN	5	37.5	334.6 mUS

(B-2-10)

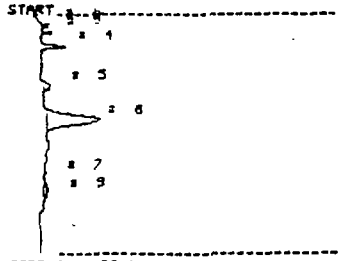
PHOTOVAC



STOP @ 102.2
SAMPLE LIBRARY 1 JUN 28 1989 10:24
ANALYSIS # 16 0350-004-100
INTERNAL TEMP 27 PURGE
GAIN 20 B2-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC

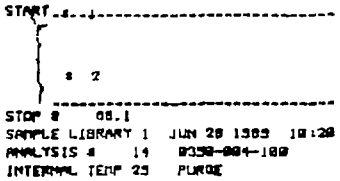


STOP @ 105.1
SAMPLE LIBRARY 1 JUN 28 1989 9:52
ANALYSIS # 11 0350-004-100
INTERNAL TEMP 28 SAMPLE
GAIN 20 B2-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	4	25.8	115.7 mUS
UNKNOWN	5	38.7	103.4 mUS
ETHYLBENZENE	6	84.1	4.335 PPM
UNKNOWN	8	149.8	112.2 mUS

(B-2-5)

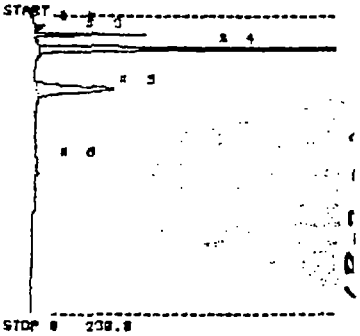
PHOTOVAC



STOP @ 88.1
SAMPLE LIBRARY 1 JUN 28 1989 10:28
ANALYSIS # 14 0350-004-100
INTERNAL TEMP 25 PURGE
GAIN 20 B2-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM

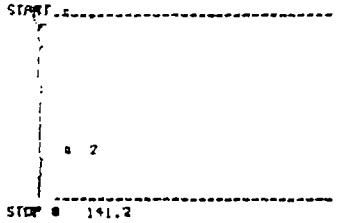
PHOTOVAC



STOP @ 230.8
SAMPLE LIBRARY 1 JUN 28 1989 10:29
ANALYSIS # 17 0350-004-100
INTERNAL TEMP 27 SAMPLE
GAIN 20 B2-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	15.1	381.2 mUS
UNKNOWN	4	25.7	3.5 US
UNKNOWN	5	58.5	1.3 US

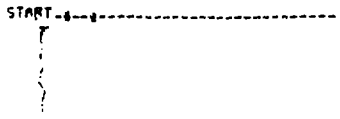
PHOTOVAC



STOP @ 141.2
SAMPLE LIBRARY 1 JUN 28 1989 10:35
ANALYSIS # 18 9350-004-100
INTERNAL TEMP 27 PURGE STND
GAIN 20 10PPM BTE

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

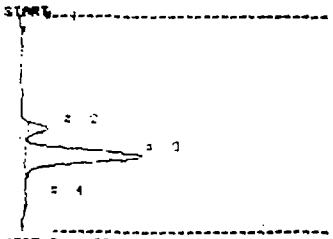


STOP @ 84.5
SAMPLE LIBRARY 1 JUN 28 1989 10:46
ANALYSIS # 20 9350-004-100
INTERNAL TEMP 26 PURGE
GAIN 20 B3-5

OFFSET 10.0 mV
CHART SPEED 1 cm/min
SLOPE SENS. 10 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 min

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

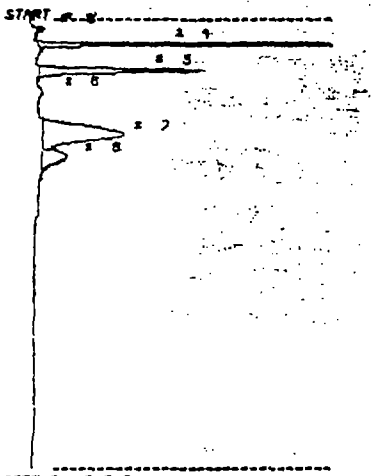


STOP @ 163.3
SAMPLE LIBRARY 1 JUN 28 1989 10:53
ANALYSIS # 22 9350-004-100
INTERNAL TEMP 27 PURGE
GAIN 10 B3-5

COMPOUND NAME PEAK R.T. AREA/PPM

ETHYLBENZENE 2 88.3 3.824 PPM
STYRENE 3 103.0 28.20 PPM

PHOTOVAC



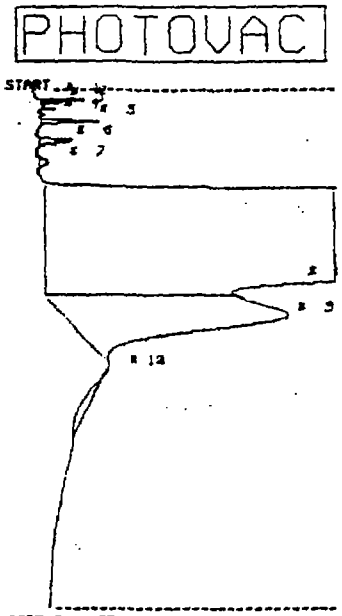
STOP @ 349.0
SAMPLE LIBRARY 1 JUN 28 1989 10:41
ANALYSIS # 19 9350-004-100
INTERNAL TEMP 28 SAMPLE STND
GAIN 20 10PPM BTE

OFFSET 14.0 mV
CHART SPEED 1 cm/min
SLOPE SENS. 10 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 min

COMPOUND NAME PEAK R.T. AREA/PPM

BENZENE 4 13.0 10.12 PPM
TOLUENE 5 41.1 10.00 PPM
ETHYLBENZENE 7 58.7 10.24 PPM
STYRENE 8 100.1 2.503 PPM

PHOTOVAC



STOP @ 403.4
SAMPLE LIBRARY 1 JUN 28 1989 10:55
ANALYSIS # 21 9350-004-100
INTERNAL TEMP 27 SAMPLE
GAIN 20 B3-5

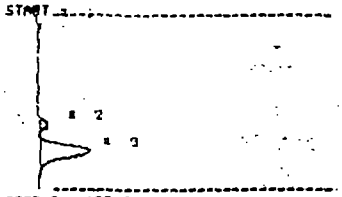
COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 1 8.7 105.7 mVS
UNKNOWN 5 26.3 387.1 mVS
TOLUENE 6 42.5 1.687 PPM
UNKNOWN 7 58.7 158.4 mVS
STYRENE 8 115.2 3767. PPM
UNKNOWN 9 179.2 28.3 VS

switch 10 Gain to and purge

(B-3-5)

PHOTOVAC

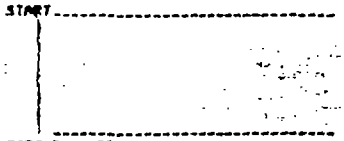


STOP @ 135.3
SAMPLE LIBRARY 1 JUN 28 1989 11:3
ANALYSIS # 23 9350-004-100
INTERNAL TEMP 27 PURGE
GAIN 10 B3-10

COMPOUND NAME PEAK R.T. AREA/PPM

ETHYLBENZENE 2 88.3 1.116 PPM
STYRENE 3 103.0 11.36 PPM

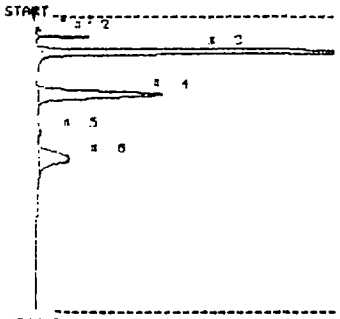
PHOTOVAC



STOP @ 92.1
SAMPLE LIBRARY 1 JUN 28 1989 11:5
ANALYSIS # 24 9350-004-100
INTERNAL TEMP 28 PURGE
GAIN 10 B3-10

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC



STOP @ 225.7
SAMPLE LIBRARY 1 JUN 28 1989 11:10
ANALYSIS # 25 0350-004-100
INTERNAL TEMP 28 SAMPLE
GAIN 10 B3-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	15.7	131.3 nVS
UNKNOWN	3	26.8	5.5 VS
UNKNOWN	4	60.3	2.2 VS
STYRENE	6	110.5	6.781 PPM

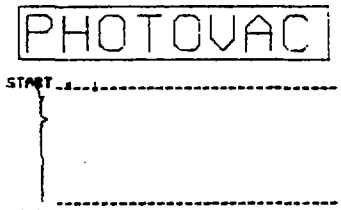
(B-3-10)

PHOTOVAC

STOP @ 88.2
SAMPLE LIBRARY 1 JUN 28 1989 11:13
ANALYSIS # 26 0350-004-100
INTERNAL TEMP 28 PURGE
GAIN 10 B3-15

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

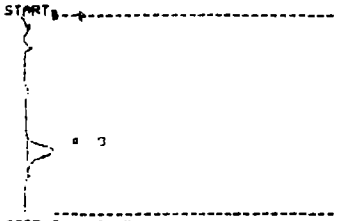


STOP @ 83.3
SAMPLE LIBRARY 1 JUN 28 1989 11:15
ANALYSIS # 27 0350-004-100
INTERNAL TEMP 27 SAMPLE
GAIN 10 B3-15

COMPOUND NAME PEAK R.T. AREA/PPM

switch Gain to 20

PHOTOVAC



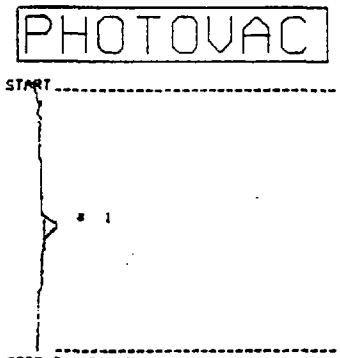
STOP @ 151.7
SAMPLE LIBRARY 1 JUN 28 1989 11:22
ANALYSIS # 28 0350-004-100
INTERNAL TEMP 28 SAMPLE
GAIN 20 B3-15

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 3 105.7 2.858 PPM

(B-3-15)

PHOTOVAC

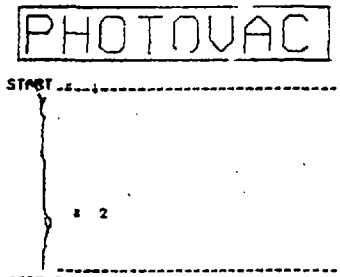


STOP @ 201.8
SAMPLE LIBRARY 1 JUN 28 1989 11:28
ANALYSIS # 29 0350-004-100
INTERNAL TEMP 27 PURGE
GAIN 20 B3-20

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 1 107.8 1.433 PPM

PHOTOVAC

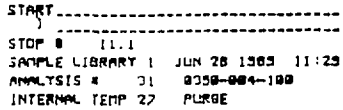


STOP @ 141.4
SAMPLE LIBRARY 1 JUN 28 1989 11:25
ANALYSIS # 30 0350-004-100
INTERNAL TEMP 28 PURGE
GAIN 20 B3-20

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 2 106.9 358.7 PPB

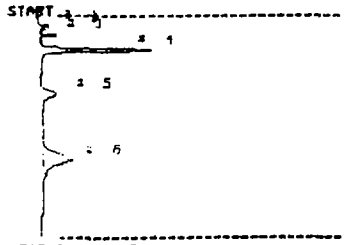
PHOTOVAC



STOP @ 11.1
SAMPLE LIBRARY 1 JUN 28 1989 11:29
ANALYSIS # 31 0350-004-100
INTERNAL TEMP 27 PURGE
GAIN 20 B3-20

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC



STOP @ 171.2
SAMPLE LIBRARY 1 JUN 28 1989 11:32
ANALYSIS # 32 0350-004-100
INTERNAL TEMP 28 SAMPLE
GAIN 20 B3-20

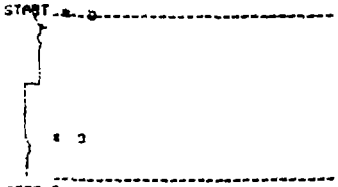
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	4	27.2	751.3 nVS
UNKNOWN	5	61.3	223.2 nVS
STYRENE	6	113.2	3.818 PPM

(B-3-20)

change Gain to 10

BPACC01045

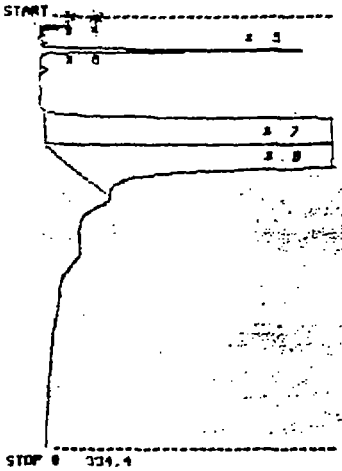
PHOTOVAC



STOP @ 123.5
SAMPLE LIBRARY 1 JUN 28 1989 11:36
ANALYSIS # 33 0350-004-100
INTERNAL TEMP 28 PURGE
GAIN 10 B4-5

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC



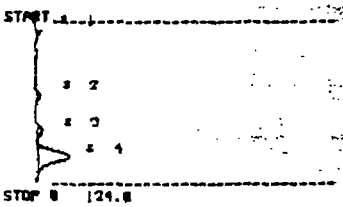
STOP @ 334.4
SAMPLE LIBRARY 1 JUN 28 1989 11:45
ANALYSIS # 34 0350-004-100
INTERNAL TEMP 27 SAMPLE
GAIN 10 B4-5

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 3 26.0 1.3 US
ETHYLBENZENE 7 88.3 435.0 PPM
STYRENE 8 103.2 132.4 PPM

(B-4-5)

PHOTOVAC

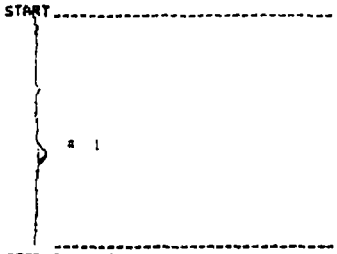


STOP @ 124.0
SAMPLE LIBRARY 1 JUN 28 1989 11:45
ANALYSIS # 35 0350-004-100
INTERNAL TEMP 27 PURGE
GAIN 10 B4-10

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 4 100.0 7.007 PPM

PHOTOVAC

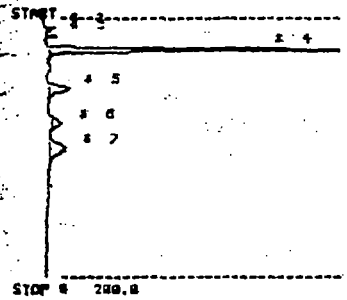


STOP @ 126.0
SAMPLE LIBRARY 1 JUN 28 1989 11:52
ANALYSIS # 36 0350-004-100
INTERNAL TEMP 28 PURGE
GAIN 10 B4-10

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 1 107.3 1.636 PPM

PHOTOVAC



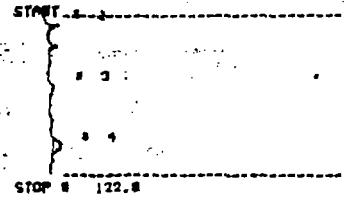
STOP @ 200.0
SAMPLE LIBRARY 1 JUN 28 1989 11:58
ANALYSIS # 37 0350-004-100
INTERNAL TEMP 28 SAMPLE
GAIN 10 B4-10

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 4 24.6 2.4 US
UNKNOWN 5 30.3 300.3 µVS
ETHYLBENZENE 6 84.1 1.255 PPM
STYRENE 7 103.6 3.084 PPM

change gain to 20

PHOTOVAC



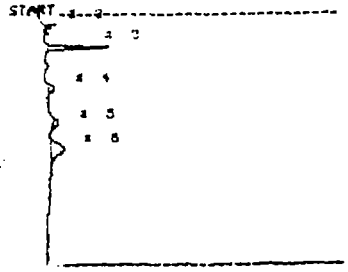
STOP @ 122.0
SAMPLE LIBRARY 1 JUN 28 1989 12:2
ANALYSIS # 38 0350-004-100
INTERNAL TEMP 29 PURGE
GAIN 20 B4-15

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 4 103.0 233.2 PPB

(B-4-10)

PHOTOVAC



STOP @ 133.1
SAMPLE LIBRARY 1 JUN 28 1989 12:7
ANALYSIS # 39 0350-004-100
INTERNAL TEMP 29 SAMPLE
GAIN 20 B4-15

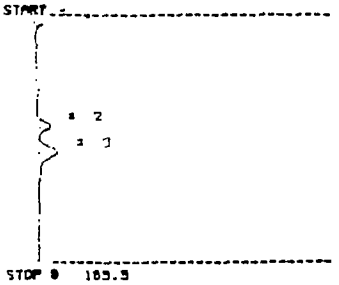
COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 3 25.2 350.7 µVS
ETHYLBENZENE 5 85.0 482.5 PPB
STYRENE 6 104.0 1.435 PPM

(B-4-15)

BPACC01046

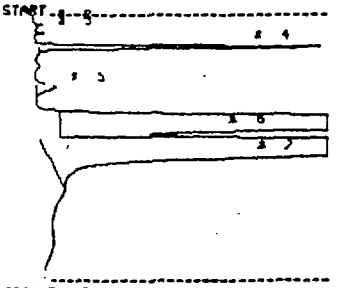
PHOTOVAC



STOP @ 185.5
SAMPLE LIBRARY 1 JUN 28 1989 13:13
ANALYSIS # 43 0350-004-100
INTERNAL TEMP 27 PURGE
GAIN 10 84-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	2	87.4	1.585 PPM
STYRENE	3	107.8	3.388 PPM

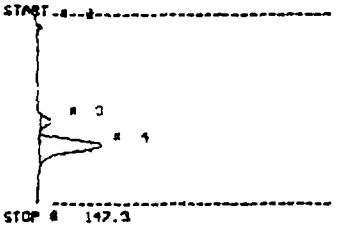
PHOTOVAC



STOP @ 204.1
SAMPLE LIBRARY 1 JUN 28 1989 13:18
ANALYSIS # 44 0350-004-100
INTERNAL TEMP 27 SAMPLE
GAIN 10 84-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	4	25.0	2.0 US
UNKNOWN	5	58.7	316.6 mUS
ETHYLBENZENE	6	83.5	221.8 PPM
STYRENE	7	103.8	325.5 PPM

PHOTOVAC

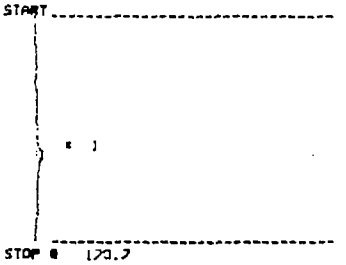


STOP @ 147.3
SAMPLE LIBRARY 1 JUN 28 1989 13:22
ANALYSIS # 45 0350-004-100
INTERNAL TEMP 28 PURGE STND
GAIN 10 10PPM BTE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	3	84.4	1.476 PPM
STYRENE	4	104.2	14.43 PPM

(B-4-20)

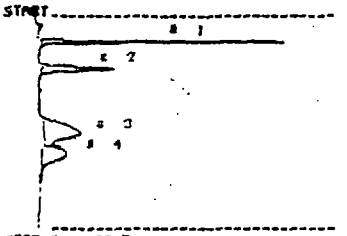
PHOTOVAC



STOP @ 170.7
SAMPLE LIBRARY 1 JUN 28 1989 13:26
ANALYSIS # 46 0350-004-100
INTERNAL TEMP 28 PURGE STND
GAIN 10 10PPM BTE

COMPOUND NAME	PEAK	R.T.	AREA/PPM

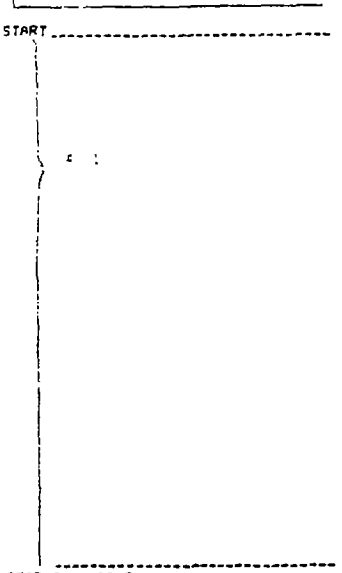
PHOTOVAC



STOP @ 163.7
SAMPLE LIBRARY 1 JUN 28 1989 13:31
ANALYSIS # 47 0350-004-100
INTERNAL TEMP 25 SAMPLE STND
GAIN 10 10PPM BTE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	1	28.8	3.558 PPM
TOLUENE	2	42.5	8.582 PPM
ETHYLBENZENE	3	53.1	3.455 PPM
STYRENE	4	103.3	5.841 PPM

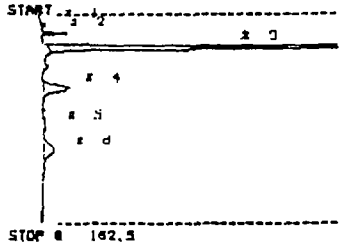
PHOTOVAC



STOP @ 109.0
SAMPLE LIBRARY 1 JUN 28 1989 13:40
ANALYSIS # 18 0350-004-100
INTERNAL TEMP 28 PURGE
GAIN 10 85-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC



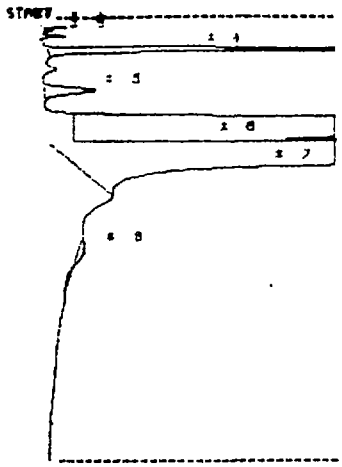
STOP @ 162.5
SAMPLE LIBRARY 1 JUN 28 1989 13:43
ANALYSIS # 49 0350-004-100
INTERNAL TEMP 25 SAMPLE
GAIN 10 85-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	25.9	3.8 US
UNKNOWN	4	58.3	425.4 mUS
STYRENE	6	108.1	1.583 PPM

(B-E-

BPACC01047

PHOTOVAC



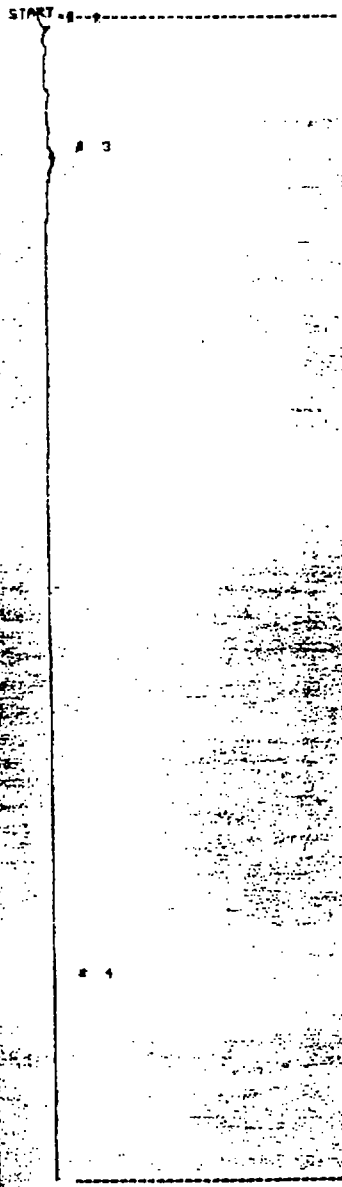
(B-4-20)

STOP @ 341.7
SAMPLE LIBRARY 1 JUN 28 1989 12:53
ANALYSIS # 41 0350-004-100
INTERNAL TEMP 26 SAMPLE
GAIN 20 84-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	4	25.5	4.5 US
UNKNOWN	5	58.1	834.2 mVS
ETHYLBENZENE	6	86.5	186.6 PPM
STYRENE	7	100.5	33.70 PPM
UNKNOWN	8	170.7	200.6 mVS

Change gain to 10

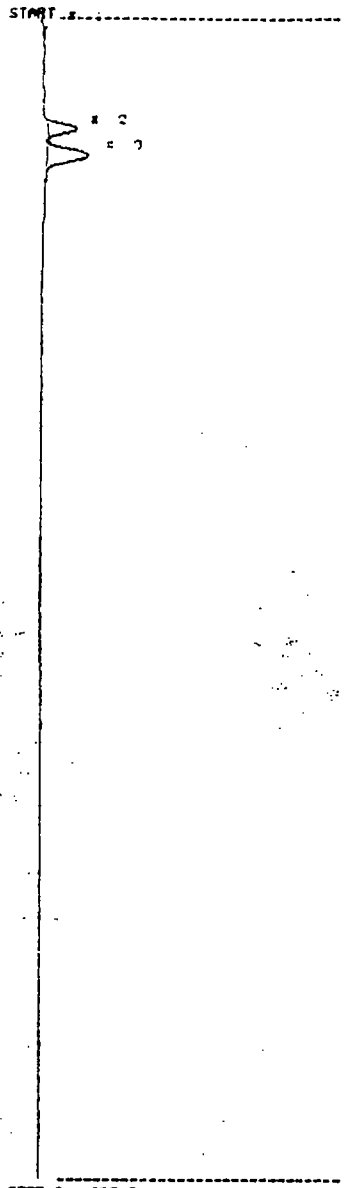
PHOTOVAC



STOP @ 300.0
SAMPLE LIBRARY 1 JUN 28 1989 12:22
ANALYSIS # 40 0350-004-100
INTERNAL TEMP 26 PURGE
GAIN 20 84-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC

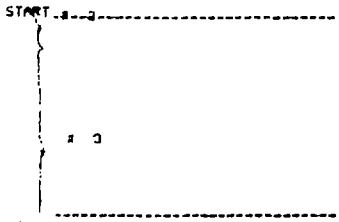


STOP @ 300.0
SAMPLE LIBRARY 1 JUN 28 1989 13:5
ANALYSIS # 42 0350-004-100
INTERNAL TEMP 25 PURGE
GAIN 10 84-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	2	87.7	4.471 PPM
STYRENE	3	107.2	3.188 PPM

BPACC01048

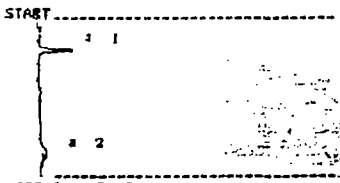
PHOTOVAC



STOP @ 151.2
SAMPLE LIBRARY 1 JUN 28 1989 13:46
ANALYSIS # 50 0350-004-100
INTERNAL TEMP 31 PURGE
GAIN 10 85-15

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC



STOP @ 121.7
SAMPLE LIBRARY 1 JUN 28 1989 13:43
ANALYSIS # 51 0350-004-100
INTERNAL TEMP 31 SAMPLE
GAIN 10 85-15

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 1 25.6 186.3 mVS

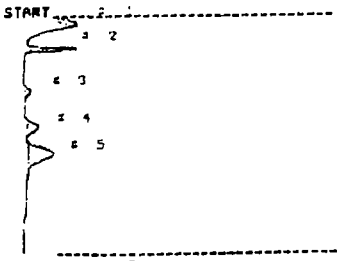
(B-5-16)

PHOTOVAC

STOP @ 76.0
SAMPLE LIBRARY 1 JUN 28 1989 13:31
ANALYSIS # 52 0350-004-100
INTERNAL TEMP 31 PURGE
GAIN 20 85-15

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC



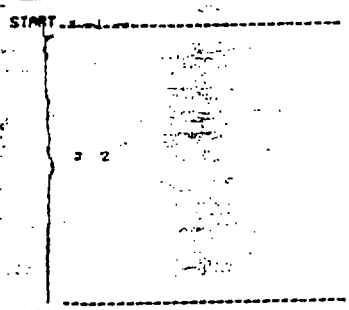
STOP @ 181.7
SAMPLE LIBRARY 1 JUN 28 1989 13:54
ANALYSIS # 53 0350-004-100
INTERNAL TEMP 32 SAMPLE
GAIN 20 85-15

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 2 25.7 385.1 mVS
ETHYLBENZENE 4 87.1 655.3 PPB
STYRENE 5 107.5 2.760 PPM

(B-5-15)

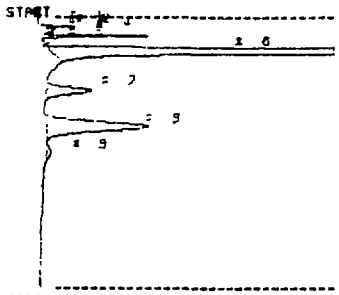
PHOTOVAC



STOP @ 214.1
SAMPLE LIBRARY 1 JUN 28 1989 14:0
ANALYSIS # 54 0350-004-100
INTERNAL TEMP 32 PURGE
GAIN 10 85-10

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC



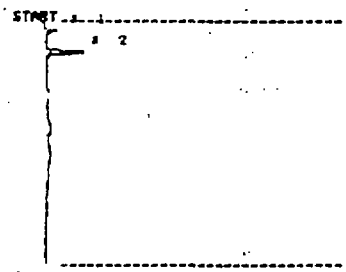
STOP @ 208.6
SAMPLE LIBRARY 1 JUN 28 1989 14:5
ANALYSIS # 55 0350-004-100
INTERNAL TEMP 32 SAMPLE
GAIN 10 85-10

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 4 14.7 335.8 mVS
UNKNOWN 6 25.4 10.1 VS
UNKNOWN 7 37.5 754.3 mVS
ETHYLBENZENE 8 85.5 14.77 PPM

(B-5-10)

PHOTOVAC

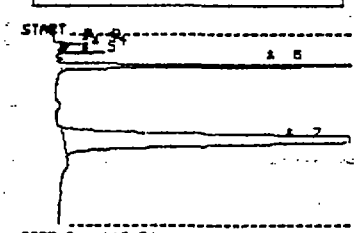


STOP @ 183.0
SAMPLE LIBRARY 1 JUN 28 1989 14:10
ANALYSIS # 56 0350-004-100
INTERNAL TEMP 32 PURGE
GAIN 10 85-5

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 2 25.6 215.8 mVS

PHOTOVAC



STOP @ 147.2
SAMPLE LIBRARY 1 JUN 28 1989 14:13
ANALYSIS # 57 0350-004-100
INTERNAL TEMP 33 SAMPLE
GAIN 10 85-5

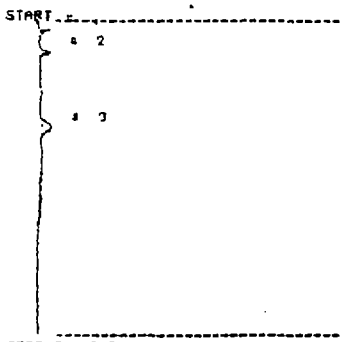
COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 4 14.3 193.2 mVS
UNKNOWN 6 24.5 2.5 VS
ETHYLBENZENE 7 82.4 70.40 PPM

(B-5-5)

BPACC01049

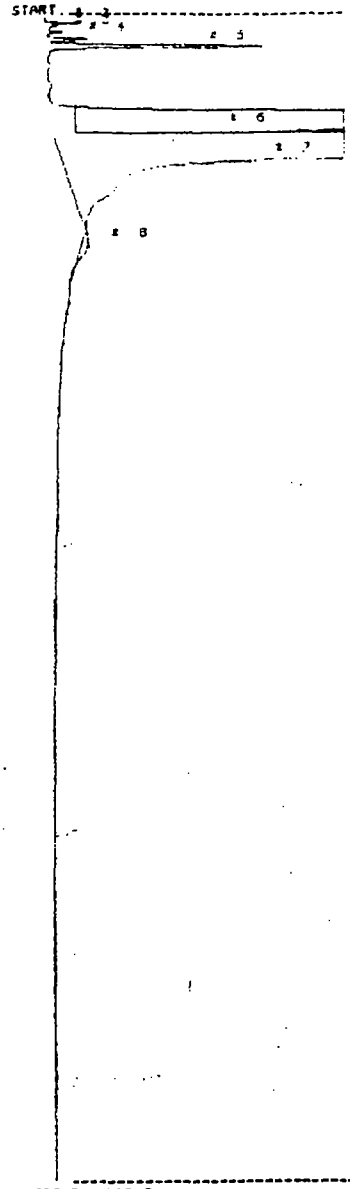
PHOTOVAC



STOP # 249.1
SAMPLE LIBRARY 1 JUN 28 1989 14:19
ANALYSIS # 58 0350-004-100
INTERNAL TEMP 32 PURGE
GAIN 10 B6-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	3	84.1	1.314 PPM

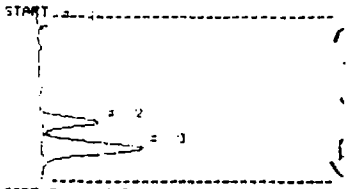
PHOTOVAC



STOP # 300.0
SAMPLE LIBRARY 1 JUN 28 1989 14:34
ANALYSIS # 55 0350-004-100
INTERNAL TEMP 32 SAMPLE
GAIN 10 B6-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	4	15.7	1.257 PPM
UNKNOWN	5	24.8	1.4 VS
ETHYLBENZENE	6	83.1	321.1 PPM
STYRENE	7	102.7	233.8 PPM
UNKNOWN	8	176.2	270.8 AVS

PHOTOVAC



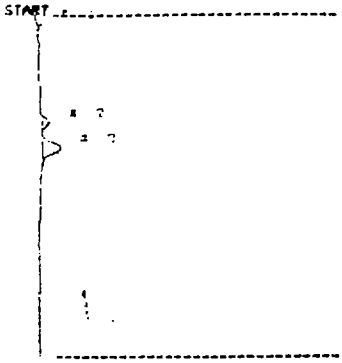
STOP # 125.6
SAMPLE LIBRARY 1 JUN 28 1989 14:40
ANALYSIS # 60 0350-004-100
INTERNAL TEMP 32 PURGE
GAIN 10 B6-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	2	83.3	3.577 PPM
STYRENE	3	103.8	23.52 PPM

(B-6-5)

BPACC01050

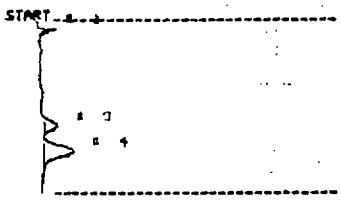
PHOTOVAC



STOP @ 250.6
SAMPLE LIBRARY 1 JUN 28 1989 14:45
ANALYSIS # 61 0350-004-100
INTERNAL TEMP 32 PURGE
GAIN 10 86-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	2	83.8	650.4 PPB
STYRENE	3	103.3	3.750 PPM

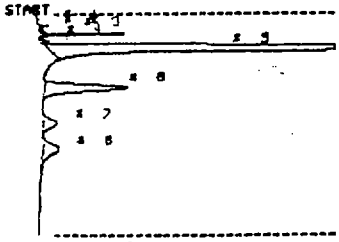
PHOTOVAC



STOP @ 133.6
SAMPLE LIBRARY 1 JUN 28 1989 14:46
ANALYSIS # 62 0350-004-100
INTERNAL TEMP 32 PURGE
GAIN 10 86-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	3	83.5	1.888 PPM
STYRENE	4	103.8	8.352 PPM

PHOTOVAC

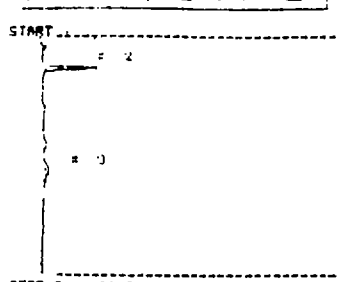


STOP @ 171.5
SAMPLE LIBRARY 1 JUN 28 1989 14:52
ANALYSIS # 63 0350-004-100
INTERNAL TEMP 32 SAMPLE
GAIN 10 86-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	15.8	226.6 aUS
UNKNOWN	5	26.4	3.3 US
UNKNOWN	6	58.3	1.4 US
ETHYLBENZENE	7	86.5	1.664 PPM
STYRENE	8	106.8	3.354 PPM

(B-6-10)

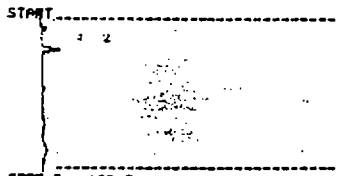
PHOTOVAC



STOP @ 182.8
SAMPLE LIBRARY 1 JUN 28 1989 14:58
ANALYSIS # 64 0350-004-100
INTERNAL TEMP 32 PURGE
GAIN 10 86-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	24.3	346.8 aUS

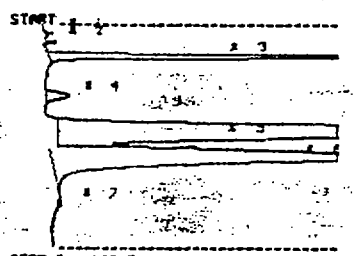
PHOTOVAC



STOP @ 128.7
SAMPLE LIBRARY 1 JUN 28 1989 15:0
ANALYSIS # 65 0350-004-100
INTERNAL TEMP 32 PURGE
GAIN 10 86-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC

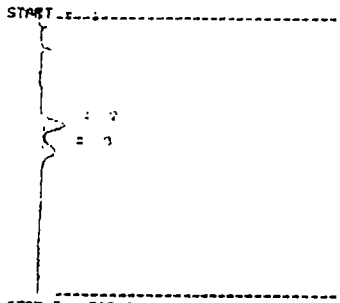


STOP @ 172.2
SAMPLE LIBRARY 1 JUN 28 1989 15:3
ANALYSIS # 66 0350-004-100
INTERNAL TEMP 33 SAMPLE
GAIN 10 86-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	24.7	4.7 US
UNKNOWN	4	56.3	388.6 aUS
ETHYLBENZENE	5	83.4	286.5 PPM
STYRENE	6	102.7	106.2 PPM

(B-6-8)

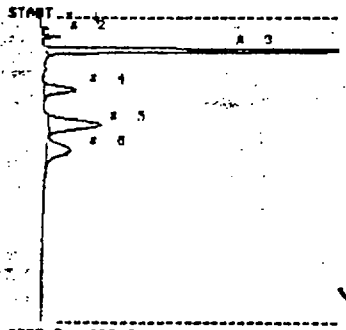
PHOTOVAC



STOP @ 210.1
SAMPLE LIBRARY 1 JUN 28 1989 15:0
ANALYSIS # 67 0350-004-100
INTERNAL TEMP 33 PURGE
GAIN 10 86-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	2	83.8	3.936 PPM
STYRENE	3	103.3	2.873 PPM

PHOTOVAC

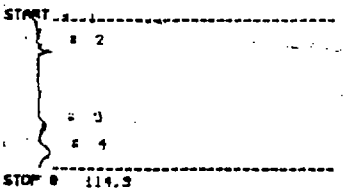


STOP @ 235.3
SAMPLE LIBRARY 1 JUN 28 1989 15:14
ANALYSIS # 68 0350-004-100
INTERNAL TEMP 33 SAMPLE
GAIN 10 86-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	25.4	3.2 US
UNKNOWN	4	56.3	457.3 aUS
ETHYLBENZENE	5	84.7	8.315 PPM
STYRENE	6	104.2	4.454 PPM

(B-6-7)

PHOTOVAC

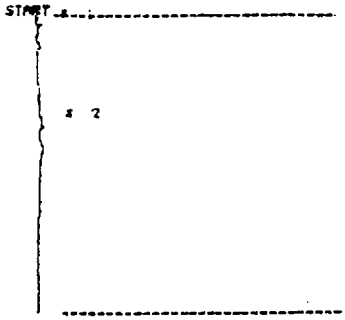


STOP @ 114.3
SAMPLE LIBRARY 1 JUN 28 1989 15:18
ANALYSIS # 69 0350-004-100
INTERNAL TEMP 34 PURGE
GAIN 10 87-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM

BPACC01051

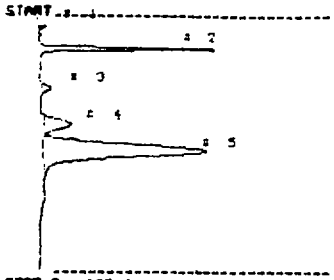
PHOTOVAC



STOP @ 227.3
SAMPLE LIBRARY 1 JUN 28 1989 15:22
ANALYSIS # 78 0350-004-100
INTERNAL TEMP 34 PURGE
GAIN 10 B7-5

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC



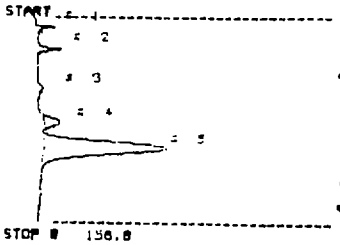
(B-7-10)

STOP @ 135.4
SAMPLE LIBRARY 1 JUN 28 1989 15:36
ANALYSIS # 73 0350-004-100
INTERNAL TEMP 36 SAMPLE
GAIN 10 B7-10

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN	2	25.3	1.2	US
UNKNOWN	3	56.9	156.4	mUS
ETHYLBENZENE	4	84.4	4.628	PPM
STYRENE	5	103.3	33.55	PPM

PHOTOVAC



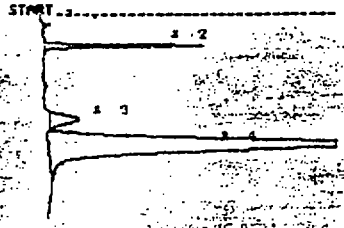
(B-7-15)

STOP @ 156.8
SAMPLE LIBRARY 1 JUN 28 1989 16: 2
ANALYSIS # 75 0350-004-100
INTERNAL TEMP 35 SAMPLE
GAIN 10 B7-15

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN	2	25.4	183.3	mUS
ETHYLBENZENE	4	83.2	2.484	PPM
STYRENE	5	102.4	27.85	PPM

PHOTOVAC



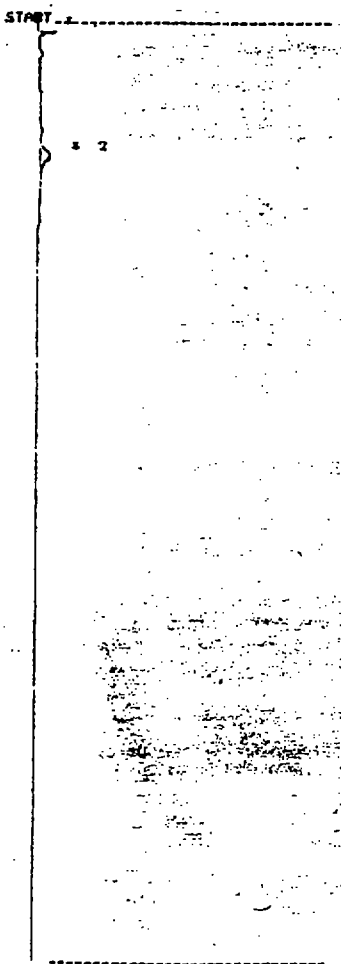
(B-7-5)

SIS # 71 0350-004-100
INTERNAL TEMP 35 SAMPLE
GAIN 10 B7-5

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN	2	24.8	1.1	US
ETHYLBENZENE	3	83.8	5.381	PPM
STYRENE	4	102.1	85.34	PPM

PHOTOVAC

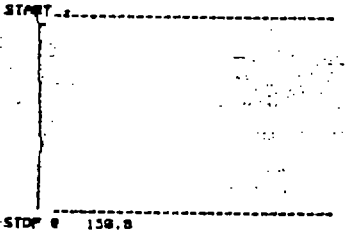


STOP @ 738.5
SAMPLE LIBRARY 1 JUN 28 1989 15:49
ANALYSIS # 74 0350-004-100
INTERNAL TEMP 33 PURGE
GAIN 10 B7-15

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 2 104.8 1.268 PPM

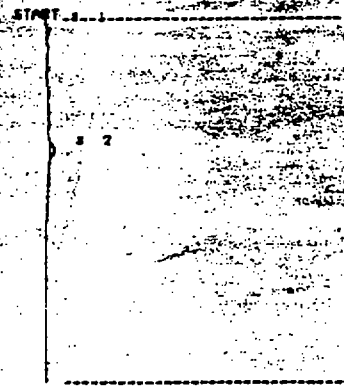
PHOTOVAC



STOP @ 158.8
SAMPLE LIBRARY 1 JUN 28 1989 16: 6
ANALYSIS # 76 0350-004-100
INTERNAL TEMP 35 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

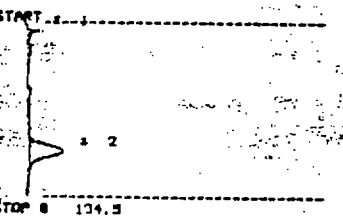
PHOTOVAC



STOP @ 282.8
SAMPLE LIBRARY 1 JUN 28 1989 15:31
ANALYSIS # 72 0350-004-100
INTERNAL TEMP 34 PURGE
GAIN 10 B7-10

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC



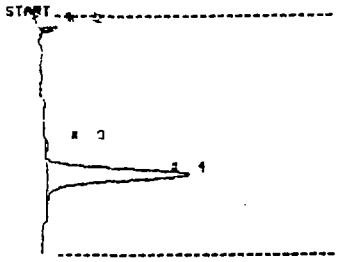
STOP @ 134.5
SAMPLE LIBRARY 1 JUN 28 1989 16: 3
ANALYSIS # 77 0350-004-100
INTERNAL TEMP 36 SAMPLE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 2 101.8 2.412 PPM

BPACC01052

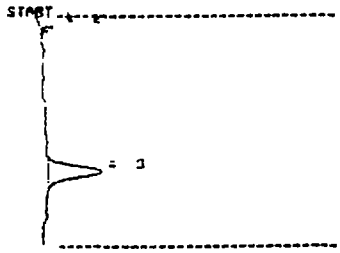
PHOTOVAC



STOP @ 184.2
SAMPLE LIBRARY 1 JUN 29 1989 3:32
ANALYSIS # 17 0350-004-100
INTERNAL TEMP 28 PURGE
GAIN 20 B-8-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	4	125.8	14.64 PPM

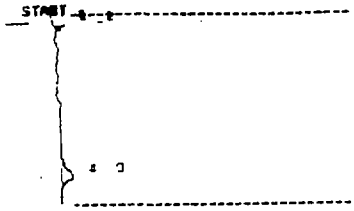
PHOTOVAC



STOP @ 178.8
SAMPLE LIBRARY 1 JUN 29 1989 3:37
ANALYSIS # 18 0350-004-100
INTERNAL TEMP 28 PURGE
GAIN 20 B-8-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	125.8	5.568 PPM

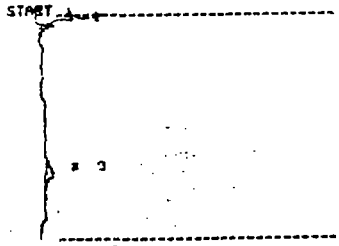
PHOTOVAC



STOP @ 145.1
SAMPLE LIBRARY 1 JUN 29 1989 3:15
ANALYSIS # 14 0350-004-100
INTERNAL TEMP 25 PURGE
GAIN 20 B-8-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	127.6	1.027 PPM

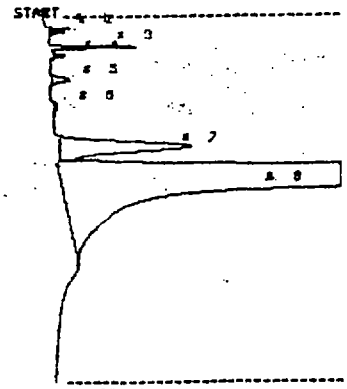
PHOTOVAC



STOP @ 172.8
SAMPLE LIBRARY 1 JUN 29 1989 3:19
ANALYSIS # 15 0350-004-100
INTERNAL TEMP 25 PURGE
GAIN 20 B-8-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	127.2	233.6 PPB

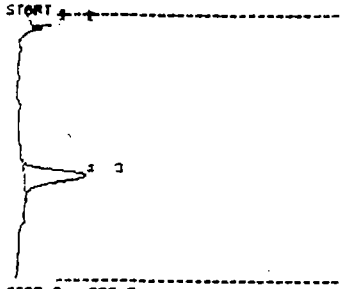
PHOTOVAC



STOP @ 283.6
SAMPLE LIBRARY 1 JUN 29 1989 3:24
ANALYSIS # 16 0350-004-100
INTERNAL TEMP 25 SAMPLE
GAIN 20 B-8-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	3	24.4	1.455 PPM
TOLUENE	5	58.3	854.7 PPB
ETHYLBENZENE	7	183.3	18.38 PPM
STYRENE	8	128.5	288.1 PPM

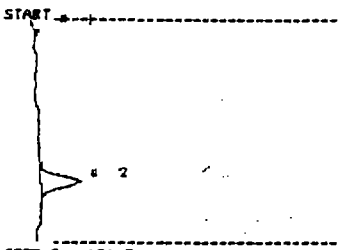
PHOTOVAC



STOP @ 202.2
SAMPLE LIBRARY 1 JUN 29 1989 3: 6
ANALYSIS # 11 0350-004-100
INTERNAL TEMP 28 PURGE
GAIN 20 B-8-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	128.8	6.112 PPM

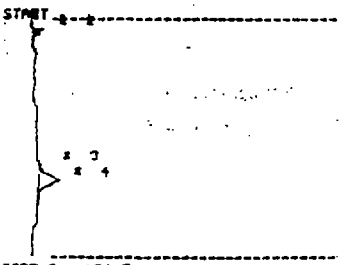
PHOTOVAC



STOP @ 171.7
SAMPLE LIBRARY 1 JUN 29 1989 3: 3
ANALYSIS # 12 0350-004-100
INTERNAL TEMP 28 PURGE
GAIN 20 B-8-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	2	128.4	3.683 PPM

PHOTOVAC



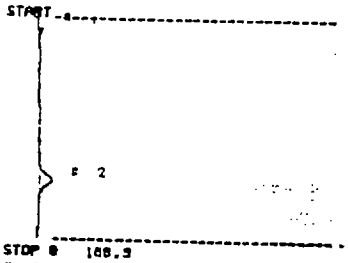
STOP @ 184.3
SAMPLE LIBRARY 1 JUN 29 1989 3:12
ANALYSIS # 13 0350-004-100
INTERNAL TEMP 25 PURGE
GAIN 20 B-8-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	4	128.4	1.443 PPM

(B-8-5)

BPACC01053

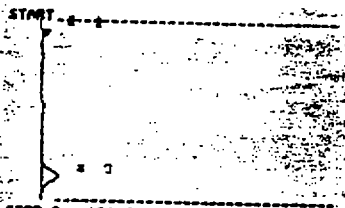
PHOTOVAC



STOP @ 168.9
SAMPLE LIBRARY 1 JUN 23 1989 10:21
ANALYSIS # 24 9350-004-100
INTERNAL TEMP 23 PURGE
GAIN 10 8-8-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	2	127.8	2.822 PPM

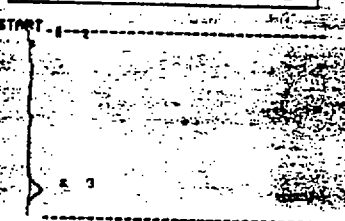
PHOTOVAC



STOP @ 138.8
SAMPLE LIBRARY 1 JUN 23 1989 10:24
ANALYSIS # 23 9350-004-100
INTERNAL TEMP 30 PURGE
GAIN 10 8-8-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	123.2	3.084 PPM

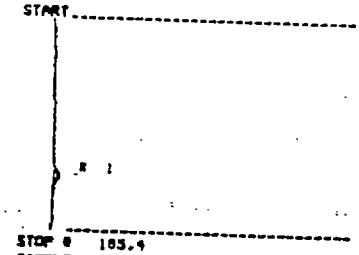
PHOTOVAC



STOP @ 144.8
SAMPLE LIBRARY 1 JUN 23 1989 10:27
ANALYSIS # 20 9350-004-100
INTERNAL TEMP 30 PURGE
GAIN 10 8-8-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	128.8	2.887 PPM

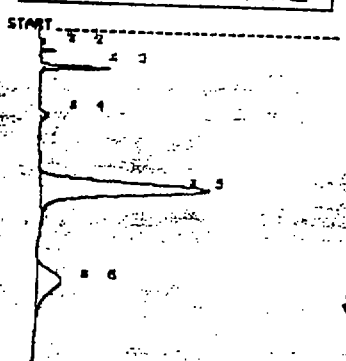
PHOTOVAC



STOP @ 165.4
SAMPLE LIBRARY 1 JUN 23 1989 10:14
ANALYSIS # 22 9350-004-100
INTERNAL TEMP 25 PURGE
GAIN 10 8-8-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC

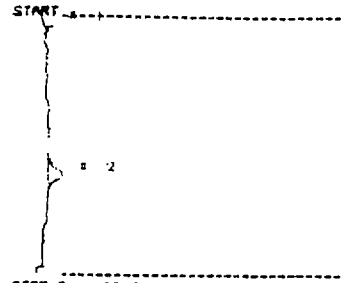


STOP @ 267.8
SAMPLE LIBRARY 1 JUN 23 1989 10:15
ANALYSIS # 23 9350-004-100
INTERNAL TEMP 23 SAMPLE
GAIN 10 8-8-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	23.7	483.1 aus
STYRENE	5	124.4	30.57 PPM
UNKNOWN	6	130.2	1.5 US

(B-8-15)

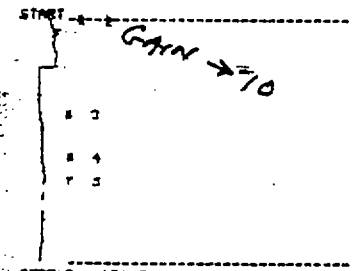
PHOTOVAC



STOP @ 137.8
SAMPLE LIBRARY 1 JUN 23 1989 3:41
ANALYSIS # 19 9350-004-100
INTERNAL TEMP 23 PURGE
GAIN 20 8-8-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	2	126.8	1.436 PPM

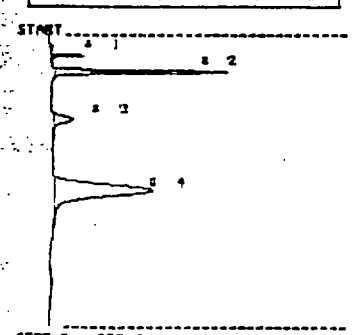
PHOTOVAC



STOP @ 171.8
SAMPLE LIBRARY 1 JUN 23 1989 3:43
ANALYSIS # 20 9350-004-100
INTERNAL TEMP 23 PURGE
GAIN 10 8-8-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC



STOP @ 225.8
SAMPLE LIBRARY 1 JUN 23 1989 3:50
ANALYSIS # 21 9350-004-100
INTERNAL TEMP 23 SAMPLE
GAIN 10 8-8-20

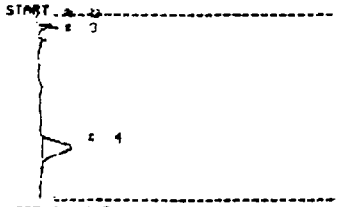
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	17.8	184.4 aus
UNKNOWN	2	23.8	1.3 US
UNKNOWN	3	87.1	348.2 aus
STYRENE	4	123.8	28.44 PPM

(B-8-20)

BPACC01054

PHOTOVAC

START



STOP @ 142.4
SAMPLE LIBRARY 1 JUN 23 1989 11:30
ANALYSIS # 42 0350-004-100
INTERNAL TEMP 32 SAMPLE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

ETHYLBENZENE 4 185.4 5.249 PPM

PHOTOVAC

CALIBRATED PEAK 4.STYRENE

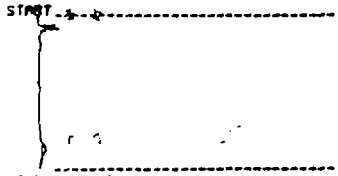
SAMPLE LIBRARY 1 JUN 23 1989 11:30
ANALYSIS # 42 0350-004-100
INTERNAL TEMP 32 SAMPLE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 4 185.4 5.000 PPM

PHOTOVAC

START

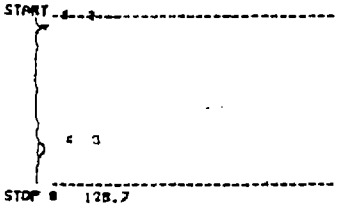


STOP @ 118.8
SAMPLE LIBRARY 1 JUN 23 1989 11:34
ANALYSIS # 43 0350-004-100
INTERNAL TEMP 32 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

START



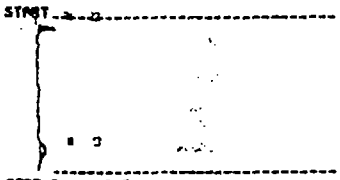
STOP @ 128.7
SAMPLE LIBRARY 1 JUN 23 1989 11:28
ANALYSIS # 35 0350-004-100
INTERNAL TEMP 32 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

ETHYLBENZENE 3 184.5 503.8 PPB

PHOTOVAC

START



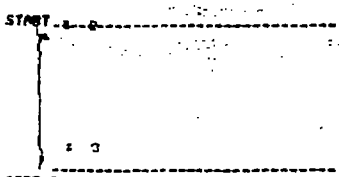
STOP @ 115.2
SAMPLE LIBRARY 1 JUN 23 1989 11:23
ANALYSIS # 40 0350-004-100
INTERNAL TEMP 32 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

ETHYLBENZENE 3 185.7 583.2 PPB

PHOTOVAC

START

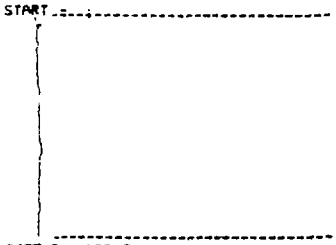


STOP @ 112.7
SAMPLE LIBRARY 1 JUN 23 1989 11:27
ANALYSIS # 41 0350-004-100
INTERNAL TEMP 32 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

START

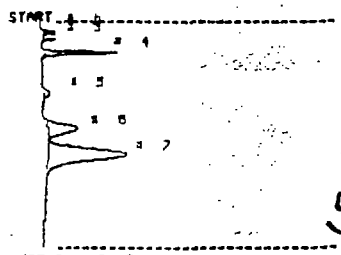


STOP @ 183.3
SAMPLE LIBRARY 1 JUN 23 1989 11: 8
ANALYSIS # 36 0350-004-100
INTERNAL TEMP 31 PURGE
GAIN 10 8-3-10

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

START



(B-9-10)

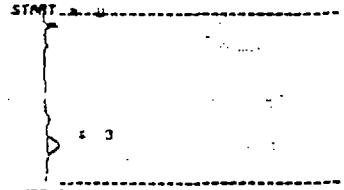
STOP @ 174.2
SAMPLE LIBRARY 1 JUN 23 1989 11:13
ANALYSIS # 37 0350-004-100
INTERNAL TEMP 32 SAMPLE
GAIN 10 8-3-10

COMPOUND NAME PEAK R.T. AREA/PPM

BENZENE 4 24.3 3.262 PPM
UNKNOWN 6 84.2 284.7 AUS
ETHYLBENZENE 7 184.3 13.77 PPM

PHOTOVAC

START



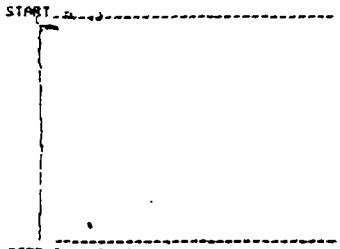
STOP @ 130.4
SAMPLE LIBRARY 1 JUN 23 1989 11:18
ANALYSIS # 38 0350-004-100
INTERNAL TEMP 31 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

ETHYLBENZENE 3 184.8 3.883 PPM

BPACC01055

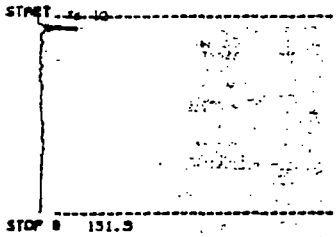
PHOTOVAC



STOP @ 171.9
SAMPLE LIBRARY 1 JUN 23 1989 11:34
ANALYSIS # 46 0350-004-100
INTERNAL TEMP 32 PURGE
GAIN 10 0-5-15

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

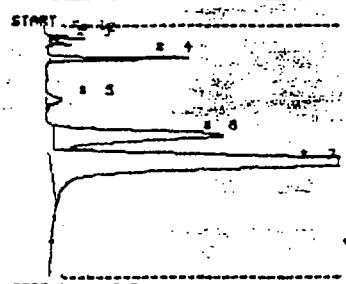


STOP @ 151.9
SAMPLE LIBRARY 1 JUN 23 1989 11:37
ANALYSIS # 45 0350-004-100
INTERNAL TEMP 31 SAMPLE
GAIN 10 AMBIANT AIR

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 2 9.9 112.8 mVS

PHOTOVAC



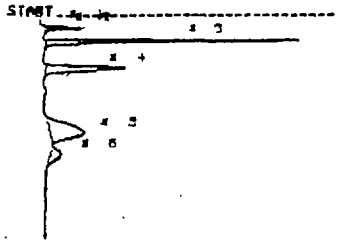
STOP @ 133.2
SAMPLE LIBRARY 1 JUN 23 1989 12:12
ANALYSIS # 50 0350-004-100
INTERNAL TEMP 31 SAMPLE
GAIN 10 0-5-15

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 4 25.0 384.4 mVS
UNKNOWN 5 30.3 223.2 mVS
ETHYLBENZENE 6 40.0 34.41 PPM
STYRENE 7 100.0 130.0 PPM

(B-8-15)

PHOTOVAC



CALIBRATED PEAK 3,BENZENE

SAMPLE LIBRARY 1 JUN 23 1989 11:46
ANALYSIS # 46 0350-004-100
INTERNAL TEMP 32 SAMPLE STND
GAIN 10 BTX

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 2 18.2 123.4 mVS
BENZENE 3 28.3 10.28 PPM
TOLUENE 4 41.7 3.222 PPM
ETHYLBENZENE 5 51.6 7.388 PPM
STYRENE 6 100.4 1.633 PPM

CALIBRATED PEAK 4,TOLUENE

SAMPLE LIBRARY 1 JUN 23 1989 11:48
ANALYSIS # 48 0350-004-100
INTERNAL TEMP 31 SAMPLE STND
GAIN 10 BTX

COMPOUND NAME PEAK R.T. AREA/PPM

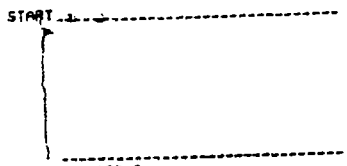
UNKNOWN 2 18.2 123.4 mVS
BENZENE 3 28.3 11.72 PPM
TOLUENE 4 41.7 10.60 PPM
ETHYLBENZENE 5 51.6 8.430 PPM
STYRENE 6 100.4 1.346 PPM

STOP @ 267.6
SAMPLE LIBRARY 1 JUN 23 1989 11:49
ANALYSIS # 47 0350-004-100
INTERNAL TEMP 31 SAMPLE STND
GAIN 10 BTX

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 2 18.2 123.4 mVS
BENZENE 3 28.3 11.72 PPM
TOLUENE 4 41.7 10.60 PPM
ETHYLBENZENE 5 51.6 8.430 PPM
STYRENE 6 100.4 1.346 PPM

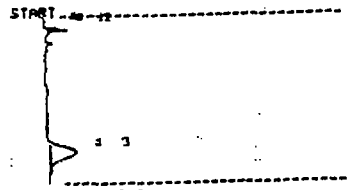
PHOTOVAC



STOP @ 107.2
SAMPLE LIBRARY 1 JUN 23 1989 11:36
ANALYSIS # 44 0350-004-100
INTERNAL TEMP 32 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

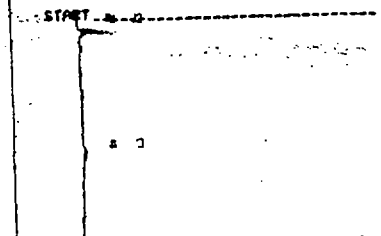


STOP @ 123.5
SAMPLE LIBRARY 1 JUN 23 1989 11:35
ANALYSIS # 43 0350-004-100
INTERNAL TEMP 33 SAMPLE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 3 100.3 4.330 PPM

PHOTOVAC



STOP @ 172.2
SAMPLE LIBRARY 1 JUN 23 1989 11:43
ANALYSIS # 45 0350-004-100
INTERNAL TEMP 32 PURGE STND
GAIN 10 BTX

COMPOUND NAME PEAK R.T. AREA/PPM

BPACC01056

PHOTOVAC

CALIBRATED PEAK 3,BENZENE

SAMPLE LIBRARY 1 JUN 23 1989 14:22
ANALYSIS # 20 8358-004-100
INTERNAL TEMP 26 SAMPLE STND
GAIN 10 BTX

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	3	20.1	10.20 PPM
TOLUENE	4	41.3	10.38 PPM
ETHYLBENZENE	5	51.8	11.28 PPM
STYRENE	6	108.1	5.583 PPM

PHOTOVAC

CALIBRATED PEAK 4,TOLUENE

SAMPLE LIBRARY 1 JUN 23 1989 14:23
ANALYSIS # 20 8358-004-100
INTERNAL TEMP 27 SAMPLE STND
GAIN 10 BTX

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	3	20.1	10.48 PPM
TOLUENE	4	41.3	10.68 PPM
ETHYLBENZENE	5	51.8	11.51 PPM
STYRENE	6	108.1	5.677 PPM

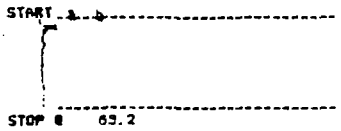
PHOTOVAC

CALIBRATED PEAK 5,ETHYLBENZENE

SAMPLE LIBRARY 1 JUN 23 1989 14:23
ANALYSIS # 20 8358-004-100
INTERNAL TEMP 26 SAMPLE STND
GAIN 10 BTX

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	3	20.1	9.343 PPM
TOLUENE	4	41.3	10.12 PPM
ETHYLBENZENE	5	51.8	11.88 PPM
STYRENE	6	108.1	5.424 PPM

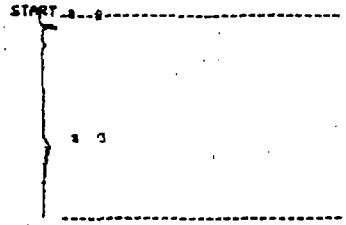
PHOTOVAC



STOP @ 69.2
SAMPLE LIBRARY 1 JUN 23 1989 14:15
ANALYSIS # 18 8358-004-100
INTERNAL TEMP 27 PURGE STND
GAIN 10 BTX

COMPOUND NAME PEAK R.T. AREA/PPM

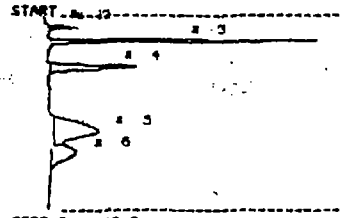
PHOTOVAC



STOP @ 137.8
SAMPLE LIBRARY 1 JUN 23 1989 14:15
ANALYSIS # 19 8358-004-100
INTERNAL TEMP 27 PURGE STND
GAIN 10 BTX

COMPOUND NAME PEAK R.T. AREA/PPM

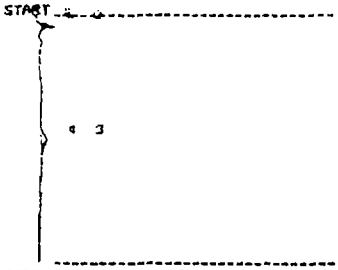
PHOTOVAC



STOP @ 148.9
SAMPLE LIBRARY 1 JUN 23 1989 14:22
ANALYSIS # 20 8358-004-100
INTERNAL TEMP 27 SAMPLE STND
GAIN 10 BTX

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	20.1	1.4 US
UNKNOWN	4	41.3	1.8 US
STYRENE	5	51.8	7.734 PPM
STYRENE	6	108.1	3.343 PPM

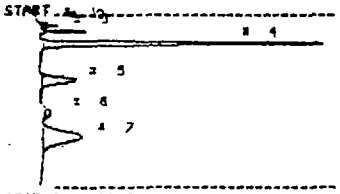
PHOTOVAC



STOP @ 188.5
SAMPLE LIBRARY 1 JUN 23 1989 14: 7
ANALYSIS # 15 8358-004-100
INTERNAL TEMP 27 PURGE
GAIN 10 B-3-20

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

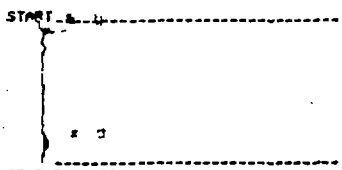


STOP @ 132.3
SAMPLE LIBRARY 1 JUN 23 1989 14:18
ANALYSIS # 16 8358-004-100
INTERNAL TEMP 27 SAMPLE
GAIN 10 B-9-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	13.5	147.7 uUS
UNKNOWN	4	23.1	1.3 US
UNKNOWN	5	52.3	587.2 uUS
ETHYLBENZENE	6	77.1	353.8 PPB
STYRENE	7	98.4	4.874 PPM

(B-9-20)

PHOTOVAC

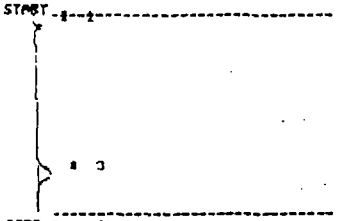


STOP @ 105.6
SAMPLE LIBRARY 1 JUN 23 1989 14:13
ANALYSIS # 17 8358-004-100
INTERNAL TEMP 27 PURGE STND
GAIN 10 BTX

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	98.3	422.3 PPB

BPACC01057

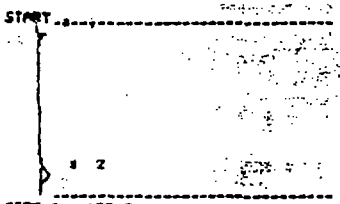
PHOTOVAC



STOP @ 151.8
SAMPLE LIBRARY 1 JUN 23 1989 10:54
ANALYSIS # 33 0350-004-100
INTERNAL TEMP 31 PURGE
GAIN 10 B-3-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	124.4	2.472 PPM

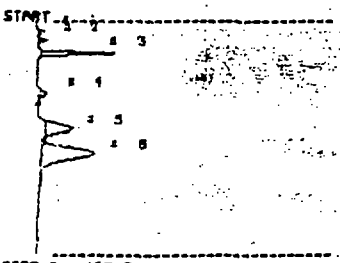
PHOTOVAC



STOP @ 133.8
SAMPLE LIBRARY 1 JUN 23 1989 10:57
ANALYSIS # 34 0350-004-100
INTERNAL TEMP 31 PURGE
GAIN 10 B-3-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	2	128.4	352.8 PPB

PHOTOVAC

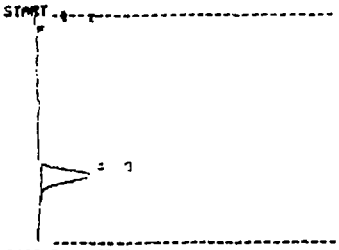


STOP @ 180.2
SAMPLE LIBRARY 1 JUN 23 1989 11:12
ANALYSIS # 35 0350-004-100
INTERNAL TEMP 31 SAMPLE
GAIN 10 B-3-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	3	23.3	3.152 PPM
UNKNOWN	5	84.2	782.8 µVS
ETHYLBENZENE	6	104.3	8.039 PPM

(B-9-5)

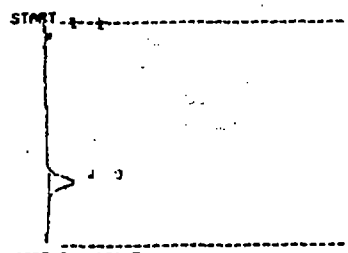
PHOTOVAC



STOP @ 171.2
SAMPLE LIBRARY 1 JUN 23 1989 10:43
ANALYSIS # 30 0350-004-100
INTERNAL TEMP 30 PURGE
GAIN 10 B-3-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	125.2	10.25 PPM

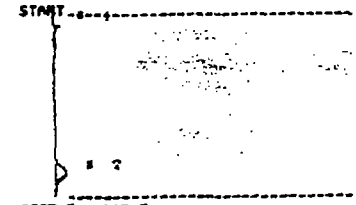
PHOTOVAC



STOP @ 171.7
SAMPLE LIBRARY 1 JUN 23 1989 10:48
ANALYSIS # 31 0350-004-100
INTERNAL TEMP 30 PURGE
GAIN 10 B-3-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	126.8	4.081 PPM

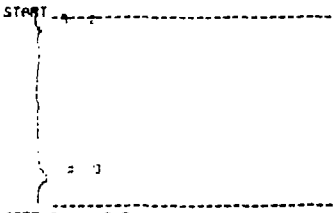
PHOTOVAC



STOP @ 148.5
SAMPLE LIBRARY 1 JUN 23 1989 10:51
ANALYSIS # 32 0350-004-100
INTERNAL TEMP 31 PURGE
GAIN 10 B-3-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	2	125.6	1.313 PPM

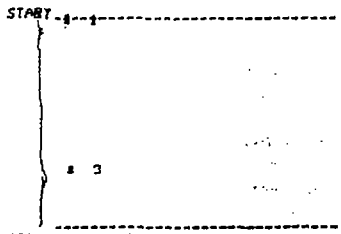
PHOTOVAC



STOP @ 143.2
SAMPLE LIBRARY 1 JUN 23 1989 10:38
ANALYSIS # 32 0350-004-100
INTERNAL TEMP 31 PURGE
GAIN 10 B-8-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	126.4	1.466 PPM

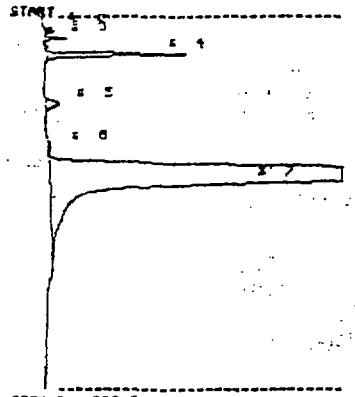
PHOTOVAC



STOP @ 161.8
SAMPLE LIBRARY 1 JUN 23 1989 10:34
ANALYSIS # 28 0350-004-100
INTERNAL TEMP 31 PURGE
GAIN 10 B-8-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC



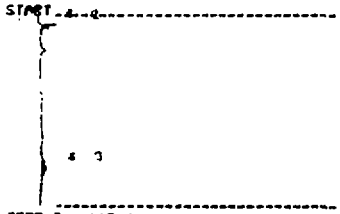
STOP @ 288.3
SAMPLE LIBRARY 1 JUN 23 1989 10:48
ANALYSIS # 23 0350-004-100
INTERNAL TEMP 23 PURGE SAMPLE
GAIN 10 B-8-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	4	38.1	1.8 US
UNKNOWN	5	88.3	213.4 µVS
STYRENE	7	125.8	225.8 PPM

(B-8-10)

BPACC01058

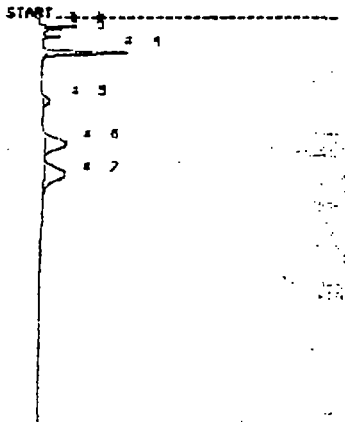
PHOTOVAC



STOP @ 147.4
SAMPLE LIBRARY 1 JUN 23 1989 14:48
ANALYSIS # 27 0350-004-100
INTERNAL TEMP 37 PURGE
GAIN 10 B-10-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	118.6	114.3 mVS

PHOTOVAC

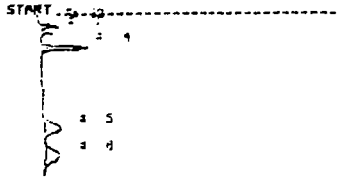


STOP @ 328.1
SAMPLE LIBRARY 1 JUN 23 1989 14:34
ANALYSIS # 20 0350-004-100
INTERNAL TEMP 36 SAMPLE
GAIN 10 B-10-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	4	28.0	628.0 mVS
STYRENE	6	33.7	2.343 PPM
UNKNOWN	7	124.4	783.1 mVS

(B-10-15)

PHOTOVAC

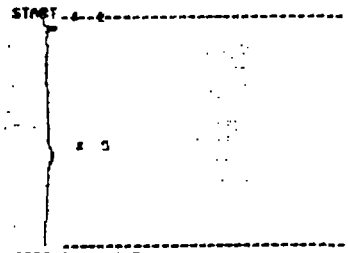


STOP @ 138.7
SAMPLE LIBRARY 1 JUN 23 1989 14:26
ANALYSIS # 24 0350-004-100
INTERNAL TEMP 36 SAMPLE
GAIN 10 B-10-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	4	25.3	231.0 mVS
ETHYLBENZENE	5	88.3	1.525 PPM
STYRENE	6	103.3	1.347 PPM

(B-10-5)

PHOTOVAC

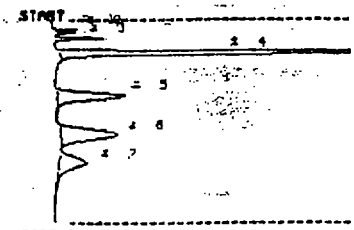


STOP @ 178.2
SAMPLE LIBRARY 1 JUN 23 1989 14:40
ANALYSIS # 25 0350-004-100
INTERNAL TEMP 36 PURGE
GAIN 10 B-10-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM

(B-10-20)

PHOTOVAC

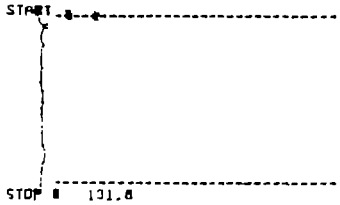


STOP @ 157.0
SAMPLE LIBRARY 1 JUN 23 1989 14:44
ANALYSIS # 26 0350-004-100
INTERNAL TEMP 36 SAMPLE
GAIN 10 B-10-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	15.8	163.2 mVS
UNKNOWN	4	26.8	4.4 VS
UNKNOWN	5	68.3	1.2 VS
ETHYLBENZENE	6	98.7	6.337 PPM
STYRENE	7	113.2	3.713 PPM

(B-10-10)

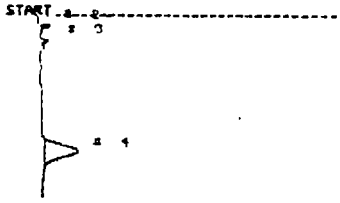
PHOTOVAC



STOP @ 131.8
SAMPLE LIBRARY 1 JUN 23 1989 14:24
ANALYSIS # 21 0350-004-100
INTERNAL TEMP 35 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC



CALIBRATED PEAK 4,STYRENE

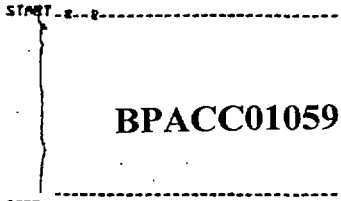
SAMPLE LIBRARY 1 JUN 23 1989 14:25
ANALYSIS # 21 0350-004-100
INTERNAL TEMP 36 SAMPLE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	4	106.6	5.000 PPM

STOP @ 142.5
SAMPLE LIBRARY 1 JUN 23 1989 14:29
ANALYSIS # 22 0350-004-100
INTERNAL TEMP 36 SAMPLE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	4	106.6	5.000 PPM

PHOTOVAC



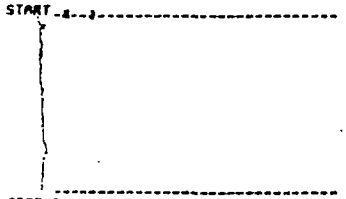
BPACC01059

STOP @ 138.5
SAMPLE LIBRARY 1 JUN 23 1989 14:32
ANALYSIS # 23 0350-004-100
INTERNAL TEMP 36 PURGE
GAIN 10 B-10-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC

START

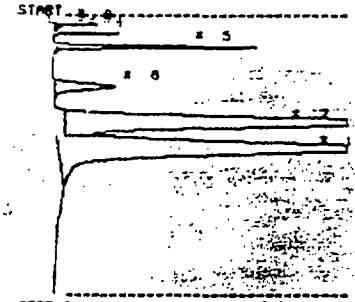


STOP @ 133.8
SAMPLE LIBRARY 1 JUN 29 1989 16:1
ANALYSIS # 34 0350-004-100
INTERNAL TEMP 49 PURGE
GAIN 10 B-11-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC

START



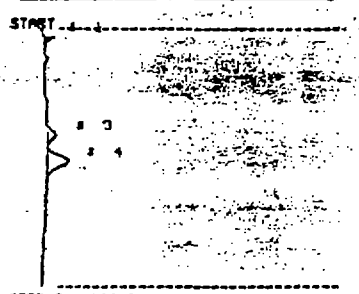
STOP @ 214.3
SAMPLE LIBRARY 1 JUN 29 1989 16:5
ANALYSIS # 35 0350-004-100
INTERNAL TEMP 40 SAMPLE
GAIN 10 B-11-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	4	14.5	202.1 aUS
UNKNOWN	5	25.1	1.4 US
UNKNOWN	6	58.3	1.8 US
ETHYLBENZENE	7	84.1	45.98 PPM
STYRENE	8	104.1	81.64 PPM

(B-11-5)

PHOTOVAC

START

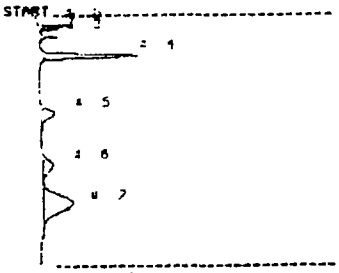


STOP @ 155.3
SAMPLE LIBRARY 1 JUN 29 1989 16:11
ANALYSIS # 36 0350-004-100
INTERNAL TEMP 42 PURGE
GAIN 10 B-11-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	3	85.3	683.5 PPB
STYRENE	4	100.4	2.833 PPM

PHOTOVAC

START



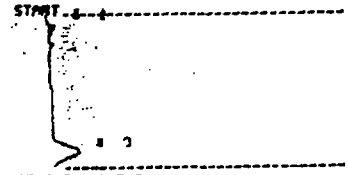
STOP @ 151.0
SAMPLE LIBRARY 1 JUN 29 1989 15:16
ANALYSIS # 31 0350-004-100
INTERNAL TEMP 37 ~~PURGE~~ SAMPLE
GAIN 10 B-10-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	4	31.8	851.5 aUS
UNKNOWN	5	78.7	251.3 aUS
STYRENE	6	118.8	1.441 PPM
UNKNOWN	7	147.2	1.3 US

(B-10-20)

PHOTOVAC

START

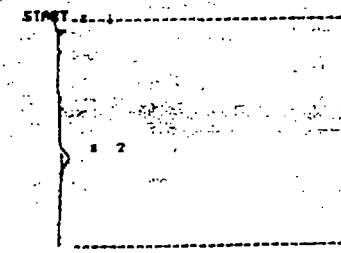


STOP @ 117.0
SAMPLE LIBRARY 1 JUN 29 1989 15:55
ANALYSIS # 32 0350-004-100
INTERNAL TEMP 38 PURGE
GAIN 10 B-11-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC

START

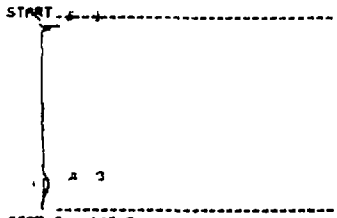


STOP @ 174.8
SAMPLE LIBRARY 1 JUN 29 1989 15:58
ANALYSIS # 33 0350-004-100
INTERNAL TEMP 38 PURGE
GAIN 10 B-11-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	2	107.8	358.8 PPB

PHOTOVAC

START

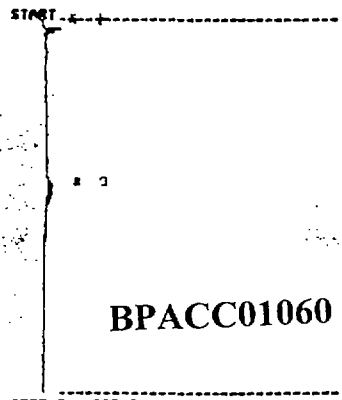


STOP @ 147.3
SAMPLE LIBRARY 1 JUN 29 1989 14:57
ANALYSIS # 23 0350-004-100
INTERNAL TEMP 37 PURGE
GAIN 10 B-10-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	132.8	148.2 aUS

PHOTOVAC

START

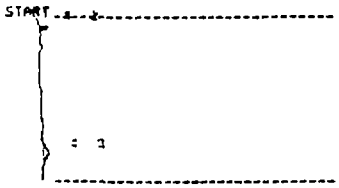


STOP @ 258.3
SAMPLE LIBRARY 1 JUN 29 1989 15:5
ANALYSIS # 26 0350-004-100
INTERNAL TEMP 36 PURGE
GAIN 10 B-10-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	138.4	137.8 aUS

BPACC01060

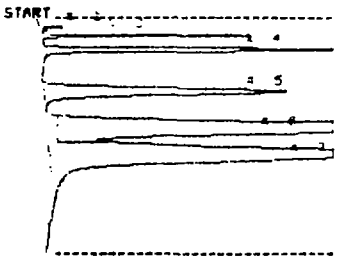
PHOTOVAC



STOP @ 124.8
SAMPLE LIBRARY 1 JUN 23 1989 16:22
ANALYSIS # 43 0350-004-100
INTERNAL TEMP 40 PURGE
GAIN 10 B-11-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	106.6	882.9 PPB

PHOTOVAC

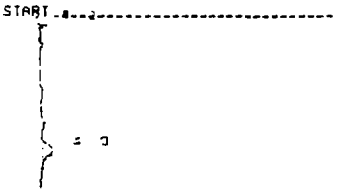


STOP @ 173.4
SAMPLE LIBRARY 1 JUN 23 1989 16:22
ANALYSIS # 40 0350-004-100
INTERNAL TEMP 41 SAMPLE
GAIN 10 B-11-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	14.8	855.3 mVS
UNKNOWN	4	25.8	3.2 VS
UNKNOWN	5	57.3	4.4 VS
ETHYLBENZENE	6	84.3	26.33 PPM
STYRENE	7	105.4	50.85 PPM

(B-11-10)

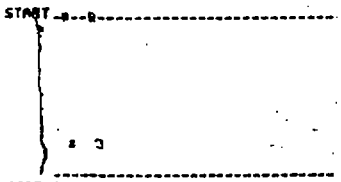
PHOTOVAC



STOP @ 138.3
SAMPLE LIBRARY 1 JUN 23 1989 16:13
ANALYSIS # 37 0350-004-100
INTERNAL TEMP 41 PURGE
GAIN 10 B-11-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	105.1	1.289 PPM

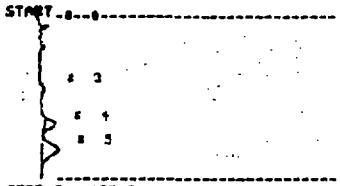
PHOTOVAC



STOP @ 122.3
SAMPLE LIBRARY 1 JUN 23 1989 16:08
ANALYSIS # 44 0350-004-100
INTERNAL TEMP 40 PURGE
GAIN 10 B-11-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM

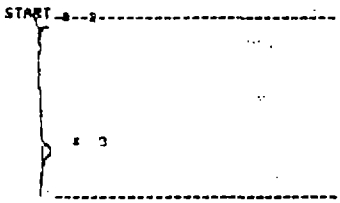
PHOTOVAC



STOP @ 125.9
SAMPLE LIBRARY 1 JUN 23 1989 16:16
ANALYSIS # 41 0350-004-100
INTERNAL TEMP 40 ~~SAMPLE~~ PURGE
GAIN 10 B-11-~~10~~ 15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	4	85.3	1.020 PPM
STYRENE	5	106.8	2.054 PPM

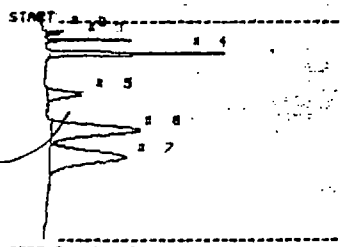
PHOTOVAC



STOP @ 138.6
SAMPLE LIBRARY 1 JUN 23 1989 16:16
ANALYSIS # 38 0350-004-100
INTERNAL TEMP 41 PURGE
GAIN 10 B-11-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	105.4	1.037 PPM

PHOTOVAC

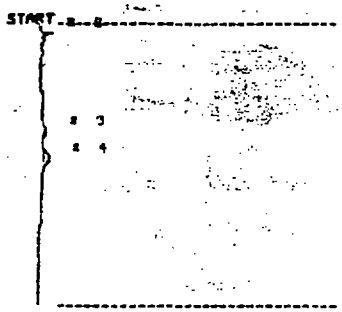


STOP @ 166.8
SAMPLE LIBRARY 1 JUN 23 1989 16:32
ANALYSIS # 45 0350-004-100
INTERNAL TEMP 40 SAMPLE
GAIN 10 B-11-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	14.8	288.9 mVS
UNKNOWN	4	25.4	1.2 VS
UNKNOWN	5	57.7	550.8 mVS
ETHYLBENZENE	6	86.2	3.351 PPM
STYRENE	7	106.6	11.81 PPM

(B-11-15)

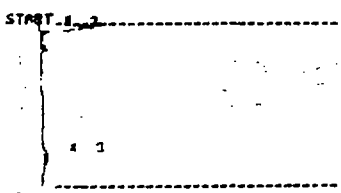
PHOTOVAC



STOP @ 217.5
SAMPLE LIBRARY 1 JUN 23 1989 16:25
ANALYSIS # 42 0350-004-100
INTERNAL TEMP 40 PURGE
GAIN 10 B-11-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	4	105.7	651.2 PPB

PHOTOVAC



STOP @ 124.8
SAMPLE LIBRARY 1 JUN 23 1989 16:13
ANALYSIS # 39 0350-004-100
INTERNAL TEMP 42 PURGE
GAIN 10 B-11-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM

BPACC01061

PHOTOVAC

START

STOP @ 227.2
SAMPLE LIBRARY 1 JUN 27 1989 11:55
ANALYSIS # 15 0350-004-100
INTERNAL TEMP 30 PURGE
GAIN 20 B1-15

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

START

STOP @ 155.2
SAMPLE LIBRARY 1 JUN 25 1989 16:55
ANALYSIS # 16 0350-004-100
INTERNAL TEMP 30 PURGE
GAIN 10 B-11-20

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 2 107.2 1.198 PPM

PHOTOVAC

START

STOP @ 12.6
SAMPLE LIBRARY 1 JUN 25 1989 16:41
ANALYSIS # 46 0350-004-100
INTERNAL TEMP 35 SAMPLE
GAIN 10 B-11-15

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

START

JUN 27 1989 12:25
INTERNAL BATTERIES LOW, POWER OFF
AC OPERATION REQUIRED

PHOTOVAC

START

STOP @ 157.8
SAMPLE LIBRARY 1 JUN 25 1989 17:12
ANALYSIS # 15 0350-004-100
INTERNAL TEMP 30 PURGE
GAIN 10 B-11-20

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

START

(B-11-20)

STOP @ 822.1
SAMPLE LIBRARY 1 JUN 25 1989 16:55
ANALYSIS # 47 0350-004-100
INTERNAL TEMP 37 PURGE
GAIN 10 B-11-20

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 4 183.3 1.481 PPM

BPACC01062

PHOTOVAC

CALIBRATED PEAK 4.TOLUENE

SAMPLE LIBRARY 1. JUN 30 1983 8:16
ANALYSIS # 8 0350-004-100
INTERNAL TEMP 30 SAMPLE STND
GAIN 10 BTX

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	3	15.1	12.95 PPM
TOLUENE	4	38.7	10.60 PPM
ETHYLBENZENE	5	87.4	10.32 PPM
STYRENE	6	103.3	4.871 PPM

PHOTOVAC

CALIBRATED PEAK 5.ETHYLBENZENE

SAMPLE LIBRARY 1 JUN 30 1983 8:16
ANALYSIS # 8 0350-004-100
INTERNAL TEMP 31 SAMPLE STND
GAIN 10 BTX

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	3	15.1	12.78 PPM
TOLUENE	4	38.7	11.24 PPM
ETHYLBENZENE	5	87.4	11.00 PPM
STYRENE	6	103.3	4.318 PPM

PHOTOVAC

START

STOP # 206.7
SAMPLE LIBRARY 1 JUN 30 1983 8:23
ANALYSIS # 3 0350-004-100
INTERNAL TEMP 30 PURGE STND
GAIN 10 BTX

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

START

STOP # 123.5
SAMPLE LIBRARY 1 JUN 30 1983 8:36
ANALYSIS # 10 0350-004-100
INTERNAL TEMP 31 ~~PURGE~~ STND
GAIN 10 BTX Sample

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	3	15.2	12.61 PPM
TOLUENE	4	38.7	11.21 PPM
ETHYLBENZENE	5	87.4	9.235 PPM
STYRENE	6	103.8	1.927 PPM

PHOTOVAC

START

STOP # 208.5
SAMPLE LIBRARY 1 JUN 30 1983 8:38
ANALYSIS # 11 0350-004-100
INTERNAL TEMP 31 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

START

STOP # 164.8
SAMPLE LIBRARY 1 JUN 30 1983 8:48
ANALYSIS # 12 0350-004-100
INTERNAL TEMP 30 SAMPLE
GAIN 10 B-12-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	14.2	121.6 mUS
ETHYLBENZENE	5	81.3	323.8 PPM
STYRENE	6	100.8	13.52 PPM

PHOTOVAC

START

STOP # 147.3
SAMPLE LIBRARY 1 JUN 30 1983 8:52
ANALYSIS # 13 0350-004-100
INTERNAL TEMP 30 PURGE
GAIN 10 B-12-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	2	82.8	10.65 PPM

PHOTOVAC

START

STOP # 231.0
SAMPLE LIBRARY 1 JUN 30 1983 8:58
ANALYSIS # 14 0350-004-100
INTERNAL TEMP 31 PURGE
GAIN 10 B-12-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	2	81.7	2.101 PPM

PHOTOVAC

START

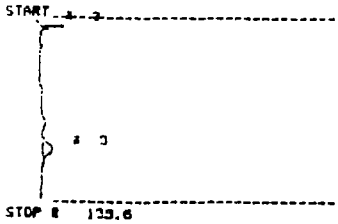
STOP # 146.7
SAMPLE LIBRARY 1 JUN 30 1983 9:11
ANALYSIS # 15 0350-004-100
INTERNAL TEMP 32 PURGE
GAIN 10 B-12-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	2	102.7	336.8 PPB

(B-12-5)

BPACC01063

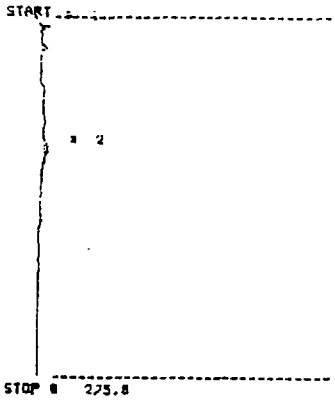
PHOTOVAC



STOP @ 133.6
SAMPLE LIBRARY 1 JUN 30 1989 9:16
ANALYSIS # 18 9050-004-100
INTERNAL TEMP 33 PURGE
GAIN 10 8-12-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	102.7	2.032 PPM

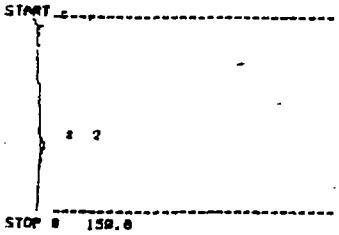
PHOTOVAC



STOP @ 275.8
SAMPLE LIBRARY 1 JUN 30 1989 9:28
ANALYSIS # 19 9050-004-100
INTERNAL TEMP 34 PURGE
GAIN 10 8-12-15

COMPOUND NAME PEAK R.T. AREA/PPM

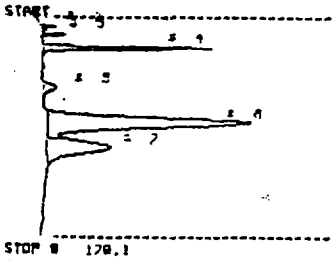
PHOTOVAC



STOP @ 150.8
SAMPLE LIBRARY 1 JUN 30 1989 9:18
ANALYSIS # 17 9050-004-100
INTERNAL TEMP 34 PURGE
GAIN 10 8-12-10

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

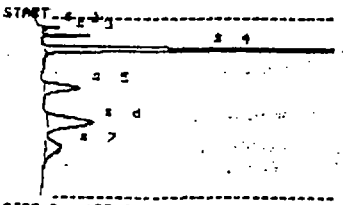


STOP @ 170.1
SAMPLE LIBRARY 1 JUN 30 1989 9:33
ANALYSIS # 20 9050-004-100
INTERNAL TEMP 33 SAMPLE
GAIN 10 8-12-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	4	24.7	1.1 US
UNKNOWN	5	38.1	152.2 mUS
ETHYLBENZENE	6	83.5	48.33 PPM
STYRENE	7	103.8	17.28 PPM

(B-12-15)

PHOTOVAC

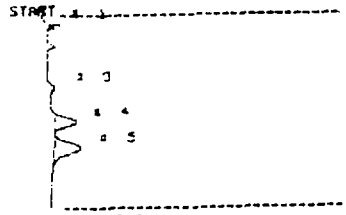


STOP @ 137.4
SAMPLE LIBRARY 1 JUN 30 1989 9:22
ANALYSIS # 18 9050-004-100
INTERNAL TEMP 34 SAMPLE
GAIN 10 8-12-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	14.2	153.3 mUS
UNKNOWN	4	24.2	4.8 US
UNKNOWN	5	35.5	680.1 mUS
ETHYLBENZENE	6	82.9	8.125 PPM
STYRENE	7	102.4	3.835 PPM

(B-12-10)

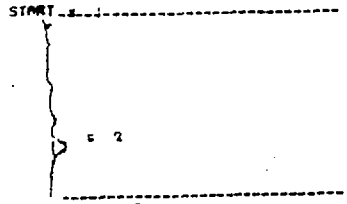
PHOTOVAC



STOP @ 147.5
SAMPLE LIBRARY 1 JUN 30 1989 9:57
ANALYSIS # 21 9050-004-100
INTERNAL TEMP 34 PURGE
GAIN 10 8-12-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	4	83.5	3.499 PPM
STYRENE	5	103.8	6.523 PPM

PHOTOVAC

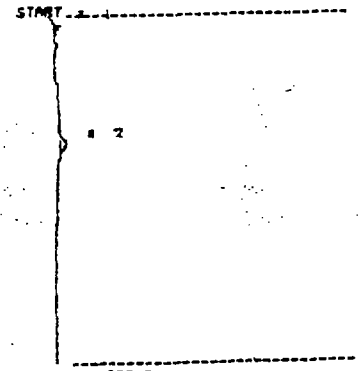


STOP @ 133.2
SAMPLE LIBRARY 1 JUN 30 1989 10:18
ANALYSIS # 22 9050-004-100
INTERNAL TEMP 34 PURGE
GAIN 10 8-12-20

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 2 102.7 2.979 PPM

PHOTOVAC



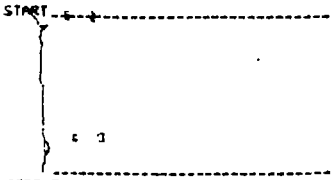
STOP @ 265.8
SAMPLE LIBRARY 1 JUN 30 1989 10:13
ANALYSIS # 23 9050-004-100
INTERNAL TEMP 33 PURGE
GAIN 10 8-12-20

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 2 102.4 1.329 PPM

BPACC01064

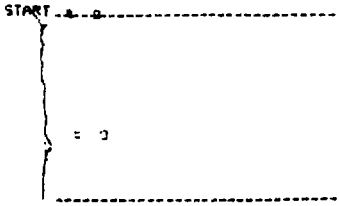
PHOTOVAC



STOP @ 118.5
SAMPLE LIBRARY 1 JUN 30 1989 10:16
ANALYSIS # 24 0350-004-100
INTERNAL TEMP 33 PURGE
GAIN 10 B-12-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	103.8	384.5 PPB

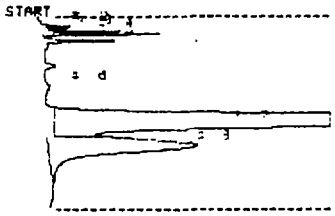
PHOTOVAC



STOP @ 141.0
SAMPLE LIBRARY 1 JUN 30 1989 10:31
ANALYSIS # 27 0350-004-100
INTERNAL TEMP 34 PURGE
GAIN 10 B-13-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	101.8	878.8 PPB

PHOTOVAC

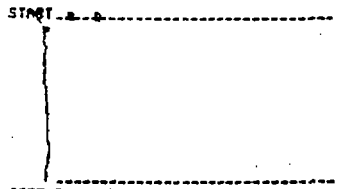


STOP @ 144.6
SAMPLE LIBRARY 1 JUN 30 1989 10:40
ANALYSIS # 30 0350-004-100
INTERNAL TEMP 36 SAMPLE
GAIN 10 B-13-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	12.1	239.4 mVS
UNKNOWN	4	14.2	432.7 mVS
BENZENE	5	15.4	2.739 PPM
ETHYLBENZENE	7	81.5	165.5 PPM
STYRENE	8	101.8	42.91 PPM

(B-13-5)

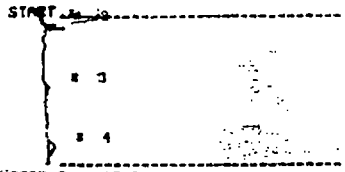
PHOTOVAC



STOP @ 125.4
SAMPLE LIBRARY 1 JUN 30 1989 10:28
ANALYSIS # 25 0350-004-100
INTERNAL TEMP 34 PURGE
GAIN 10 B-12-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM

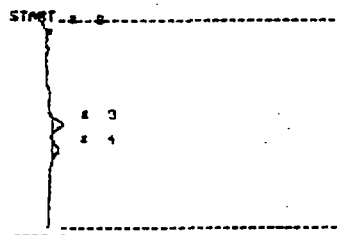
PHOTOVAC



STOP @ 113.8
SAMPLE LIBRARY 1 JUN 30 1989 10:33
ANALYSIS # 26 0350-004-100
INTERNAL TEMP 35 PURGE
GAIN 10 B-13-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	4	102.4	1.495 PPM

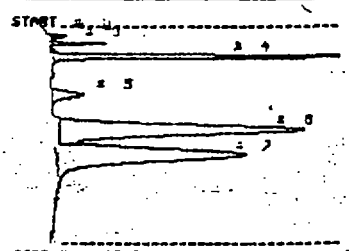
PHOTOVAC



STOP @ 168.4
SAMPLE LIBRARY 1 JUN 30 1989 10:57
ANALYSIS # 31 0350-004-100
INTERNAL TEMP 36 PURGE
GAIN 10 B-13-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	3	82.6	1.661 PPM
STYRENE	4	102.1	1.306 PPM

PHOTOVAC

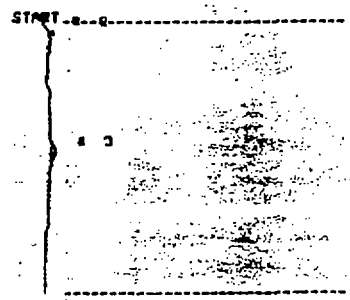


STOP @ 167.5
SAMPLE LIBRARY 1 JUN 30 1989 10:24
ANALYSIS # 26 0350-004-100
INTERNAL TEMP 34 ~~PURGE~~ SAMPLE
GAIN 10 B-12-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	14.1	171.8 mVS
UNKNOWN	4	24.8	3.4 VS
UNKNOWN	5	55.3	514.6 mVS
ETHYLBENZENE	6	82.3	49.85 PPM
STYRENE	7	102.1	51.34 PPM

(B-10-20)

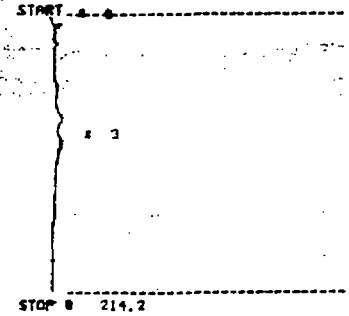
PHOTOVAC



STOP @ 208.8
SAMPLE LIBRARY 1 JUN 30 1989 10:37
ANALYSIS # 29 0350-004-100
INTERNAL TEMP 35 PURGE
GAIN 10 B-13-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC

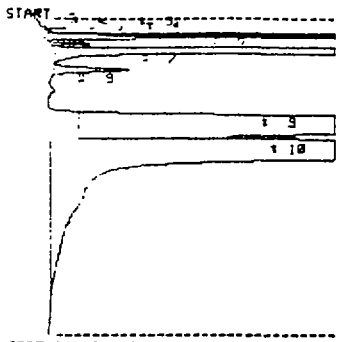


STOP @ 214.2
SAMPLE LIBRARY 1 JUN 30 1989 10:57
ANALYSIS # 32 0350-004-100
INTERNAL TEMP 35 PURGE
GAIN 10 B-13-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM

BPACC01065

PHOTOVAC

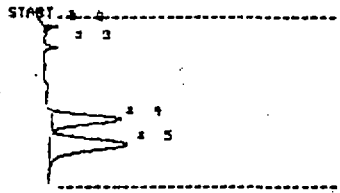


STOP @ 240.5
SAMPLE LIBRARY 1 JUN 30 1989 11:12
ANALYSIS # 33 0350-004-100
INTERNAL TEMP 35 SAMPLE
GAIN 10 B-13-10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	12.1	1.1 US
UNKNOWN	4	14.0	2.0 US
BENZENE	5	15.7	1.288 PPM
UNKNOWN	6	24.5	7.4 US
TOLUENE	7	35.2	3.242 PPM
ETHYLBENZENE	8	82.1	330.6 PPM
STYRENE	10	101.2	345.2 PPM

(B-13-10)

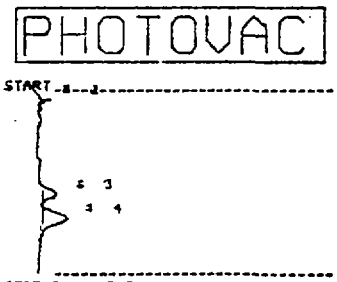
PHOTOVAC



STOP @ 131.1
SAMPLE LIBRARY 1 JUN 30 1989 11:21
ANALYSIS # 34 0350-004-100
INTERNAL TEMP 36 PURGE
GAIN 10 B-13-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	4	82.3	12.65 PPM
STYRENE	5	101.8	13.58 PPM

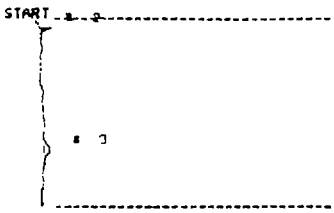
PHOTOVAC



STOP @ 142.6
SAMPLE LIBRARY 1 JUN 30 1989 11:24
ANALYSIS # 35 0350-004-100
INTERNAL TEMP 37 PURGE
GAIN 10 B-13-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	3	82.3	2.028 PPM
STYRENE	4	102.1	8.257 PPM

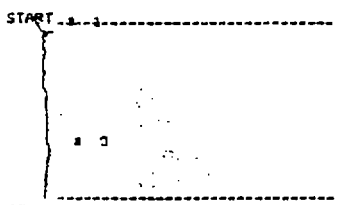
PHOTOVAC



STOP @ 140.6
SAMPLE LIBRARY 1 JUN 30 1989 11:25
ANALYSIS # 36 0350-004-100
INTERNAL TEMP 37 PURGE
GAIN 10 B-13-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	101.8	361.1 PPB

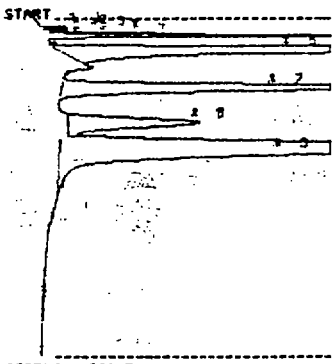
PHOTOVAC



STOP @ 134.5
SAMPLE LIBRARY 1 JUN 30 1989 11:32
ANALYSIS # 37 0350-004-100
INTERNAL TEMP 37 PURGE
GAIN 10 B-13-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC

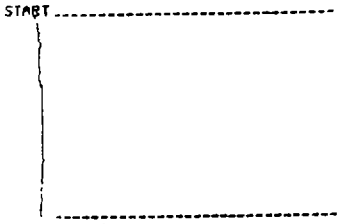


(B-13-15)

STOP @ 260.5
SAMPLE LIBRARY 1 JUN 30 1989 11:38
ANALYSIS # 38 0350-004-100
INTERNAL TEMP 37 SAMPLE
GAIN 10 B-13-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	12.0	323.8 uUS
UNKNOWN	4	14.0	2.2 US
UNKNOWN	6	24.8	12.3 US
UNKNOWN	7	34.5	7.3 US
ETHYLBENZENE	8	82.6	23.85 PPM
STYRENE	9	101.2	185.5 PPM

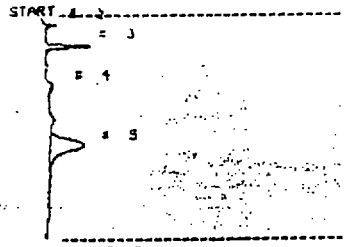
PHOTOVAC



STOP @ 154.0
SAMPLE LIBRARY 1 JUN 30 1989 11:42
ANALYSIS # 39 0350-004-100
INTERNAL TEMP 38 PURGE
GAIN 10 B-13-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM

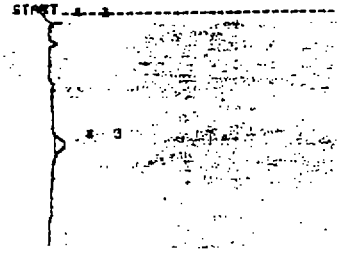
PHOTOVAC



STOP @ 171.8
SAMPLE LIBRARY 1 JUN 30 1989 11:45
ANALYSIS # 40 0350-004-100
INTERNAL TEMP 37 PURGE
GAIN 10 B-13-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	24.3	258.3 uUS
STYRENE	5	102.1	8.113 PPM

PHOTOVAC

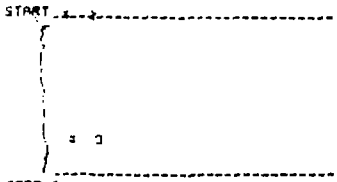


BPACC01066

STOP @ 278.9
SAMPLE LIBRARY 1 JUN 30 1989 11:5
ANALYSIS # 41 0350-004-100
INTERNAL TEMP 37 PURGE
GAIN 10 B-13-20

COMPOUND NAME	PEAK	R.T.	AREA/PP
STYRENE	3	102.4	2.400 PP

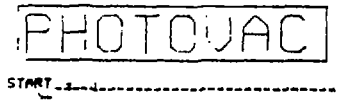
PHOTOVAC



STOP @ 113.4
SAMPLE LIBRARY 1 JUN 30 1989 11:55
ANALYSIS # 42 0350-004-100
INTERNAL TEMP 38 PURGE
GAIN 10 B-13-20

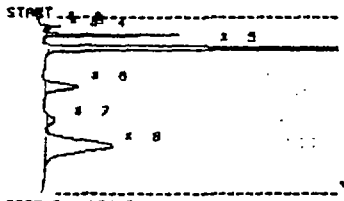
COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC



JUN 30 1989 12: 1
INTERNAL BATTERIES LOW, POWER OFF
AC OPERATION REQUIRED

PHOTOVAC



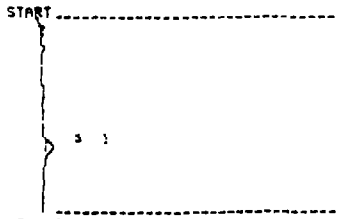
(B-13-20)

STOP @ 136.3
SAMPLE LIBRARY 1 JUN 30 1989 12: 7
ANALYSIS # 1 0350-004-100
INTERNAL TEMP 37 ~~PURGE~~ SAMPLE
GAIN 10 B-13-20

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN	4	14.3	423.5 mVS
UNKNOWN	5	24.2	3.8 VS
UNKNOWN	6	55.3	542.7 mVS
ETHYLBENZENE	7	82.8	1.188 PPM
STYRENE	8	102.1	16.53 PPM

PHOTOVAC

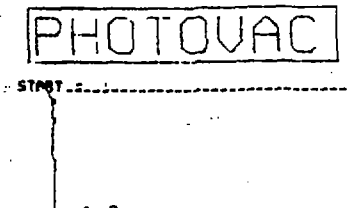


STOP @ 149.5
SAMPLE LIBRARY 1 JUN 30 1989 12:32
ANALYSIS # 2 0350-004-100
INTERNAL TEMP 35 PURGE
GAIN 10 B-13-20

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 1 102.1 1.369 PPM

PHOTOVAC

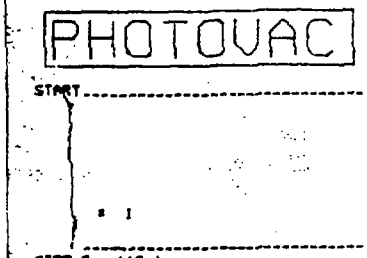


STOP @ 118.2
SAMPLE LIBRARY 1 JUN 30 1989 12:24
ANALYSIS # 3 0350-004-100
INTERNAL TEMP 36 PURGE
GAIN 10 B-13-20

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 2 102.1 877.4 PPB

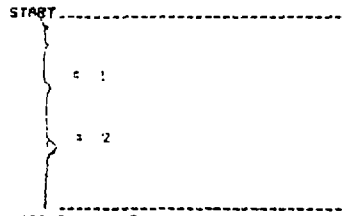
PHOTOVAC



STOP @ 113.1
SAMPLE LIBRARY 1 JUN 30 1989 12:27
ANALYSIS # 4 0350-004-100
INTERNAL TEMP 36 PURGE
GAIN 10 B-13-20

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

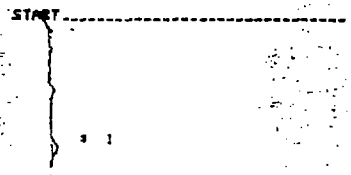


STOP @ 146.2
SAMPLE LIBRARY 1 JUN 30 1989 12:37
ANALYSIS # 5 0350-004-100
INTERNAL TEMP 36 PURGE
GAIN 10 B-13-20

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 2 102.1 1.842 PPM

PHOTOVAC

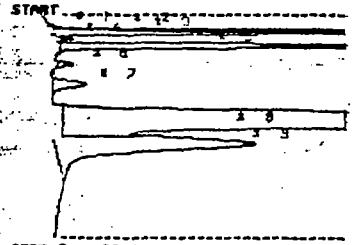


STOP @ 123.2
SAMPLE LIBRARY 1 JUN 30 1989 12:40
ANALYSIS # 6 0350-004-100
INTERNAL TEMP 36 PURGE
GAIN 10 B-13-20

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 1 101.5 1.138 PPM

PHOTOVAC



(B-14-10)

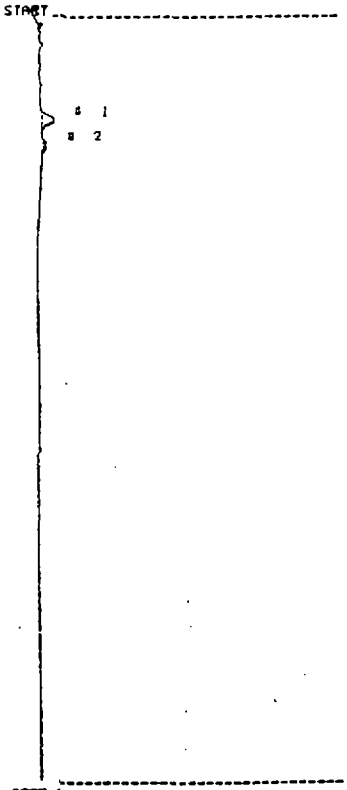
STOP @ 173.0
SAMPLE LIBRARY 1 JUN 30 1989 12:45
ANALYSIS # 7 0350-004-100
INTERNAL TEMP 36 SAMPLE
GAIN 10 B-14-10

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN	2	12.3	935.3 mVS
UNKNOWN	3	14.4	2.3 VS
UNKNOWN	5	24.4	5.8 VS
TOLUENE	6	35.3	1.736 PPM
UNKNOWN	7	55.5	565.8 mVS
ETHYLBENZENE	8	82.1	234.9 PPM
STYRENE	9	102.1	57.12 PPM

BPACC01067

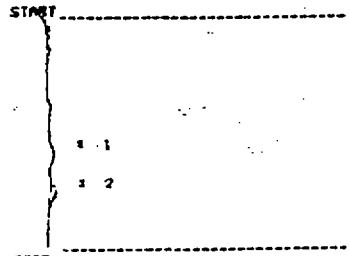
PHOTOVAC



STOP # 388.1
SAMPLE LIBRARY 1 JUN 30 1983 12:57
ANALYSIS # 8 0350-004-100
INTERNAL TEMP 35 PURGE
GAIN 12 8-14-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	1	81.7	1.733 PPM

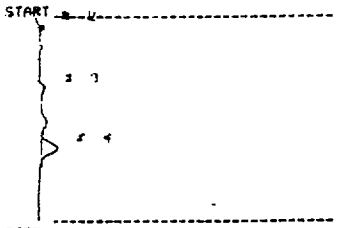
PHOTOVAC



STOP # 170.1
SAMPLE LIBRARY 1 JUN 30 1983 13: 8
ANALYSIS # 9 0350-004-100
INTERNAL TEMP 36 PURGE
GAIN 10 8-14-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	137.2	223.1 mVS

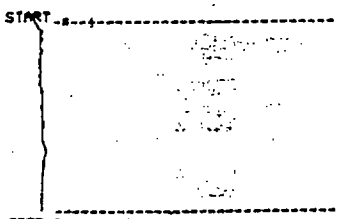
PHOTOVAC



STOP # 155.4
SAMPLE LIBRARY 1 JUN 30 1983 131 8
ANALYSIS # 10 0350-004-100
INTERNAL TEMP 36 PURGE
GAIN 10 8-14-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	4	182.4	3.715 PPM

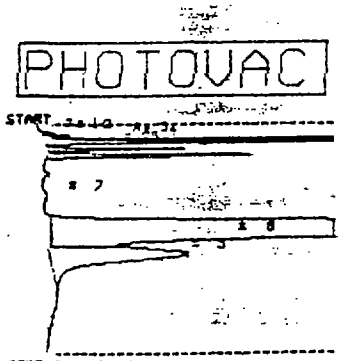
PHOTOVAC



STOP # 146.1
SAMPLE LIBRARY 1 JUN 30 1983 13:11
ANALYSIS # 11 0350-004-100
INTERNAL TEMP 37 PURGE
GAIN 10 8-14-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC

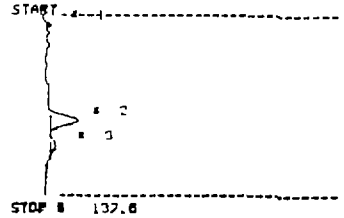


STOP # 170.8
SAMPLE LIBRARY 1 JUN 30 1983 13:14
ANALYSIS # 12 0350-004-100
INTERNAL TEMP 37 SAMPLE
GAIN 10 8-14-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	9.3	113.5 mVS
UNKNOWN	3	12.8	1.8 US
UNKNOWN	4	14.8	1.8 US
BENZENE	5	15.3	3.484 PPM
UNKNOWN	6	24.5	1.3 US
ETHYLBENZENE	8	81.3	321.4 PPM
STYRENE	9	182.1	10.73 PPM

(B-14-5)

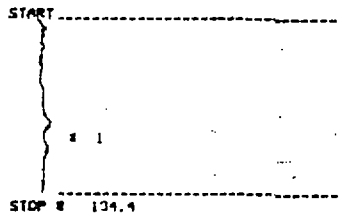
PHOTOVAC



STOP # 137.6
SAMPLE LIBRARY 1 JUN 30 1983 13:16
ANALYSIS # 13 0350-004-100
INTERNAL TEMP 37 PURGE
GAIN 10 8-14-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	2	82.8	4.958 PPM
STYRENE	3	181.8	367.1 PPB

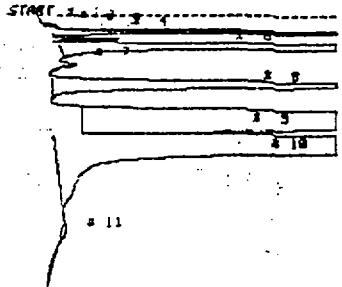
PHOTOVAC



STOP # 134.4
SAMPLE LIBRARY 1 JUN 30 1983 13:20
ANALYSIS # 14 0350-004-100
INTERNAL TEMP 38 PURGE
GAIN 12 8-14-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC



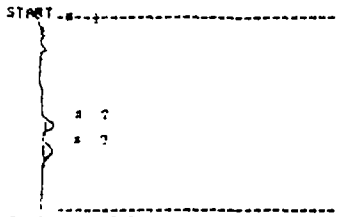
STOP # 221.5
SAMPLE LIBRARY 1 JUN 30 1983 13:24
ANALYSIS # 15 0350-004-100
INTERNAL TEMP 37 SAMPLE
GAIN 10 8-14-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	11.3	561.3 mVS
UNKNOWN	4	13.3	2.5 US
BENZENE	5	15.3	2.178 PPM
UNKNOWN	6	24.2	3.7 US
TOLUENE	7	38.8	1.374 PPM
UNKNOWN	8	54.5	8.4 US
ETHYLBENZENE	9	81.9	342.7 PPM

(B-14-15)

BPACC01068

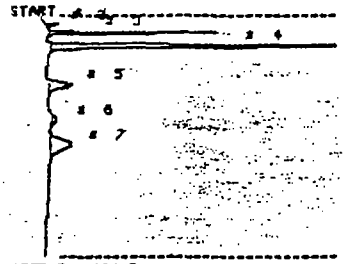
PHOTOVAC



STOP @ 145.5
SAMPLE LIBRARY 1 JUN 30 1993 13:37
ANALYSIS # 16 8350-004-1PP
INTERNAL TEMP 38 PURGE
GAIN 10 B-14-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	2	82.3	1.245 PPM
STYRENE	3	102.4	1.784 PPM

PHOTOVAC

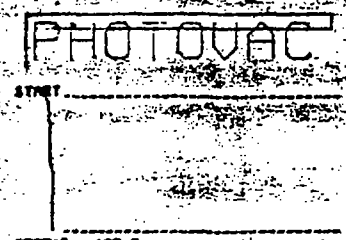


(B-14-20)

STOP @ 184.8
SAMPLE LIBRARY 1 JUN 30 1993 13:43
ANALYSIS # 17 8350-004-1PP
INTERNAL TEMP 36 ~~PURGE~~ SAMPLE
GAIN 10 B-14-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	14.2	571.8 AVG
UNKNOWN	4	34.1	2.8 VS
UNKNOWN	5	55.3	383.8 AVG
STYRENE	7	102.1	4.811 PPM

PHOTOVAC

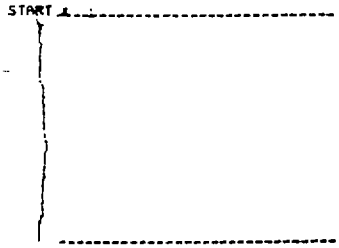


STOP @ 183.5
SAMPLE LIBRARY 1 JUN 30 1993 13:45
ANALYSIS # 18 8350-004-1PP
INTERNAL TEMP 37 PURGE
GAIN 10 B-14-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM

BPACC01069

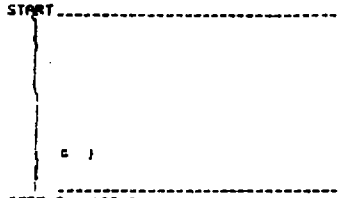
PHOTOVAC



STOP @ 173.8
SAMPLE LIBRARY 1 JUN 30 1989 8:15
ANALYSIS # 2 0358-004-100
INTERNAL TEMP 30 PURGE STND
GAIN 10 BTX

COMPOUND NAME PEAK R.T. AREA/PPM

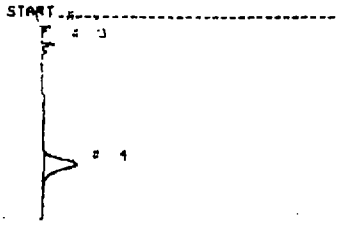
PHOTOVAC



STOP @ 133.2
SAMPLE LIBRARY 1 JUN 30 1989 7:56
ANALYSIS # 3 0358-004-100
INTERNAL TEMP 25 PURGE STND
GAIN 10 SPPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC



CALIBRATED PEAK 4,STYRENE

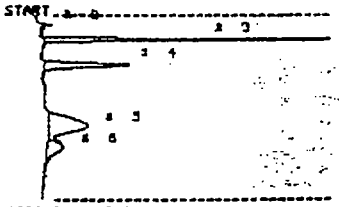
SAMPLE LIBRARY 1 JUN 30 1989 8:4
ANALYSIS # 4 0358-004-100
INTERNAL TEMP 25 SAMPLE STND
GAIN 10 SPPM STYRENE

OFFSET 13.0 mV
CHART SPEED 1 cm/min
SLOPE SENS. 10 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 12.0 Sec
ANALYSIS TIME 300.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 4 116.2 5.000 PPM

PHOTOVAC

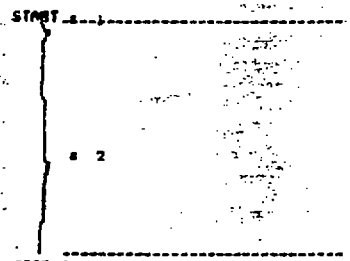


STOP @ 142.2
SAMPLE LIBRARY 1 JUN 30 1989 8:16
ANALYSIS # 6 0358-004-100
INTERNAL TEMP 31 SAMPLE STND
GAIN 10 BTX

COMPOUND NAME PEAK R.T. AREA/PPM

BENZENE	3	13.1	8.558 PPM
UNKNOWN	4	38.7	1.0 US
ETHYLBENZENE	5	87.4	7.785 PPM
ETHYLBENZENE	6	103.5	2.652 PPM

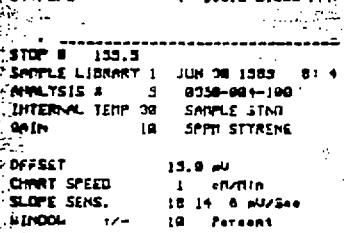
PHOTOVAC



STOP @ 188.0
SAMPLE LIBRARY 1 JUN 30 1989 8:0
ANALYSIS # 4 0358-004-100
INTERNAL TEMP 30 PURGE STND
GAIN 10 SPPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC



STOP @ 155.5
SAMPLE LIBRARY 1 JUN 30 1989 8:4
ANALYSIS # 5 0358-004-100
INTERNAL TEMP 30 SAMPLE STND
GAIN 10 SPPM STYRENE

OFFSET 13.0 mV
CHART SPEED 1 cm/min
SLOPE SENS. 10 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 300.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 4 116.2 5.000 PPM

PHOTOVAC

CALIBRATED PEAK 3,BENZENE

SAMPLE LIBRARY 1 JUN 30 1989 8:16
ANALYSIS # 6 0358-004-100
INTERNAL TEMP 31 SAMPLE STND
GAIN 10 BTX

COMPOUND NAME PEAK R.T. AREA/PPM

BENZENE	3	13.1	10.20 PPM
TOLUENE	4	38.7	8.560 PPM
ETHYLBENZENE	5	87.4	9.773 PPM
STYRENE	6	103.5	3.444 PPM

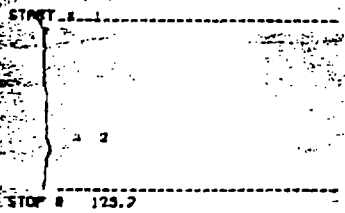
PHOTOVAC

SAMPLE LIBRARY 1 JUN 30 1989 8:0
ANALYSIS # 4 0358-004-100
INTERNAL TEMP 25 PURGE STND
GAIN 10 SPPM STYRENE

OFFSET 13.0 mV
CHART SPEED 1 cm/min
SLOPE SENS. 10 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 300.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC



STOP @ 125.7
SAMPLE LIBRARY 1 JUN 30 1989 8:5
ANALYSIS # 6 0358-004-100
INTERNAL TEMP 30 PURGE STND
GAIN 10 BTX

COMPOUND NAME PEAK R.T. AREA/PPM

BPACC01070

PHOTOVAC

SAMPLE LIBRARY 1 JUN 30 1985 7:32
ANALYSIS # 2 0350-004-100
INTERNAL TEMP 26 PLASE
GAIN 10 0-11-20

OFFSET 7.2 mV
CHART SPEED 1 cm/min
SLOPE SENS. 10 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

SAMPLE LIBRARY 1 JUN 30 1985 7:40
ANALYSIS # 0 0350-004-100
INTERNAL TEMP 26 PURGE STND
GAIN 10 5PPM STYRENE

OFFSET 35.0 mV
CHART SPEED 1 cm/min
SLOPE SENS. 10 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

SAMPLE LIBRARY 1 JUN 30 1985 7:44
ANALYSIS # 2 0350-004-100
INTERNAL TEMP 26 PURGE STND
GAIN 10 5PPM STYRENE

OFFSET 32.0 mV
CHART SPEED 1 cm/min
SLOPE SENS. 10 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

1 COMPOUND	ID #	R.T.	LIMIT
STYRENE	1	106.8	25.00 PPM
BENZENE	2	13.3	30.00 PPM
TOLUENE	3	33.3	30.00 PPM
ETHYLBENZENE	4	88.8	30.00 PPM

PHOTOVAC

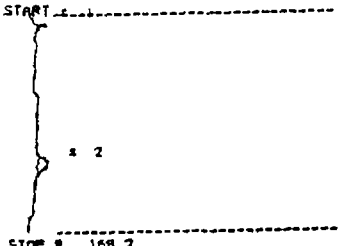
SAMPLE LIBRARY 1 JUN 30 1985 7:46
ANALYSIS # 0 0350-004-100
INTERNAL TEMP 26 PURGE STND
GAIN 10 5PPM STYRENE

OFFSET 30.0 mV
CHART SPEED 1 cm/min
SLOPE SENS. 10 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

START



STOP @ 168.2
SAMPLE LIBRARY 1 JUN 30 1985 7:50
ANALYSIS # 1 0350-004-100
INTERNAL TEMP 26 PURGE STND
GAIN 10 5PPM STYRENE

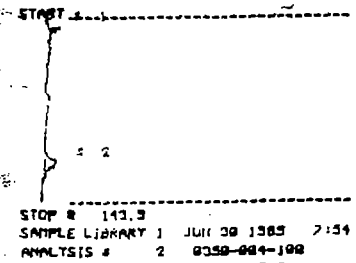
OFFSET 30.0 mV
CHART SPEED 1 cm/min
SLOPE SENS. 10 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 2 116.8 1.254 PPM

PHOTOVAC

START



STOP @ 143.3
SAMPLE LIBRARY 1 JUN 30 1985 7:54
ANALYSIS # 2 0350-004-100
INTERNAL TEMP 26 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 2 114.1 1.873 PPM

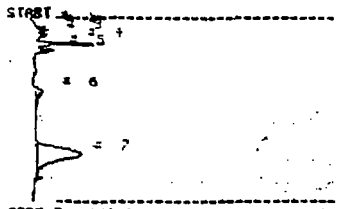
BPACC01071

PHOTOVAC

STOP # 96.8
SAMPLE LIBRARY 1 JUN 28 1989 9: 5
ANALYSIS # 3 9350-004-100
INTERNAL TEMP 27 PURGE STND
GAIN 20 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC



STOP # 141.1
SAMPLE LIBRARY 1 JUN 28 1989 9: 8
ANALYSIS # 4 9350-004-100
INTERNAL TEMP 28 SAMPLE STND
GAIN 20 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 4 28.5 266.5 µVS
STYRENE 7 107.2 3.421 PPM

PHOTOVAC

I	COMPOUND	ID #	R.T.	LIMIT
	STYRENE	1	109.5	25.00 PPM

PHOTOVAC

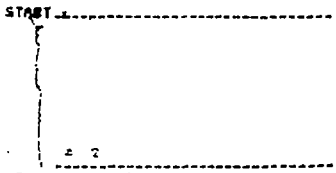
CALIBRATED PEAK 7,STYRENE

SAMPLE LIBRARY 1 JUN 28 1989 9: 9
ANALYSIS # 4 9350-004-100
INTERNAL TEMP 28 SAMPLE STND
GAIN 20 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 4 28.5 266.5 µVS
STYRENE 7 107.2 5.000 PPM

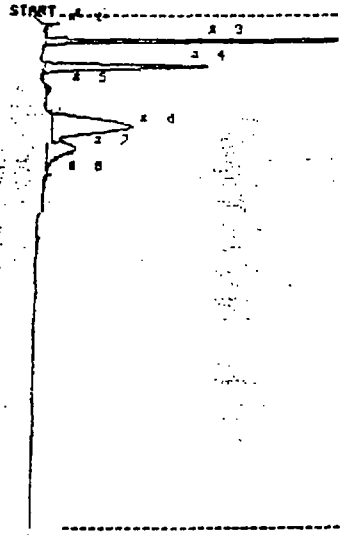
PHOTOVAC



STOP # 114.7
SAMPLE LIBRARY 1 JUN 28 1989 9:12
ANALYSIS # 5 9350-004-100
INTERNAL TEMP 28 PURGE
GAIN 20 10 PPM BTE

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC



STOP # 338.3
SAMPLE LIBRARY 1 JUN 28 1989 9:15
ANALYSIS # 6 9350-004-100
INTERNAL TEMP 27 SAMPLE STND
GAIN 20 10 PPM BTE

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 3 15.5 2.6 VS
UNKNOWN 4 35.7 1.5 VS
UNKNOWN 6 89.5 5.2 VS
STYRENE 7 105.1 3.001 PPM

PHOTOVAC

SAMPLE LIBRARY 1 JUN 28 1989 9:22
ANALYSIS # 8 9350-004-100
INTERNAL TEMP 26 SAMPLE STND
GAIN 20 10 PPM BTE

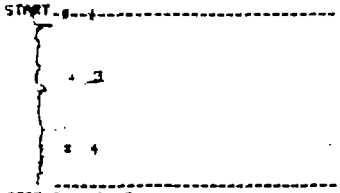
COMPOUND NAME PEAK R.T. AREA/PPM

BENZENE 3 15.5 3.355 PPM
TOLUENE 4 35.7 10.00 PPM
ETHYLBENZENE 6 89.5 10.00 PPM
STYRENE 7 105.1 3.001 PPM

PHOTOVAC

I	COMPOUND	ID #	R.T.	LIMIT
	STYRENE	1	107.2	25.00 PPM
	BENZENE	2	15.5	50.00 PPM
	TOLUENE	3	35.7	50.00 PPM
	ETHYLBENZENE	4	88.3	50.00 PPM

PHOTOVAC



STOP # 135.3
SAMPLE LIBRARY 1 JUN 28 1989 9:41
ANALYSIS # 7 9350-004-100
INTERNAL TEMP 27 PURGE
GAIN 20 B1-15

OFFSET 21.0 µV
CHART SPEED 1 mV/min
SLOPE SENS. 18 14 6 µV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 µVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 3 55.1 101.4 µVS

PHOTOVAC

STOP # 5.5
SAMPLE LIBRARY 1 JUN 28 1989 9:43
ANALYSIS # 8 9350-004-100
INTERNAL TEMP 27 PURGE
GAIN 20 B1-15

COMPOUND NAME PEAK R.T. AREA/PPM

BPACC01072

PHOTOVAC

	COMPOUND	ID #	R.T.	LIMIT
STYRENE		1	100.3	25.00 PPM
BENZENE		2	13.7	50.00 PPM
TOLUENE		3	40.1	50.00 PPM
ETHYLBENZENE		4	83.4	50.00 PPM

PHOTOVAC

SAMPLE LIBRARY 1 JUN 23 1983 7:45
ANALYSIS # 2 0350-004-100
INTERNAL TEMP 26 SAMPLE
GAIN 2 87-13

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

SAMPLE LIBRARY 1 JUN 23 1983 7:46
ANALYSIS # 2 0350-004-100
INTERNAL TEMP 26 SAMPLE
GAIN 2 87-13

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

SAMPLE LIBRARY 1 JUN 23 1983 7:57
ANALYSIS # 0 0350-004-100
INTERNAL TEMP 25 SAMPLE
GAIN 18 87-13

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

SAMPLE LIBRARY 1 JUN 28 1983 8:38
ANALYSIS # 0 0350-004-100
INTERNAL TEMP 25 PURGE STND
GAIN 20 5PPM STYRENE

OFFSET 63.0 mV
CHART SPEED 1 cM/Min
SLOPE SENS. 18 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

START
STOP 0 0.0
SAMPLE LIBRARY 1 JUN 28 1983 8:41
ANALYSIS # 1 0350-004-100
INTERNAL TEMP 25 PURGE STND
GAIN 20 5PPM STYRENE

OFFSET 51.0 mV
CHART SPEED 1 cM/Min
SLOPE SENS. 18 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

JUN 28 1983 8:48

FIELD: 25
POWER: 44

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	10.0	120.0
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

PHOTOVAC

SAMPLE LIBRARY 1 JUN 28 1983 8:54
ANALYSIS # 1 0350-004-100
INTERNAL TEMP 25 PURGE STND
GAIN 20 5PPM STYRENE

OFFSET 37.0 mV
CHART SPEED 1 cM/Min
SLOPE SENS. 18 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

SAMPLE LIBRARY 1 JUN 28 1983 9:0
ANALYSIS # 1 0350-004-100
INTERNAL TEMP 25 PURGE STND
GAIN 20 5PPM STYRENE

OFFSET 34.0 mV
CHART SPEED 1 cM/Min
SLOPE SENS. 18 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

START
STOP 0 75.6
SAMPLE LIBRARY 1 JUN 28 1983 9:3
ANALYSIS # 2 0350-004-100
INTERNAL TEMP 26 PURGE STND
GAIN 20 5PPM STYRENE

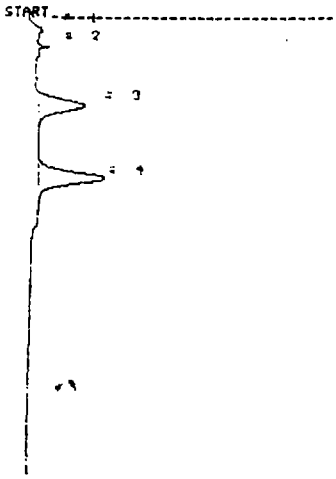
OFFSET 33.0 mV
CHART SPEED 1 cM/Min
SLOPE SENS. 18 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 2 37.5 232.7 mVS

BPACC01073

PHOTOVAC



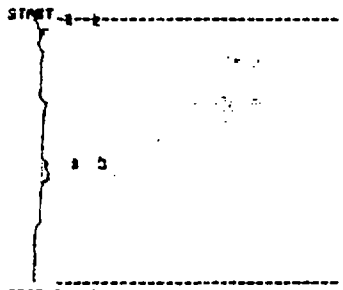
SAMPLE LIBRARY 1 JUN 25 1989 8:25
ANALYSIS # 3 9350-004-100
INTERNAL TEMP 26 PURGE
GAIN 20 CAL

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	69.3	1.5 US
UNKNOWN	4	120.0	2.2 US

STOP @ 420.0
SAMPLE LIBRARY 1 JUN 25 1989 8:31
ANALYSIS # 4 9350-004-100
INTERNAL TEMP 26 PURGE
GAIN 20 CAL

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	69.3	1.5 US
UNKNOWN	4	120.0	2.2 US

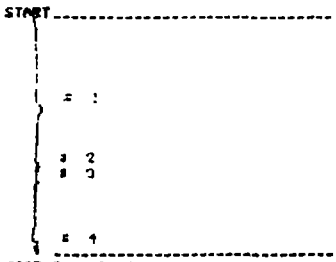
PHOTOVAC



STOP @ 204.7
SAMPLE LIBRARY 1 JUN 25 1989 8:35
ANALYSIS # 5 9350-004-100
INTERNAL TEMP 27 PURGE STND
GAIN 20 5PPM STYRENE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	124.0	227.2 mUS

PHOTOVAC

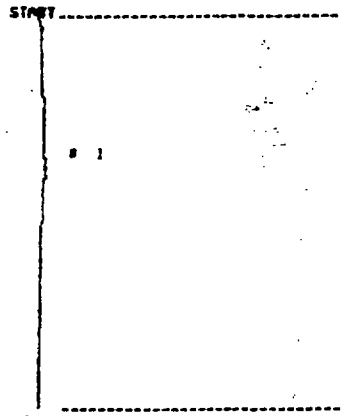


STOP @ 181.7
SAMPLE LIBRARY 1 JUN 25 1989 8:15
ANALYSIS # 1 9350-004-100
INTERNAL TEMP 26 PURGE
GAIN 10 CAL

OFFSET	25.0 mV	
CHART SPEED	1	cM/Min
SLOPE SENS.	10 14 6	mV/Sec
WINDOW +/-	10	Percent
MINIMUM AREA	100	mVSec
TIMER DELAY	10.0	Sec
ANALYSIS TIME	300.0	Sec
CYCLE TIME	0	Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM

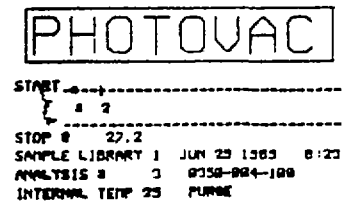
PHOTOVAC



STOP @ 307.1
SAMPLE LIBRARY 1 JUN 25 1989 8:21
ANALYSIS # 2 9350-004-100
INTERNAL TEMP 26 PURGE
GAIN 10 CAL

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC



STOP @ 27.2
SAMPLE LIBRARY 1 JUN 25 1989 8:23
ANALYSIS # 3 9350-004-100
INTERNAL TEMP 25 PURGE
GAIN 20 CAL

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC

JUN 25 1989 8: 0

FIELD: 25
POWER: 44

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	10.0	120.0
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

PHOTOVAC

JUN 25 1989 8: 2

FIELD: 25
POWER: 44

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	10.0	120.0
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

PHOTOVAC

SAMPLE LIBRARY 1 JUN 25 1989 8: 5
ANALYSIS # 0 9350-004-100
INTERNAL TEMP 25 SAMPLE
GAIN 10 87-15

OFFSET	32.0 mV	
CHART SPEED	1	cM/Min
SLOPE SENS.	10 14 6	mV/Sec
WINDOW +/-	10	Percent
MINIMUM AREA	100	mVSec
TIMER DELAY	10.0	Sec
ANALYSIS TIME	300.0	Sec
CYCLE TIME	0	Min

COMPOUND NAME	PEAK	R.T.	AREA/PPM

BPACC01074

PHOTOVAC

SAMPLE LIBRARY 1 JUN 25 1989 8: 9
ANALYSIS # 0 9350-004-100
INTERNAL TEMP 25 SAMPLE
GAIN 10 87-15

OFFSET	26.0 mV	
CHART SPEED	1	cM/Min
SLOPE SENS.	10 14 6	mV/Sec
WINDOW +/-	10	Percent
MINIMUM AREA	100	mVSec
TIMER DELAY	10.0	Sec
ANALYSIS TIME	300.0	Sec
CYCLE TIME	0	Min

PHOTOVAC

CALIBRATED PEAK 7,ETHYLBENZENE

SAMPLE LIBRARY 1 JUN 29 1989 8:51
ANALYSIS # 9 0350-004-100
INTERNAL TEMP 27 SAMPLE STND
GAIN 20 BTX

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	4	23.6	3.363 PPM
TOLUENE	5	45.5	10.07 PPM
ETHYLBENZENE	7	105.6	11.00 PPM
STYRENE	8	120.4	4.005 PPM

PHOTOVAC

SAMPLE LIBRARY 1 JUN 29 1989 8:51
ANALYSIS # 8 0350-004-100
INTERNAL TEMP 27 SAMPLE STND
GAIN 20 BTX

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	4	23.6	3.363 PPM
TOLUENE	5	45.5	10.07 PPM
ETHYLBENZENE	7	105.6	11.00 PPM
STYRENE	8	120.4	4.005 PPM

PHOTOVAC

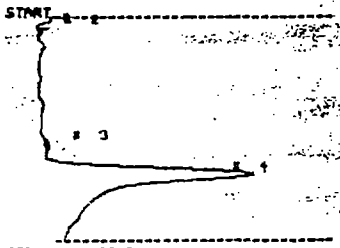
START

STOP # 13.8
SAMPLE LIBRARY 1 JUN 29 1989 8:59
ANALYSIS # 9 0350-004-100
INTERNAL TEMP 26 SAMPLE STND
GAIN 20 BTX

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

START

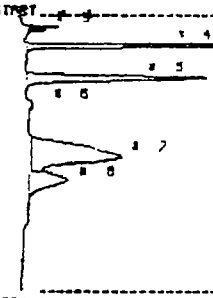


STOP # 173.9
SAMPLE LIBRARY 1 JUN 29 1989 9:12
ANALYSIS # 10 0350-004-100
INTERNAL TEMP 27 PURGE
GAIN 20 B-8-5

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	3	102.4	277.1 PPB

PHOTOVAC

START



STOP # 211.8
SAMPLE LIBRARY 1 JUN 29 1989 8:45
ANALYSIS # 8 0350-004-100
INTERNAL TEMP 27 SAMPLE STND
GAIN 20 BTX

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	4	23.6	12.09 PPM
TOLUENE	5	45.5	12.22 PPM
ETHYLBENZENE	7	105.6	13.35 PPM
STYRENE	8	120.4	4.867 PPM

PHOTOVAC

CALIBRATED PEAK 4,BENZENE

SAMPLE LIBRARY 1 JUN 29 1989 8:50
ANALYSIS # 8 0350-004-100
INTERNAL TEMP 27 SAMPLE STND
GAIN 20 BTX

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	4	23.6	10.20 PPM
TOLUENE	5	45.5	10.31 PPM
ETHYLBENZENE	7	105.6	11.28 PPM
STYRENE	8	120.4	4.104 PPM

PHOTOVAC

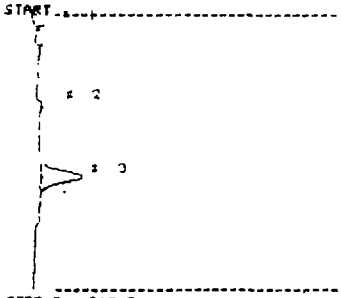
CALIBRATED PEAK 5,TOLUENE

SAMPLE LIBRARY 1 JUN 29 1989 8:50
ANALYSIS # 8 0350-004-100
INTERNAL TEMP 27 SAMPLE STND
GAIN 20 BTX

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	4	23.6	10.40 PPM
TOLUENE	5	45.5	10.60 PPM
ETHYLBENZENE	7	105.6	11.57 PPM
STYRENE	8	120.4	4.220 PPM

PHOTOVAC

START



STOP # 210.0
SAMPLE LIBRARY 1 JUN 29 1989 8:35
ANALYSIS # 6 0350-004-100
INTERNAL TEMP 27 SAMPLE STND
GAIN 20 5PPM STYRENE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	127.2	1.3 US

PHOTOVAC

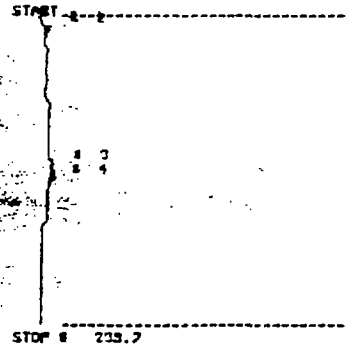
CALIBRATED PEAK 3,STYRENE

SAMPLE LIBRARY 1 JUN 29 1989 8:40
ANALYSIS # 6 0350-004-100
INTERNAL TEMP 27 SAMPLE STND
GAIN 20 5PPM STYRENE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	127.2	5.000 PPM

PHOTOVAC

START

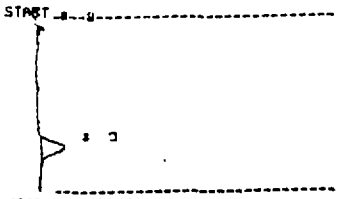


STOP # 233.7
SAMPLE LIBRARY 1 JUN 29 1989 8:45
ANALYSIS # 7 0350-004-100
INTERNAL TEMP 27 PURGE STND
GAIN 20 BTX

COMPOUND NAME PEAK R.T. AREA/PPM

BPACC01075

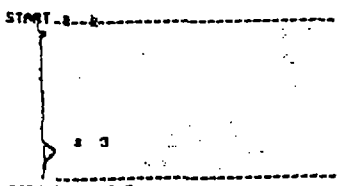
PHOTOVAC



STOP # 133.8
SAMPLE LIBRARY 1 JUN 29 1989 13:27
ANALYSIS # 4 0350-004-100
INTERNAL TEMP 35 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	3	102.1	5.126 PPM

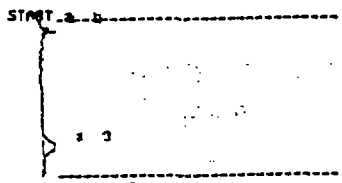
PHOTOVAC



STOP # 113.2
SAMPLE LIBRARY 1 JUN 29 1989 13:30
ANALYSIS # 5 0350-004-100
INTERNAL TEMP 35 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	3	101.5	2.062 PPM

PHOTOVAC



STOP # 121.8
SAMPLE LIBRARY 1 JUN 29 1989 13:32
ANALYSIS # 6 0350-004-100
INTERNAL TEMP 35 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	3	35.1	2.186 PPM

PHOTOVAC

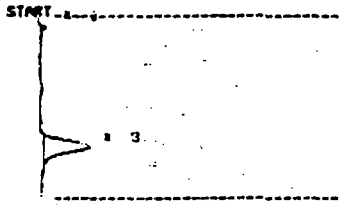
SAMPLE LIBRARY 1 JUN 29 1989 13:18
ANALYSIS # 1 0350-004-100
INTERNAL TEMP 33 PURGE
GAIN 10 8-5-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	83.2	701.2 AVG

PHOTOVAC

#	COMPOUND	ID #	R.T.	LIMIT
	STYRENE	1	112.5	25.00 PPM
	BENZENE	2	28.4	50.00 PPM
	TOLUENE	3	41.7	50.00 PPM
	ETHYLBENZENE	4	32.3	50.00 PPM

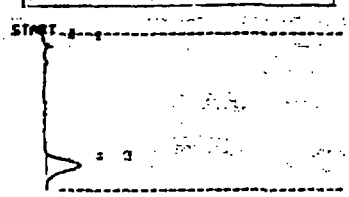
PHOTOVAC



STOP # 140.4
SAMPLE LIBRARY 1 JUN 29 1989 13:22
ANALYSIS # 2 0350-004-100
INTERNAL TEMP 34 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	103.8	11.88 PPM

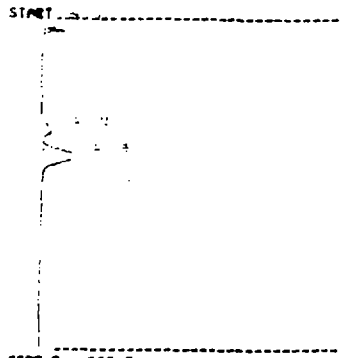
PHOTOVAC



STOP # 121.8
SAMPLE LIBRARY 1 JUN 29 1989 13:25
ANALYSIS # 3 0350-004-100
INTERNAL TEMP 34 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	3	104.2	8.445 PPM

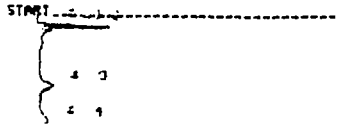
PHOTOVAC



STOP # 252.2
SAMPLE LIBRARY 1 JUN 29 1989 17:
ANALYSIS # 1 0350-004-100
INTERNAL TEMP 31 PURGE
GAIN 10 8-5-20

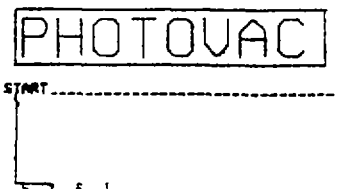
COMPOUND NAME	PEAK	R.T.	AREA/PPM
ETHYLBENZENE	3	87.1	1.258 PPM
STYRENE	4	107.5	8.003 PPM

PHOTOVAC



JUN 29 1989 13:15
INTERNAL BATTERIES LOW, POWER OFF
AC OPERATION REQUIRED

PHOTOVAC

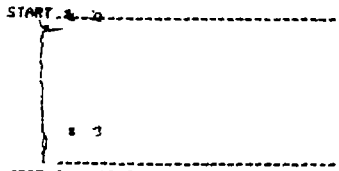


STOP # 38.1
SAMPLE LIBRARY 1 JUN 29 1989 13:18
ANALYSIS # 1 0350-004-100
INTERNAL TEMP 32 PURGE
GAIN 10 8-5-20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	83.2	701.2 AVG

BPACC01076

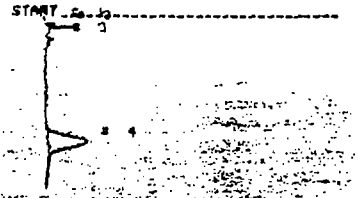
PHOTOVAC



STOP @ 110.9
SAMPLE LIBRARY 1 JUN 29 1989 13:56
ANALYSIS # 12 0350-004-100
INTERNAL TEMP 38 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC



CALIBRATED PEAK 4.STYRENE

SAMPLE LIBRARY 1 JUN 29 1989 13:55
ANALYSIS # 12 0350-004-100
INTERNAL TEMP 37 SAMPLE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

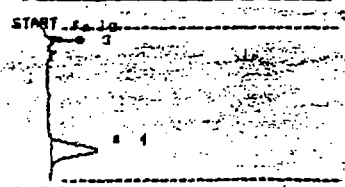
STYRENE 4 38.5 5.000 PPM

STOP @ 133.8
SAMPLE LIBRARY 1 JUN 29 1989 13:55
ANALYSIS # 13 0350-004-100
INTERNAL TEMP 38 SAMPLE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 4 38.3 5.000 PPM

PHOTOVAC

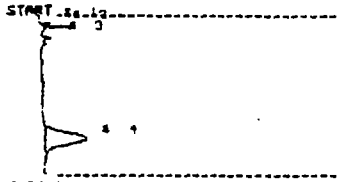


STOP @ 118.4
SAMPLE LIBRARY 1 JUN 29 1989 14:03
ANALYSIS # 14 0350-004-100
INTERNAL TEMP 37 SAMPLE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

STYRENE 4 37.3 5.256 PPM

PHOTOVAC



STOP @ 123.2
SAMPLE LIBRARY 1 JUN 29 1989 13:50
ANALYSIS # 10 0350-004-100
INTERNAL TEMP 38 SAMPLE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

ETHYLBENZENE 4 37.3 8.348 PPM

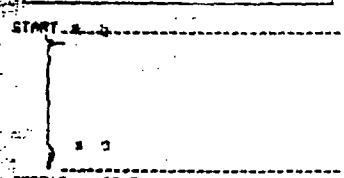
PHOTOVAC

SAMPLE LIBRARY 1 JUN 29 1989 13:51
ANALYSIS # 10 0350-004-100
INTERNAL TEMP 38 SAMPLE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

ETHYLBENZENE 4 37.3 8.348 PPM

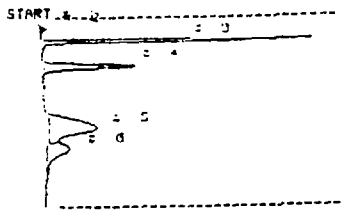
PHOTOVAC



STOP @ 106.7
SAMPLE LIBRARY 1 JUN 29 1989 13:54
ANALYSIS # 11 0350-004-100
INTERNAL TEMP 35 PURGE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

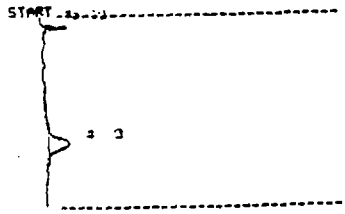


STOP @ 144.7
SAMPLE LIBRARY 1 JUN 29 1989 13:36
ANALYSIS # 7 0350-004-100
INTERNAL TEMP 38 SAMPLE STND
GAIN 10 BTX

COMPOUND NAME PEAK R.T. AREA/PPM

BENZENE 3 18.3 11.74 PPM
TOLUENE 4 38.3 11.53 PPM
ETHYLBENZENE 5 88.3 13.36 PPM
ETHYLBENZENE 6 102.1 4.761 PPM

PHOTOVAC

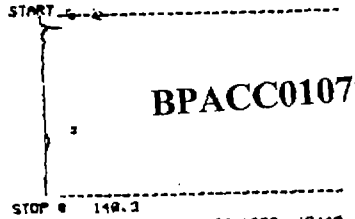


STOP @ 148.1
SAMPLE LIBRARY 1 JUN 29 1989 13:45
ANALYSIS # 0 0350-004-100
INTERNAL TEMP 35 SAMPLE STND
GAIN 10 BTX

COMPOUND NAME PEAK R.T. AREA/PPM

ETHYLBENZENE 3 101.5 4.178 PPM

PHOTOVAC



STOP @ 140.3
SAMPLE LIBRARY 1 JUN 29 1989 13:40
ANALYSIS # 3 0350-004-100
INTERNAL TEMP 35 SAMPLE STND
GAIN 10 BTX

COMPOUND NAME PEAK R.T. AREA/PPM

BPACC01077

PHOTOVAC

COMPOUND	ID #	R.T.	LIMIT
STYRENE	1	107.2	25.00 PPM
BENZENE	2	13.5	50.00 PPM
TOLUENE	3	35.7	50.00 PPM
ETHYLBENZENE	4	88.3	50.00 PPM

PHOTOVAC

CALIBRATED PEAK 2,STYRENE

SAMPLE LIBRARY 1 JUN 28 1989 16:10
ANALYSIS # 77 8350-004-100
INTERNAL TEMP 35 SAMPLE STND
GAIN 10 5PPM STYRENE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
STYRENE	2	101.8	5.000 PPM

PHOTOVAC

START

STOP @ 148.6
SAMPLE LIBRARY 1 JUN 28 1989 16:14
ANALYSIS # 78 8350-004-100
INTERNAL TEMP 35 PURGE STND
GAIN 10 10PPM BTE

COMPOUND NAME	PEAK	R.T.	AREA/PPM

PHOTOVAC

START

STOP @ 106.6
SAMPLE LIBRARY 1 JUN 28 1989 16:21
ANALYSIS # 79 8350-004-100
INTERNAL TEMP 33 SAMPLE STND
GAIN 10 10PPM BTE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	3	13.7	8.655 PPM
TOLUENE	4	35.0	8.718 PPM
ETHYLBENZENE	5	87.1	5.151 PPM
STYRENE	6	103.3	1.023 PPM

PHOTOVAC

CALIBRATED PEAK 3,BENZENE

SAMPLE LIBRARY 1 JUN 28 1989 16:22
ANALYSIS # 79 8350-004-100
INTERNAL TEMP 33 SAMPLE STND
GAIN 10 10PPM BTE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	3	13.7	10.00 PPM
TOLUENE	4	35.0	8.334 PPM
ETHYLBENZENE	5	87.1	7.688 PPM
STYRENE	6	103.3	1.336 PPM

PHOTOVAC

CALIBRATED PEAK 4,TOLUENE

SAMPLE LIBRARY 1 JUN 28 1989 16:22
ANALYSIS # 79 8350-004-100
INTERNAL TEMP 33 SAMPLE STND
GAIN 10 10PPM BTE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	3	13.7	11.71 PPM
TOLUENE	4	35.0	10.00 PPM
ETHYLBENZENE	5	87.1	9.000 PPM
STYRENE	6	103.3	1.000 PPM

PHOTOVAC

CALIBRATED PEAK 5,ETHYLBENZENE

SAMPLE LIBRARY 1 JUN 28 1989 16:24
ANALYSIS # 79 8350-004-100
INTERNAL TEMP 32 SAMPLE STND
GAIN 10 10PPM BTE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	3	13.7	13.00 PPM
TOLUENE	4	35.0	11.10 PPM
ETHYLBENZENE	5	87.1	10.00 PPM
STYRENE	6	103.3	1.338 PPM

PHOTOVAC

CALIBRATED PEAK 3,BENZENE

SAMPLE LIBRARY 1 JUN 28 1989 16:23
ANALYSIS # 79 8350-004-100
INTERNAL TEMP 33 SAMPLE STND
GAIN 10 10PPM BTE

COMPOUND NAME	PEAK	R.T.	AREA/PPM
BENZENE	3	13.7	10.00 PPM
TOLUENE	4	35.0	8.334 PPM
ETHYLBENZENE	5	87.1	7.688 PPM
STYRENE	6	103.3	1.336 PPM

PHOTOVAC

START

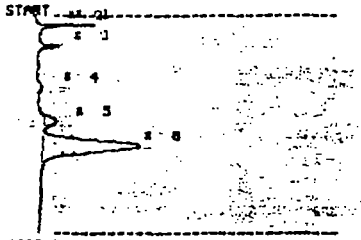
STOP @ 55.7
SAMPLE LIBRARY 1 JUN 28 1989 16:28
ANALYSIS # 80 8350-004-100
INTERNAL TEMP 33 PURGE
GAIN 10 87-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM

BPACC01078

PHOTOVAC

START



STOP @ 160.3
SAMPLE LIBRARY 1 JUN.28 1989 16:31
ANALYSIS # 81 [illegible]
INTERNAL TEMP 34 SAMPLE
GAIN 10 [illegible]

20

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	8.0	147.0 AVG
ETHYLBENZENE	5	82.5	1.338 PPM
STYRENE	6	102.4	21.81 PPM

PHOTOVAC

JUN 28 1989 16:22

FIELD: 30
POWER: 40

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	10.0	120.0
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

PHOTOVAC

BPACC01079

AMOCO

PHOTOVAC

SAMPLE LIBRARY 1 JUN 27 1989 9:45
ANALYSIS # 0 0358-004-100
INTERNAL TEMP 25 PURGE
GAIN 20 5PPM STYRENE

OFFSET 63.0 mV
CHART SPEED 1 cM/Min
SLOPE SENS. 10 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

JUN 27 1989

FIELD: 25
POWER: 45

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	10.0	120.0
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

PHOTOVAC

SAMPLE LIBRARY 1 JUN 27 1989 9:53
ANALYSIS # 0 0358-004-100
INTERNAL TEMP 25 PURGE
GAIN 20 5PPM STYRENE

OFFSET 51.0 mV
CHART SPEED 1 cM/Min
SLOPE SENS. 10 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

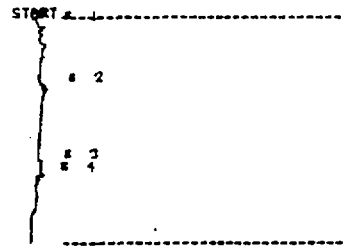
PHOTOVAC

SAMPLE LIBRARY 1 JUN 27 1989 10: 0
ANALYSIS # 0 0358-004-100
INTERNAL TEMP 25 PURGE
GAIN 20 5PPM STYRENE

OFFSET 43.0 mV
CHART SPEED 1 cM/Min
SLOPE SENS. 10 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC



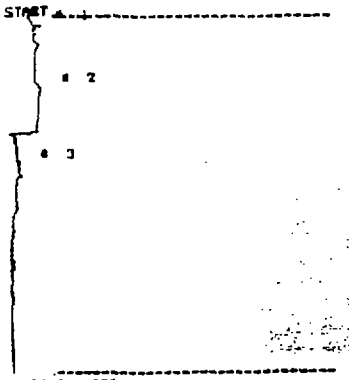
STOP 0 174.4
SAMPLE LIBRARY 1 JUN 27 1989 10: 5
ANALYSIS # 1 0358-004-100
INTERNAL TEMP 30 PURGE
GAIN 20 5PPM STYRENE

OFFSET 38.0 mV
CHART SPEED 1 cM/Min
SLOPE SENS. 10 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

BPACC01080

PHOTOVAC

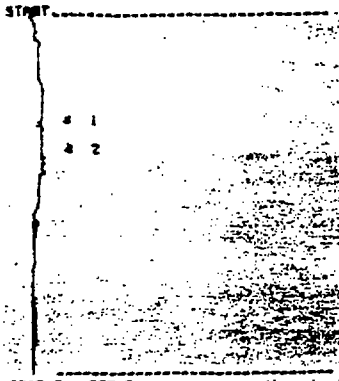


STOP @ 273.4
SAMPLE LIBRARY 1 JUN 27 1989 10:19
ANALYSIS # 2 0350-004-100
INTERNAL TEMP 31 PURGE
GAIN 20 5PPM STYRENE

OFFSET 33.0 mV
CHART SPEED 1 cM/Min
SLOPE SENS. 10 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

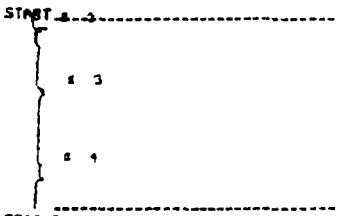


STOP @ 277.3
SAMPLE LIBRARY 1 JUN 27 1989 10:27
ANALYSIS # 3 0350-004-100
INTERNAL TEMP 31 PURGE
GAIN 20 5PPM STYRENE

OFFSET 28.0 mV
CHART SPEED 1 cM/Min
SLOPE SENS. 10 14 6 mV/Sec
WINDOW +/- 10 Percent
MINIMUM AREA 100 mVSec
TIMER DELAY 10.0 Sec
ANALYSIS TIME 500.0 Sec
CYCLE TIME 0 Min

COMPOUND NAME PEAK R.T. AREA/PPM

PHOTOVAC

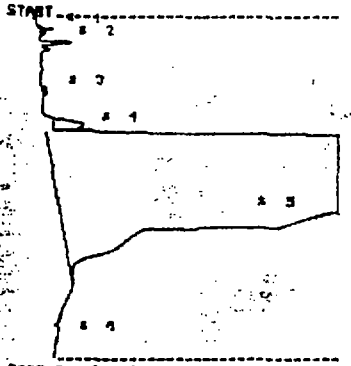


STOP @ 145.2
SAMPLE LIBRARY 1 JUN 27 1989 10:30
ANALYSIS # 4 0350-004-100
INTERNAL TEMP 32 PURGE
GAIN 20 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

Syringe Contam

PHOTOVAC



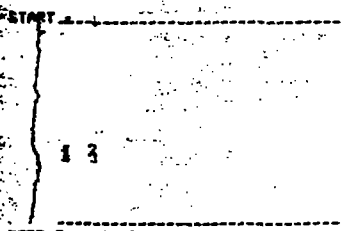
STOP @ 264.5
SAMPLE LIBRARY 1 JUN 27 1989 10:35
ANALYSIS # 5 0350-004-100
INTERNAL TEMP 31 SAMPLE
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 2 28.5 123.5 mVS
UNKNOWN 4 84.2 872.5 mVS
UNKNOWN 5 122.2 625.5 VS

Purge

PHOTOVAC

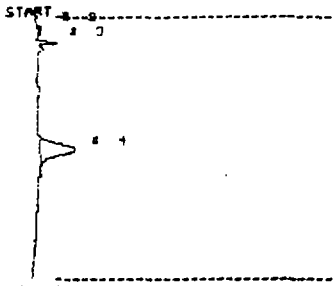


STOP @ 136.6
SAMPLE LIBRARY 1 JUN 27 1989 10:38
ANALYSIS # 6 0350-004-100
INTERNAL TEMP 32 PURGE
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

5PPM Inj - Gain 10

PHOTOVAC



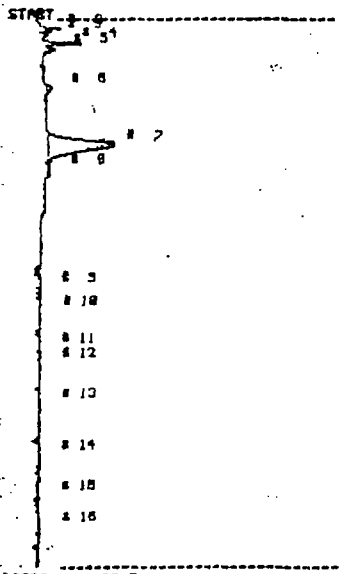
STOP @ 299.7
SAMPLE LIBRARY 1 JUN 27 1989 10:42
ANALYSIS # 7 0350-004-100
INTERNAL TEMP 32 SAMPLE
GAIN 10 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 4 104.2 1.1 VS

Gain = 20

PHOTOVAC



STOP @ 423.5
SAMPLE LIBRARY 1 JUN 27 1989 11:14
ANALYSIS # 8 0350-004-100
INTERNAL TEMP 25 SAMPLE
GAIN 20 5PPM STYRENE

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 4 15.4 167.8 mVS
UNKNOWN 7 189.3 2.8 VS

BPACC01081

ENSR

Formerly ERT

September 15, 1989

File No: 0350-004

ENSR Consulting
and Engineering

19782 MacArthur Boulevard
Suite 365
Irvine, CA 92715
714 476-0321

Mr. John M. Verrier
Environmental Specialist
Amoco Chemical Company
Highway I-55 and Route 6
Joliet, Illinois 60434

RE: **Regulatory Review - Additional Information Concerning the Amoco Chemical Company Polystyrene Facility, Torrance, California**

Dear Mr. Verrier:

Since our transmittal of the Regulatory Review information concerning reporting requirements regarding the results of the subsurface soil investigation at the aforementioned facility, we have had further discussions with individuals from the Los Angeles County Department of Health Services (LAC-DHS) and the California Regional Water Quality Control Board - Los Angeles Region (RWQCB). At no time did we mention Amoco, the specific site, or the specific chemicals of concern. The following is a summary of the scenario provided to the agencies, the resulting discussions, and our recommendations.

SCENARIO

The following description of the situation was presented to the agencies during my phone conversations with them.

1. The site has an above-ground tank farm located in the southern portion of Los Angeles County.

2. Groundwater is at 70 to 80 feet below grade. A groundwater monitoring system at the site includes six wells that were sampled within the past year for VOCs. The results were all non-detectable.

3. A soils investigation was conducted within the tank farm containment areas. Soil sampling was conducted down to about 20 feet, with the samples analyzed for VOCs. Field GC analysis indicated that VOC vapors were present in all of the soil samples; however, lab analysis indicated only localized VOC contamination of soils. Two hot spots had PCE and TCE concentrations in the ppm range.

4. The client wishes to modify the containment areas as soon as possible to minimize the impact of any possible future releases. Therefore, the client wishes to expedite the review process. Thought has been given to integrating the construction efforts with any additional site characterization and remediation activities.

5. The client wishes to identify the probable lead agency.

LAC-DHS

I talked with Tom Clinger who is the head of Site Mitigation with the LAC-DHS. The results of our discussion follow.

1. The California DHS (CA-DHS) is the lead agency for soil contamination; however, there is a Memo of Understanding between the LAC-DHS and the CA-DHS which gives the LAC-DHS authority for facilities having hazardous waste generator I. D. numbers.

2. Currently, the site mitigation group has 4 people assigned to it; thus, their responsiveness is based on the perceived level of threat to public health. This site would probably not have a high priority.

3. The RWQCB would be notified and would want to know whether groundwater is contaminated. The existing wells should be tested to determine the hydraulic gradient and flow direction and whether contamination exists.

4. The extent of soil contamination will have to be defined.

5. If there is no groundwater contamination or apparent threat to groundwater, it is likely that the LAC-DHS would be the lead agency; however, if their is groundwater contamination or the RWQCB perceives a potential threat, then they may become the lead agency.

6. Mr. Clinger recommended sampling the wells, submitting the soil and groundwater data to the LAC-DHS, and meeting with them to discuss the situation. They will not commit to any schedule for dealing with the situation regardless of the client's desire to proceed in an expeditious manner.

RWQCB

I discussed the situation with David Bacharowski of the RWQCB. The following is a summary of his comments.

1. The lateral and vertical extent of soil contamination must be defined.

2. The existing wells should be tested to determine whether contamination is present and whether the wells are hydraulically down gradient from the points of entry, which are defined as the contaminated soils. If not, additional wells would be required.

3. The RWQCB is taking the attitude that chlorinated VOCs will eventually reach the groundwater unless there is a significant barrier to their vertical migration. The RWQCB is moving towards using drinking water standards as acceptable soil concentration levels which can remain without remediation.

4. The soils and groundwater results should be reported to the RWQCB and the LAC-DHS.

5. Due to the levels of chlorinated VOCs, the RWQCB will probably take an interest, if not the lead. However, he can not tell who will be the lead at this time.

6. Mr. Bacharowski suggested that, if possible, the client should relocate the tank farm so that the extent of contamination can be completely defined without interfering with the planned modifications. The RWQCB will not necessarily move more quickly to facilitate the modifications to the tank farm.

SUMMARY & RECOMMENDATIONS

Based on the above discussions, it is evident that both the LAC-DHS and the RWQCB will want to be notified about the contamination at the site. At a minimum, the RWQCB will want to know if groundwater is contaminated and if the existing wells are located so as to intercept contamination from the tank farm.

The question as to whom will be the lead agency can not be answered at this time; however, it is our view that the RWQCB will take the lead due to the site's proximity to known groundwater contamination in the area and the presence of chlorinated VOCs in the soils at concentrations thousands of times higher than California Drinking Water Standards.

Regardless of the lead agency, it is likely that it will be necessary to fully delineate the extent of soil and possible groundwater contamination before the containment area can be renovated.

Based on the above discussions and our knowledge to date, we would recommend the following approach.

1. Test the existing groundwater monitoring wells to determine the following: the depth to groundwater, hydraulic gradient, flow direction, and concentrations of possible VOCs.

2. Notify all the agencies required in your Business Plan and Contingency Plan.

3. Submit the Sampling and Analysis Report and the results of the groundwater testing to the LAC-DHS and RWQCB.

4. In your cover letter with the submittals, describe your desire to expedite the matter so that you can proceed with renovation of the tank farms in order to mitigate any possible threat to human health and the environment that would result in the event of a major release from the tanks. Also, request that a meeting be held within one week among Amoco, the RWQCB, and the LAC-DHS to determine who will be the lead agency.

5. Prepare an approach and schedule demonstrating how AMOCO wishes to deal with the situation and present it to the agencies at the meeting. While this is no guarantee that the agencies will expedite the process, they are usually more responsive with corporations and consultants who involve them in a continuing dialogue as the process proceeds.

I will contact you next week to discuss our recommendations. ENSR is pleased to provide environmental services to Amoco, and we look forward to continuing our work with you on this project. If you have any questions, please call either Mike Donovan or me.

Sincerely,
ENSR CONSULTING AND ENGINEERING

Richard O. Richter, Ph.D., P.E.
Manager, Engineering & Geology

0350-005\LET06.ROR

SIMON HYDRO-SEARCH
5882 Bolsa Avenue
Huntington Beach, CA 92649
Telephone (714) 891-7446
Facsimile (714) 891-9009

ENVIRONMENTAL CONSERVATION (CHEMICALS)
MAR 19 '92

	NOTE		NOTE
CJW		RJG	
KMS		DMH	
DBN		EEW	
TMS	X	AEB	
MAP		LEL	
JAL			
FILE:			

TRANSMITTAL LETTER

TO: AMOCO Corporation
200 E. Randolph
Chicago, IL 60680-0759

DATE: 3/13/92
JOB NO. 512-345

ATTENTION: Mr. Tom Stark

SUBJECT: Amoco Chemical Company

ENCLOSED PLEASE FIND:

One copy of: January, 1992
Groundwater Sampling and Analysis Report
Amoco Chemical Company
Torrance, California
Project No. 512-345

REMARKS:

SHOULD YOU HAVE ANY QUESTIONS, PLEASE FEEL FREE TO CALL ME.

SINCERELY,
SIMON-EEI INC.

BY:

Stephen P. Walter
Senior Geologist

BPACC01086

SIMON Environmental

SIMON HYDRO-SEARCH

5882 Bolsa Avenue
Huntington Beach, CA 92649

Telephone (714) 891-7446
Facsimile (714) 891-9009

March 11, 1992

AMOCO Corporation
7201 East 38th Street, Space 7253
Tulsa, Oklahoma 74145

Attention: Mr. Timothy J. Nagengast
Specialist

Subject: January, 1992
Groundwater Sampling and Analysis Report
Amoco Chemical Company
Torrance, California
Project No. 512-345

Dear Mr. Nagengast:

Enclosed please find the above referenced report.

If there are any questions concerning this report, please do not hesitate to contact us. Simon Hydro-Search appreciates the opportunity to provide environmental services to Amoco Chemical Company.

Sincerely,

Stephen P. Walter
Senior Geologist

cc: Mr. Robert F. Doerr, Amoco - Torrance, CA
Mr. Tom Stark - Amoco - Chicago, IL
Mr. N. Mark Reese - Simon Hydro-Search

h:\simon\word\amoco\0311rpt

BPACC01087

DRAFT

JANUARY, 1992 BIANNUAL GROUNDWATER SAMPLING AND ANALYSIS REPORT AMOCO CHEMICAL COMPANY TORRANCE, CALIFORNIA

February 26, 1992

Simon Hydro-Search
5882 Bolsa Avenue
Huntington Beach, California 92649

Project No. 512-345

DRAFT

February 26, 1992

AMOCO Chemical Company
1225 West 196th Street
Torrance, California 90502

Attention: Mr. Robert F. Doerr
Environmental Coordinator

Subject: January, 1992 Biannual
Groundwater Sampling and Analysis Report
Amoco Chemical Company
Torrance, California
Project No. 512-345

Dear Mr. Doerr:

Enclosed please find the above referenced report. The report also includes a summary of the sampling methodology.

If there are any questions concerning this report, please do not hesitate to contact us. Simon Hydro-Search appreciates the opportunity to provide environmental services to Amoco Chemical Company.

Sincerely,

Leobardo Chaidez
Geologist

N. Mark Reese
Operations Manager

h:\simon\word\amoco\0226cvr

PROFESSIONAL CERTIFICATION **DRAFT**

JANUARY, 1992 BIANNUAL
GROUNDWATER SAMPLING AND ANALYSIS REPORT
AMOCO CHEMICAL COMPANY
TORRANCE, CALIFORNIA

512-345
February 26, 1992

This report has been prepared by the staff of Simon Hydro-Search under the professional supervision of the person whose seal and signature appear hereon.

The findings, recommendations, specifications or professional opinions are presented, within the limits prescribed by the client, after being prepared in accordance with generally accepted professional engineering and geologic practice. There is no other warranty, either expressed or implied.

N. Mark Reese
Operations Manager
Registered Geologist #4880

Leobardo Chaidez
Geologist

Stephen P. Walter
Senior Geologist

DRAFT

JANUARY, 1992 BIANNUAL GROUNDWATER SAMPLING AND ANALYSIS REPORT AMOCO CHEMICAL COMPANY TORRANCE, CALIFORNIA

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4.0 WORK COMPLETED	2
5.0 SITE GEOLOGY AND HYDROGEOLOGY	3
6.0 GROUNDWATER LABORATORY ANALYTICAL RESULTS	3
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BPACC01091

DRAFT

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C	Graphs of Selected Organic Compounds Over Time
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JANUARY, 1992 BIANNUAL GROUNDWATER SAMPLING AND ANALYSIS REPORT AMOCO CHEMICAL COMPANY TORRANCE, CALIFORNIA

DRAFT

EXECUTIVE SUMMARY

On January 16, 1992, six monitoring wells at the Amoco Chemical Company were gauged for depth to groundwater, sampled and analyzed by EPA Methods 624 and 625. Groundwater occurs at an average depth of 64.5 feet and flows to the south at a gradient of approximately 0.0016 ft./ft. Detectable concentrations of volatile compounds were present in all wells and, with the exception of methylene chloride, increase in the down gradient direction. The methylene chloride concentration is 1,000,000 ug/l at the northwest corner of the facility and decreases five orders of magnitude downgradient to the south/southeast across the facility.

Compound	Maximum Concentration (ug/l)	Minimum Concentration (ug/l)	CADHS MCL (ug/l)	CADHS AL (ug/l)
Benzene	28	ND<3	1	--
Chloroform	69	8	unregulated	not listed
1,2-Dichlorobenzene	5	ND<5	unregulated	130
1,1-Dichloroethane	11	ND<3	5	--
1,1-Dichloroethene	150	ND<3	6	--
Cis-1,2-Dichloroethene	560	23	6	--
Trans-1,2-Dichloroethene	7	ND<3	10	--
Ethylbenzene	5	ND<3	680	--
Methylene Chloride	1,000,000	ND<5	unregulated	40
Tetrachloroethene	9,400	190	5	--
Toluene	4	ND<3	unregulated	100
1,1,2-Trichloroethane	6	ND<5	32	--
Trichloroethene	21,000	2,200	5	--
Trichlorofluoromethane	17	ND<10	150	--
Xylenes	14	ND<3	1,750	--
All Other Semi-Volatile Organic Compounds	ND	ND	--	--

ND = Not detected at limit shown.
MCL = Maximum contaminant level for drinking water as set by the California Department of Health Services, October 24, 1990.
AL = Action level for drinking water as set by the California Department of Health Services, October 24, 1990.

tetrachloroethene Trichloroethene

Five of the compounds (benzene, ethylbenzene, toluene, TCE, and PCE) detected in the groundwater samples have been previously detected in soil samples collected from borings at the Amoco facility. All of the compounds detected in the groundwater samples, with two exceptions, have also been detected in the soil and/or groundwater samples from the McDonnell Douglas facility located approximately 800 feet west of the Amoco facility. The two exceptions are 1,2-dichlorobenzene which was detected in one well at a concentration equal to the detection limit (5 ug/l) and trichlorofluoromethene which is a common lab solvent.

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JANUARY, 1992 BIANNUAL GROUNDWATER SAMPLING AND ANALYSIS REPORT AMOCO CHEMICAL COMPANY TORRANCE, CALIFORNIA

1.0 INTRODUCTION

The purpose of the groundwater sampling was to evaluate the concentration of volatile and semi-volatile organic compounds in water samples collected from six on site monitoring wells. This report contains the results of the January 16, 1992 sampling event performed by Simon Hydro-Search (Simon).

2.0 SITE DESCRIPTION

Amoco Chemical Company operates a facility at 1225 West 196th Street, Torrance, California for the conversion of styrene monomer to styrene polymer (Figure 1). This facility is located approximately 800 feet east of the McDonnell Douglas Aircraft C6 facility.

3.0 PREVIOUS INVESTIGATIONS

Initial groundwater samples were obtained from six wells located on site in early 1989 and analyzed by Amoco's laboratory in Joliet, Illinois. Simon (formerly Engineering Enterprises) was requested by Amoco to collect water samples from the wells in February, 1990 to confirm analytical results that indicated that no organic compounds were detected. Results from this event indicated the presence of volatile organic compounds in all wells. A new sampling event was conducted three weeks after, and reported results verified the previously reported concentrations. Soil samples collected from the site during previous investigations had detectable concentrations of volatile compounds. A subsequent review of California Regional Water Quality Control Board files determined that the soil and groundwater beneath the McDonnell Douglas facility was also impacted by volatile organic compounds. A list of previous investigation reports is included as Appendix E.

Amoco requested Simon to conduct groundwater sampling and analysis on a biannual basis beginning December, 1990.

4.0 WORK COMPLETED

Groundwater samples from six onsite monitoring wells were collected and chemically analyzed by EPA Methods 624 and 625 for volatile and semi-volatile compounds, respectively. This report was prepared to present analytical data and concentration trends over time.

BPACC01094

The groundwater sampling methods used are discussed in Appendix D.

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5.0 SITE GEOLOGY AND HYDROGEOLOGY

The site is located in the western basin of the Coastal Plain in Los Angeles County. The Pleistocene deposits (Quaternary rocks) which underlie most of the area contain the semiperched water body that occurs less than 100 feet below surface level (Geological Survey Water-Supply Paper 1461, U.S. Department of the Interior, 1959).

Groundwater occurs under water table conditions at depths of 63 to 66 feet below ground surface (Table 2). Groundwater flow direction is towards the south with a gradient of approximately 0.0016 ft./ft. as shown on the water table elevation contour map (Figure 2). Monitoring well hydrographs are included in Appendix B.

6.0 GROUNDWATER LABORATORY ANALYTICAL RESULTS

Six groundwater samples plus a field blank (OW-00) and a duplicate of well OW-2 (OW-100) were analyzed by a State certified laboratory using EPA Methods 624 and 625 for volatile and semi-volatile compounds, respectively. Laboratory reports and chain-of-custody forms are included in Appendix A.

The groundwater from each of the six wells had detectable concentrations of volatile (halogenated and aromatic) organic compounds (Table 1). 1,2-dichlorobenzene was the only semi-volatile compound reported. It had a concentration of 5 ug/l in monitoring well OW-6.

Eleven halogenated compounds were detected in the groundwater samples. Five of these compounds (1,1-DCA, 1,1-DCE, cis-1,2-DCE, TCE, and PCE)[1], had concentrations that were greater then their respective CADHS MCLs[2]. Two of these five (TCE and PCE) have been detected in soil samples previously collected from borings on the Amoco facility. The remaining three compounds (1,1-DCA, 1,1-DCE, and C-1,2-DCE) can be formed by heterogenous surface reactions involving TCE and/or PCE. All five of these compounds have also been detected in the soil and/or groundwater beneath the McDonnell Douglas facility.

1 1,1-DCA: 1,1-dichloroethane; 1,1-DCE: 1,1-dichloroethene; cis-1,2-DCE: cis-1,2-dichloroethene; trans-1,2-DCE: trans-1,2-dichloroethene; PCE: tetrachloroethene; 1,1,2-TCA: 1,1,2-trichloroethane, TCE: trichloroethene

2 Maximum Contaminant Levels (MCLs) and Action Levels (ALs) for drinking water in California are established by the California Department of Health Services (CADHS). "MCLs are enforceable primary drinking water standards, adopted into regulation under the Safe Drinking Water Act, which must be met by all public drinking water systems to which they apply. They are risk-management numbers based on comprehensive risk assessments, exposure levels, analytical detection limits, feasibility of removal and removal costs. In cases where no MCL has been established, ALs serve as non-enforceable health-based guidance numbers, which are only affected by analytical detection limits. They are provided by the Department as interim guidance for "safe" levels of contaminants in drinking water". Alexis M. Milea, P.E., Standards and Technology Unit, Office of Drinking Water, California Department of Health Services, October 24, 1990.

BPACC01095

Three of the eleven detected halogenated compounds (trans-1,2-DCE, 1,1,2 TCA, and trichlorofluoromethane) were detected at concentrations less than their respective CADHS MCLs. Trans-1,2-DCE and 1,1,2-TCA were not detected in the Amoco soil samples but they can be formed by TCE and/or PCE heterogenous surface reactions. Trans-1,2-DCE has been reported in the groundwater and 1,1,2-TCA has been reported in the soil of the McDonnell Douglas facility. Trichlorofluoromethane is a common laboratory solvent.

The three remaining detected halogenated compounds are 1,2-dichlorobenzene, chloroform, and methylene chloride. The detected 1,2-dichlorobenzene concentration was less then the CADHS AL (there is no MCL set for this compound). There is no established CADHS MCL or AL for chloroform. The detected methylene chloride concentration was greater than the CADHS AL (there is no MCL set for this compound). 1,2-dichlorobenzene has not been detected in either the soil or groundwater beneath the McDonnell Douglas facility and it was not detected in the Amoco soil samples. Chloroform is present in the groundwater beneath McDonnell Douglas facility at approximately the same concentration as in the groundwater beneath the Amoco facility. The maximum methylene chloride concentration detected in the soil beneath the McDonnell Douglas facility is 20,000 mg/kg. It has not been detected in the soil beneath the Amoco facility or in the groundwater beneath the McDonnell Douglas facility.

Four aromatic compounds, (benzene, ethylbenzene, toluene, and xylenes) were detected in the groundwater samples. The benzene concentration was greater than its MCL but the remaining three were detected at concentrations less than their applicable MCL or AL. Benzene, ethylbenzene, and toluene have been detected in the soil beneath the Amoco facility and in either the soil or groundwater beneath the McDonnell Douglas facility. Xylenes were not detected in the Amoco soil samples but were detected in the soil beneath the McDonnell Douglas facility.

A comparison of the compounds detected in the soil and groundwater beneath the Amoco and McDonnell Douglas facilities is given in Table 4. Groundwater concentration maps of cis-1,2-DCE, TCE, PCE, methylene chloride, and benzene are enclosed as figures 3 through 7. Graphs showing selected detected compound concentrations through time for the six Amoco monitoring wells are enclosed as Appendix C.

7.0 CONCLUSIONS

Halogenated and aromatic hydrocarbons have been detected in the soil and groundwater beneath the Amoco facility and beneath the McDonnell Douglas facility. There are five common contaminants (1,1,1-TCA, TCE, PCE, ethylbenzene, and toluene) detected in the soil of each site and eight common contaminants (chloroform, 1,1-DCA, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, TCE, benzene, and toluene) detected in the groundwater of each site. Additional field investigation, records research, and soil and groundwater plume mapping is necessary to determine the origin and distribution of the contaminant plumes.

GROUNDWATER LABORATORY ANALYTICAL RESULTS

TABLE 1

Report: JANUARY, 1992 BIANNUAL GROUNDWATER MONITORING REPORT
Client: AMOCO
Facility: AMOCO Chemical Company
Location: 1225 West 196th Street/Normandie
City: Torrance, California

SIMON Hydro-Search
Project: 512-345
Contract: NA
Date: 18-Feb-92

SAMPLE DESCRIPTION | LABORATORY RESULTS — ND = Not Detected above limit shown, NA = Not Anayized, Unregulated = Monitoring Required per CADHS, Not Listed = No CADHS Levels Established

Sample Date	Well/Sample Name	Benzene EPA 624 (ug/l)	Chloroform EPA 624 (ug/l)	1,2-Dichloro benzene EPA 625 (ug/l)	1,1-Dichloro ethane EPA 624 (ug/l)	1,1-Dichloro ethene EPA 624 (ug/l)	cis-1,2-Dichloro ethene EPA 624 (ug/l)	trans-1,2-Dichloro ethene EPA 624 (ug/l)	Ethyl benzene EPA 624 (ug/l)	Methylene Chloride EPA 624 (ug/l)	Tetrachloro ethene EPA 624 (ug/l)	Toluene EPA 624 (ug/l)	1,1,2-Tri chloro ethane EPA 624 (ug/l)	Trichloro ethane EPA 624 (ug/l)	Trichloro fluoro methane EPA 624 (ug/l)	Xylenes Total EPA 624 (ug/l)	All Other Semi-Volatile Compounds EPA 625 (ug/l)
CADHS MCL as of 18 OCT 90		1	unregulated	unregulated	5	6	6	10	680	unregulated	5	unregulated	32	5	150	1,750	
CADHS AL as of 18 OCT 90			not listed	130						40		100					
01/16/92	OW-00 field blank	ND<3	ND<3	ND<5	ND<3	ND<3	ND<3	ND<3	ND<3	ND<5	ND<3	ND<3	ND<5	ND<3	ND<10	ND<3	none detected
01/16/92	OW-01	3	37	ND<5	ND<3	8	60	ND<3	5	1,000,000	190	4	8	2,200	ND<10	14	none detected
01/16/92	OW-02	ND<3	11	ND<5	ND<3	ND<3	23	7	ND<3	930	460	ND<3	ND<5	2,700	17	ND<3	none detected
01/16/92	OW-02 Duplicate	ND<3	13	ND<5	ND<3	ND<3	24	8	ND<3	25	380	ND<3	ND<5	2,700	18	ND<3	none detected
01/16/92	OW-03	ND<3	8	ND<5	ND<3	8	59	ND<3	ND<3	7	430	ND<3	ND<5	3,200	ND<10	ND<3	none detected
01/16/92	OW-04	7	19	ND<5	ND<3	33	190	ND<3	ND<3	5	1,300	ND<3	ND<5	5,500	ND<10	ND<3	none detected
01/16/92	OW-05	22	34	ND<5	10	150	560	ND<3	ND<3	6	5,500	ND<3	ND<5	14,000	14	ND<3	none detected
01/16/92	OW-06	28	69	5	11	130	300	ND<3	ND<3	ND<5	9,400	ND<3	ND<5	21,000	ND<10	ND<3	none detected

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TABLE 2

AMOCO CHEMICAL COMPANY
SELECTED ORGANIC COMPOUNDS OVER TIME

Well No.	Date	Units	1,1 Dichloro-ethene	Cis-1,2 Dichloroethene	Trichloro-ethene	Tetrachloro-ethene	Methyl-Chloride
01	2/21/90	ug/l	<1500	<1500	2200	<1500	190,000
	12/05/90		<1000	<1000	2000	<1000	320,000
	6/20/91		<5000	<5000	<5000	<5000	1,100,000
	1/16/92		8	60	2200	190	1,000,000
02	2/21/90	ug/l	<5	6	1100	160	<25
	12/05/90		<10	56	3000	420	<10
	6/20/91		<20	50	2700	410	<20
	1/16/92		<3	23	2700	460	930
03	2/21/90	ug/l	35	150	3800	1100	<20
	12/05/90		<20	73	2600	290	<20
	6/20/91		<20	<20	1900	270	<20
	1/16/92		8	59	3200	430	7
04	2/21/90	ug/l	45	87	3400	400	<15
	12/05/90		46	330	7200	1600	<40
	6/20/91		<50	360	7800	1000	<50
	1/16/92		33	190	5500	1300	5
05	2/21/90	ug/l	<80	380	15000	5900	<400
	12/05/90		<100	670	21000	8100	<100
	6/20/91		<200	900	15000	6600	<200
	1/16/92		150	560	14000	5000	6
06	2/21/90	ug/l	56	59	7800	3300	<40
	12/05/90		<100	270	27000	11000	<100
	6/20/91		<200	<200	22000	10000	<200
	1/16/92		130	300	21000	9400	<5

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TABLE 3

MEASURED GROUNDWATER ELEVATIONS

Well Casing	Casing Elevation (Assumed)	Groundwater Elevation January 16, 1992	Groundwater Elevation June 25, 1992	Change in Elevation
OW-1	100.86	34.86	35.41	-0.55
OW-2	99.63	34.93	35.23	-0.30
OW-3	98.56	34.84	35.24	-0.40
OW-4	99.19	34.73	35.13	-0.40
OW-5	97.99	34.65	35.06	-0.41
OW-6	99.67	34.69	35.07	-0.38

NOTE: Elevation in Feet

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MAXIMUM DETECTED SOIL & GROUNDWATER LABORATORY RESULTS AT THE AMOCO AND McDONNELL DOUGLAS FACILITIES

TABLE 4

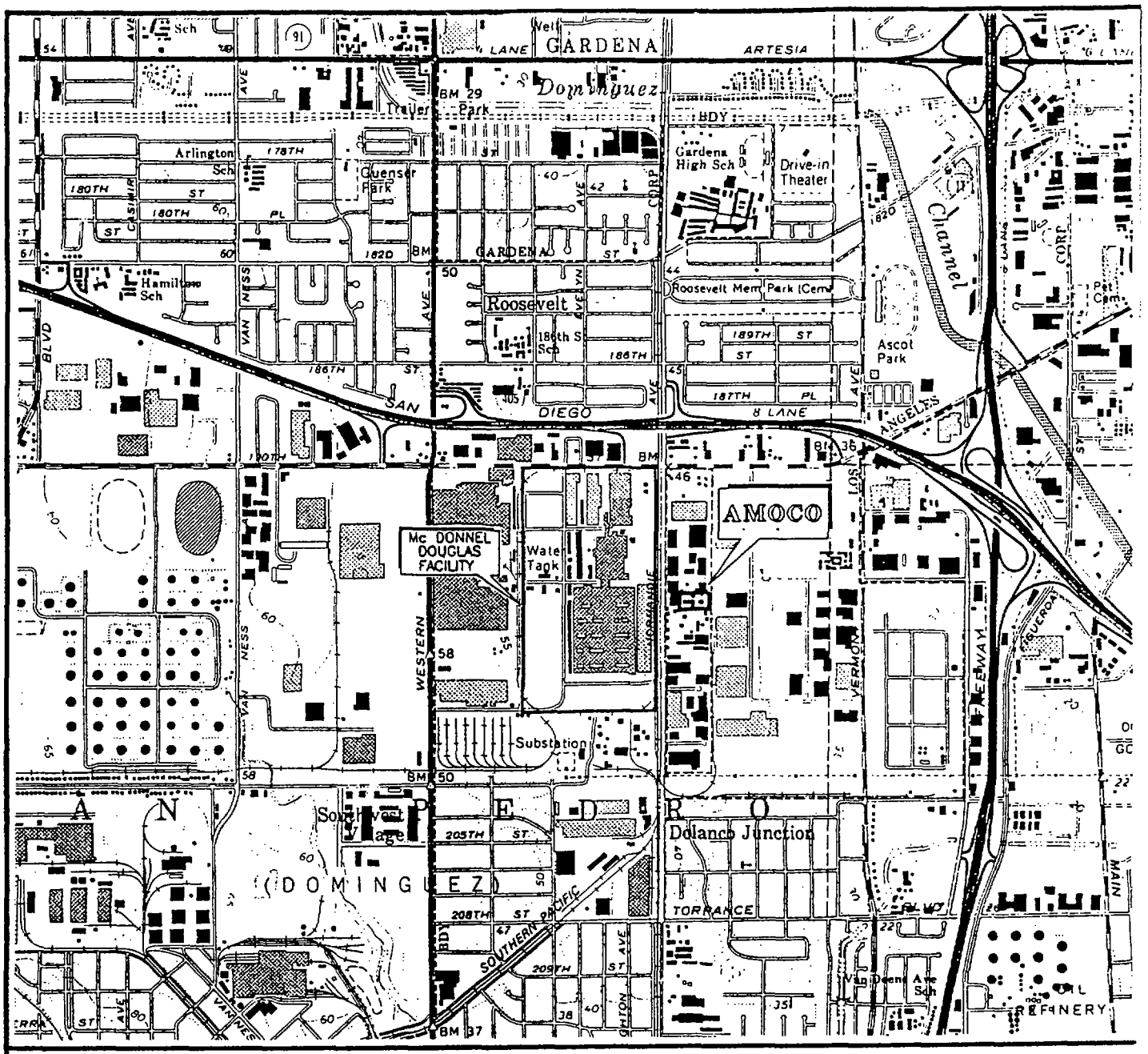
Report: JANUARY, 1992 BIANNUAL GROUNDWATER MONITORING REPORT
Client: AMOCO
Facility: AMOCO Chemical Company
Location: 1225 West 196th Street/Normandie
City: Torrance, California

SIMON Hydro-Search
Project: 512-345
Contract: NA
Date: 18-Feb-92

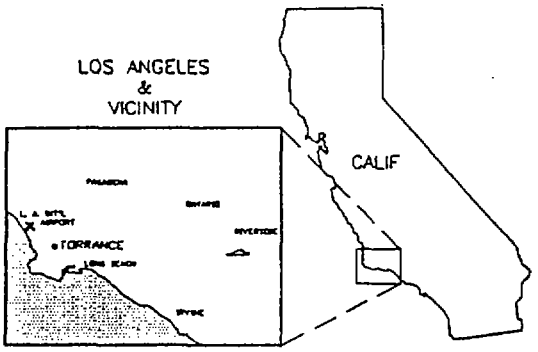
All Reported Detected Compounds	Maximum Detected Concentrations			
	AMOCO Chemical Company		Mcdonnell Douglas Aircraft	
	soil (mg/kg)	water (mg/l)	soil (mg/kg)	water (mg/l)
1,1-dichloroethane		0.011	0.09	88
1,1-dichloroethene		0.15	600	1
1,1,1-trichloroethane	0.07		59000	78
1,1,2-trichloroethane		0.006	4	
1,2-dichlorobenzene		0.005		
benzene	0.05	0.028		0.16
butyl cellosolve			0.7	
carbon disulfide	0.14			
chlorobenzene		2.8		
chloroform		0.069		0.039
cis-1,2-dichloroethene		0.9		0.041
ethylbenzene	140	0.005	51	
methyl ethyl ketone			9.2	
methyl isobutyl ketone			8.4	70
methylene chloride		1100	20000	
styrene	330			
tetrachloroethene	75	11	140	
toluene	1.1	0.004	1900	80
trans-1,2-dichloroethene		0.008		1
trichloroethene	90	27	45	11
trichlorofluoromethane		0.018		
xylenes total		0.21	390	

Comparing soil concentrations of ~~many~~ chemicals between ACC and Mcdonnel Douglass indicates much higher concentrations at Mcdonnel Douglass for some (look at 1,1,1 TCE & toluene)

BPACC01100



SOURCE: USGS 7.5 minute topo sheet, Torrance quad.



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N

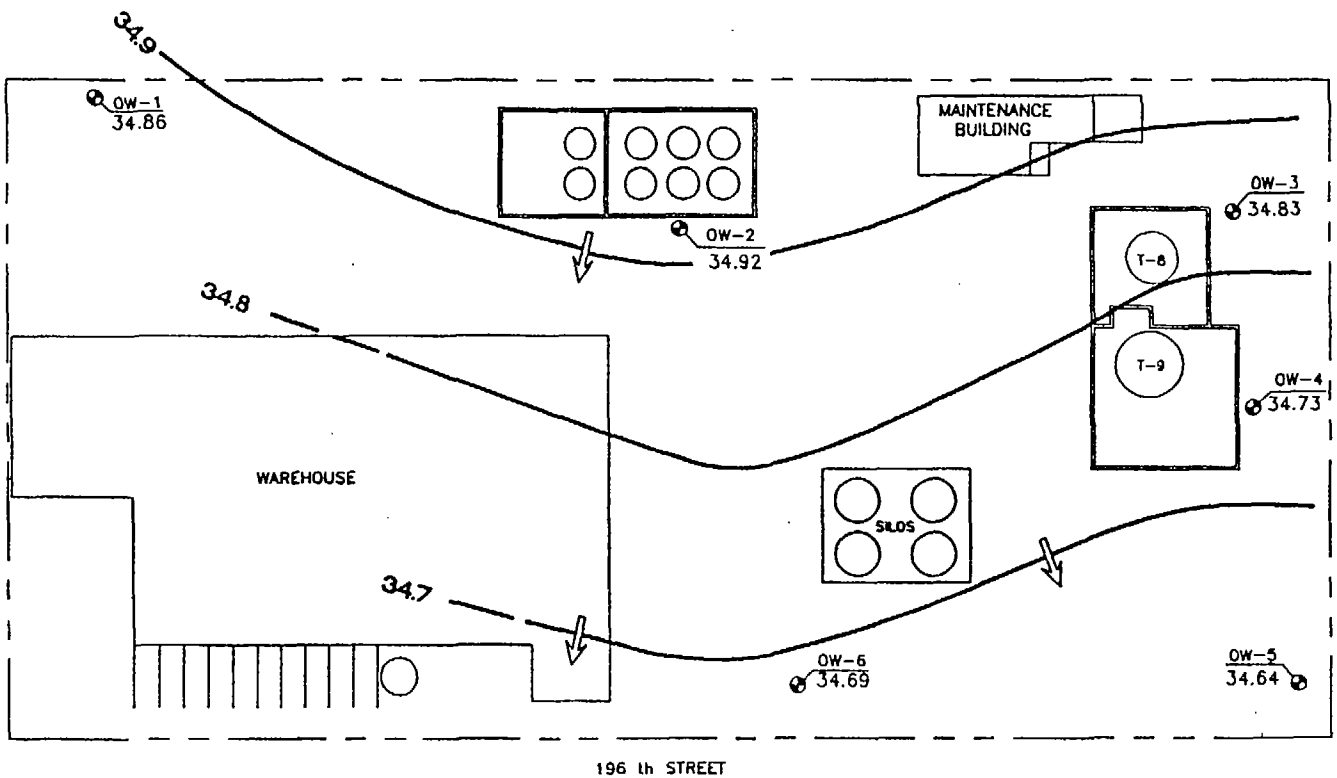
0 2000 4000

SCALE IN FEET

SITE LOCATION MAP
AMOCO CHEMICAL FACILITY
TORRANCE, CALIFORNIA

SIMON HYDRO-SEARCH
5882 BOLSA AVENUE
HUNTINGTON BEACH, CALIFORNIA 92649

PROJECT NO: 512-345	FIGURE NO: 1
DATE: JANUARY, 1992	



EXPLANATION

OW-3 MONITORING WELL NUMBER
34.83 GROUNDWATER ELEVATION (feet)

34.7 GROUNDWATER ELEVATION CONTOUR (dashed where inferred)

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

NOTE:

1. Data collected Jan. 16, 1992.
2. Contour intreval = 0.10 feet.

N

0 60 120

SCALE IN FEET
1" = 60'

GROUNDWATER ELEVATION CONTOUR MAP
AMOCO CHEMICAL COMPANY
TORRANCE, CALIFORNIA

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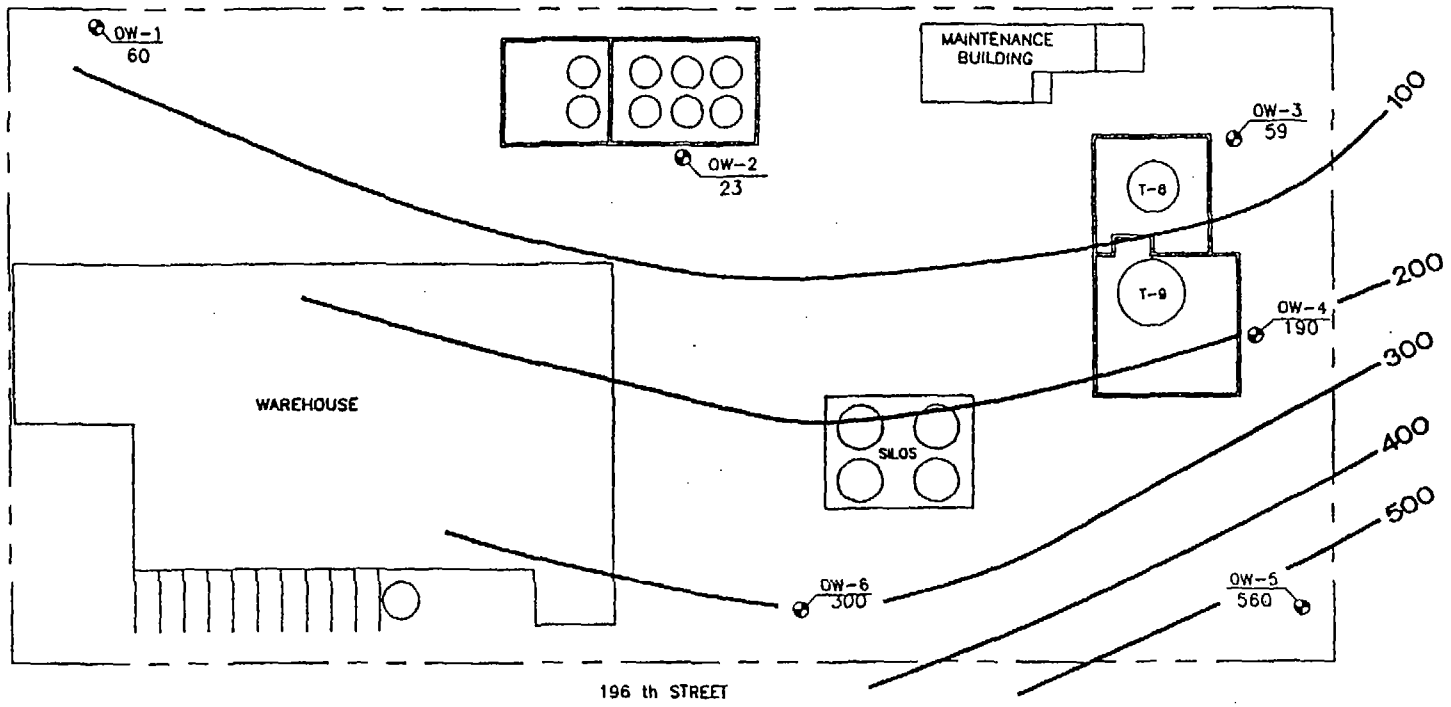
SIMON HYDRO-SEARCH
5882 BOLSA AVENUE
HUNTINGTON BEACH, CALIFORNIA 92649

PROJECT NO: 512-345	DWG NO: 345001	FIGURE: 2
DATE: JANUARY, 1992	REV. 2/21/92	

BPACC01102



EXPLANATION

OW-3	MONITORING WELL NUMBER
59	CIS-1,2 DICHLOROETHENE CONCENTRATION (ug/L)
500	CIS- 1,2 DICHLOROETHENE CONTOUR (Dashed where inferred)

NOTE: 1. Data collected Jan. 16, 1992

2. Contour Interval = 100(ug/l)

N

0 60 120

SCALE IN FEET
1" = 60'

CIS - 1,2 DICHLOROETHENE
CONCENTRATION MAP
AMOCO CHEMICAL COMPANY
TORRANCE, CALIFORNIA

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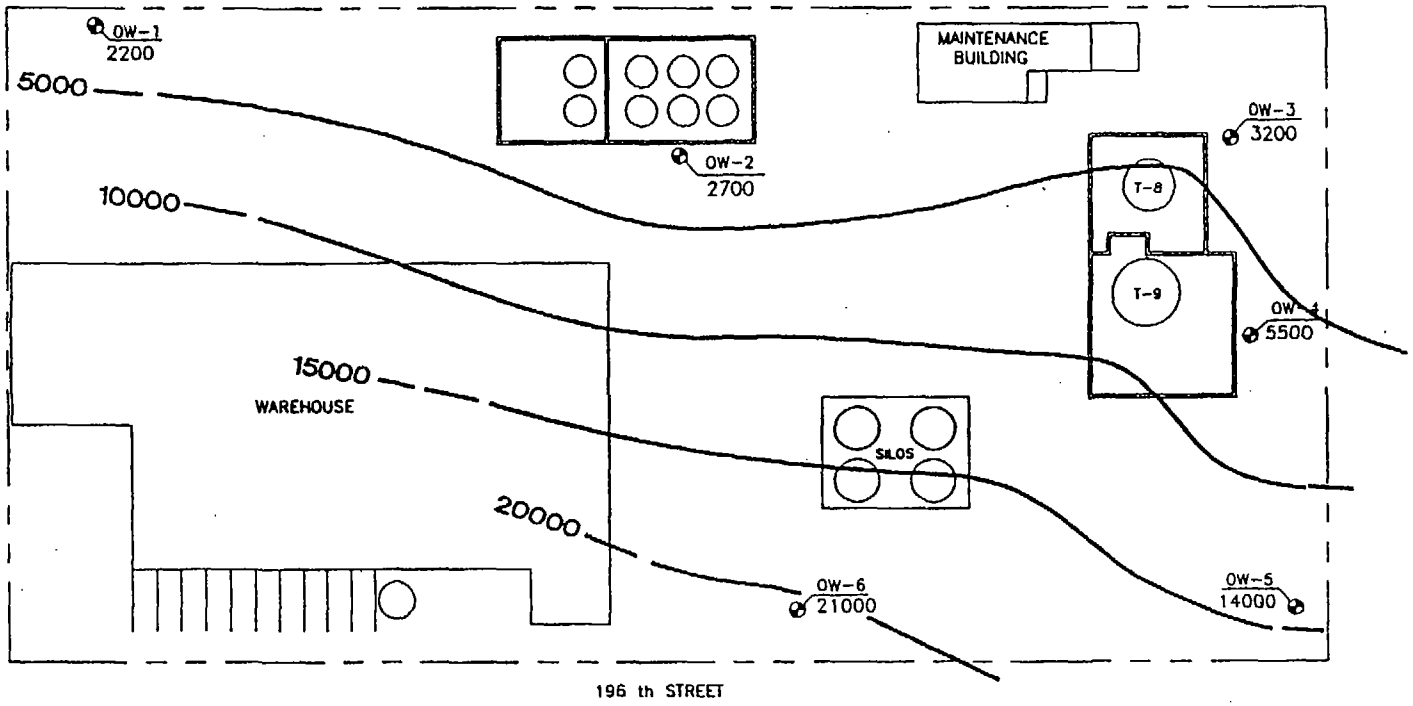
SIMON HYDRO-SEARCH
5882 BOLSA AVENUE
HUNTINGTON BEACH, CALIFORNIA 92649

PROJECT NO: 512-345	DWG NO: 345001	FIGURE: 3
DATE: JANUARY, 1992	REV. 2/21/92	

BPACC01103



EXPLANATION

OW-3	MONITORING WELL NUMBER
1900	TRICHLOROETHENE CONCENTRATION (ug/L)
5000	TRICHLOROETHENE CONTOUR (Dashed where inferred)

1. Data collected Jan. 16, 1992.
2. Contour Interval = 5000 ug/L.

N

0 60 120

SCALE IN FEET
1" = 60'

TRICHLOROETHENE CONCENTRATION MAP
AMOCO CHEMICAL COMPANY
TORRANCE, CALIFORNIA

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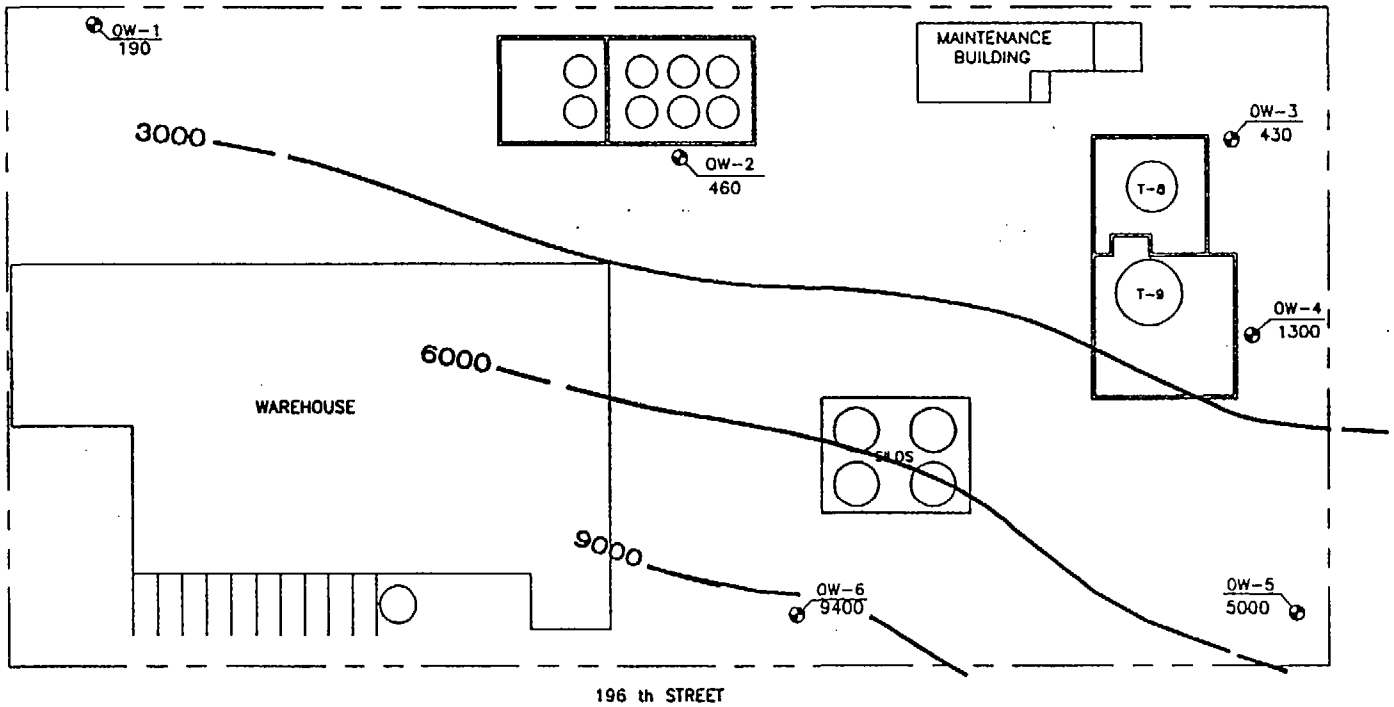
SIMON HYDRO-SEARCH
5882 BOLSA AVENUE
HUNTINGTON BEACH, CALIFORNIA 92649

PROJECT NO: 512-345	DWG NO: 345001	FIGURE: 4
DATE: JANUARY, 1992	REV. 2/21/92	

BPACC01104



EXPLANATION

OW-3 MONITORING WELL NUMBER
430 TETRACHLOROETHYLENE CONCENTRATION (ug/L)

3000 TETRACHLOROETHYLENE CONTOUR (Dashed where inferred)

1. Data collected Jan. 16, 1992.
2. Contour interval = 3000 ug/L.

N

0 60 120

SCALE IN FEET
1" = 60'

TETRACHLOROETHENE CONCENTRATION MAP
AMOCO CHEMICAL COMPANY
TORRANCE, CALIFORNIA

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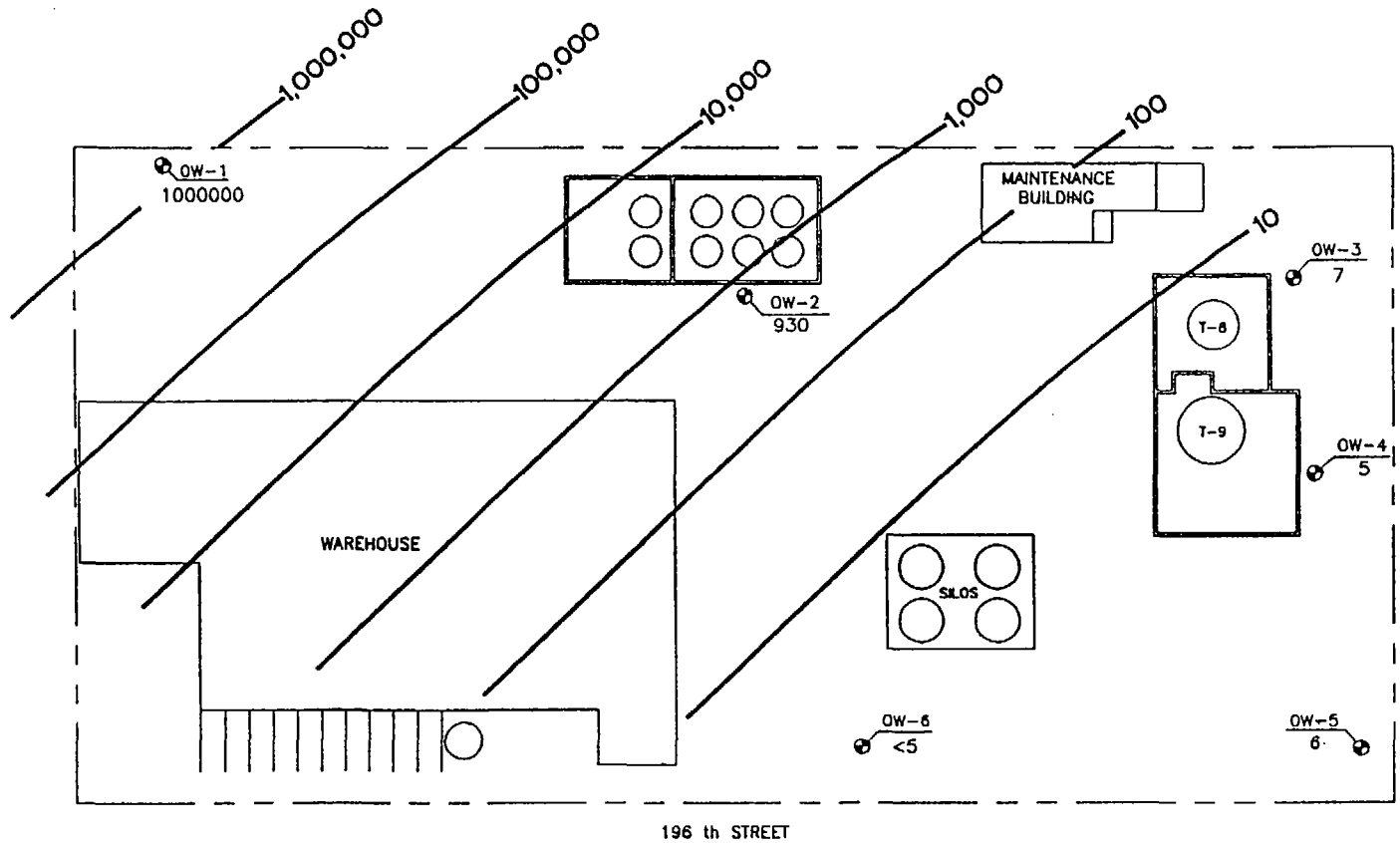
SIMON HYDRO-SEARCH
5882 BOLSA AVENUE
HUNTINGTON BEACH, CALIFORNIA 92649

PROJECT NO: 512-345	DWG NO: 345001	FIGURE: 5
DATE: JANUARY 1992	REV. 2/21/92	

BPACC01105



EXPLANATION

OW-3 MONITORING WELL NUMBER
7 METHYLENE CHLORIDE CONCENTRATION (ug/l)

10 METHYLENE CHLORIDE CONTOUR (Dashed where inferred)

NOTE: 1. Data collected Jan 16, 1992.
2. <5 = not detected above limit shown.

N

0 60 120

SCALE IN FEET
1" = 60'

METHYLENE CHLORIDE CONCENTRATION MAP
AMOCO CHEMICAL COMPANY
TORRANCE, CALIFORNIA

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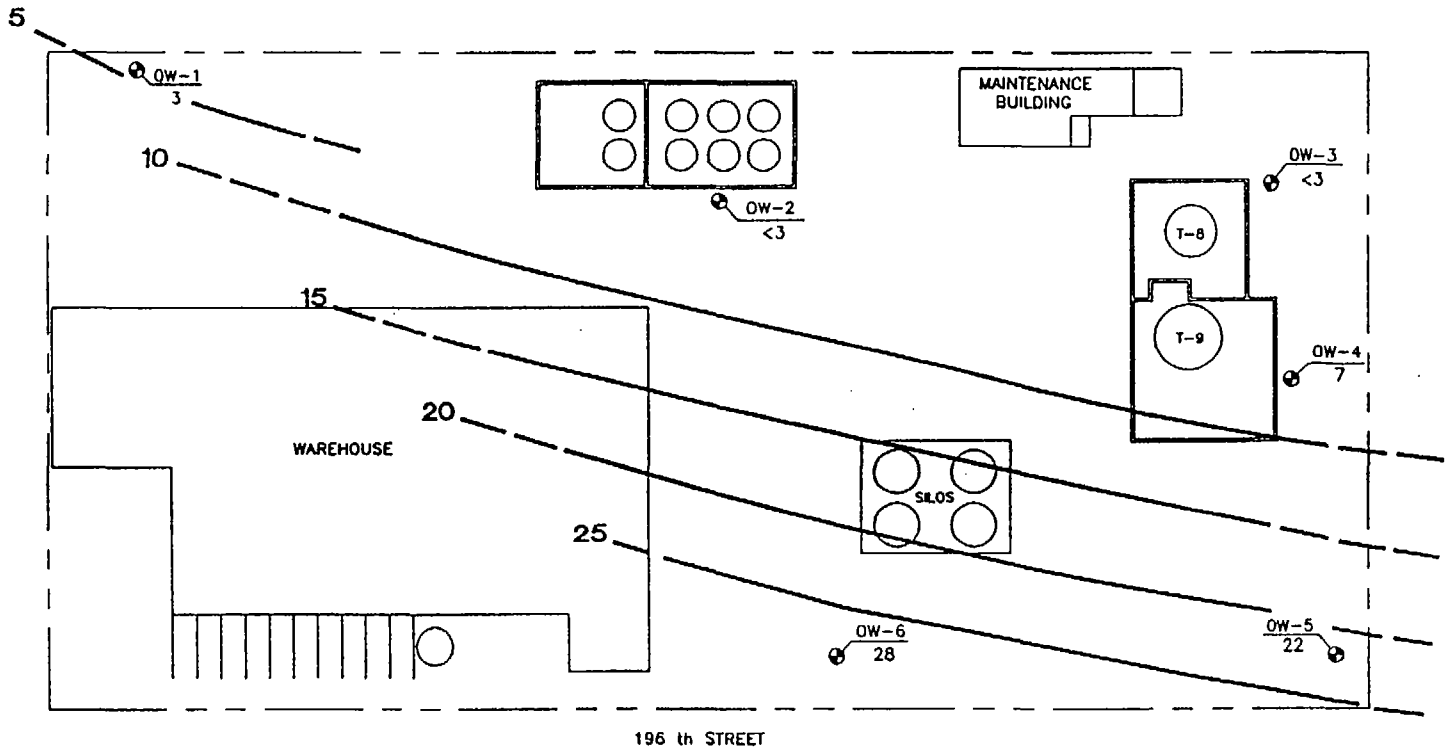
SIMON HYDRO-SEARCH
5882 BOLSA AVENUE
HUNTINGTON BEACH, CALIFORNIA 92649

PROJECT NO: 512-345	DWG NO: 345001	FIGURE: 6
DATE: JANUARY, 1992	REV. 2/21/92	

BPACC01106



EXPLANATION

OW-3 MONITORING WELL NUMBER
BENZENE CONCENTRATION (ug/l)

5 BENZENE CONTOUR
(Dashed where inferred)

NOTE: 1. Data collected Jan. 16, 1992.
2. Contour interval = 5 ug/l.
3. < 3 = not detected above limit shown.

N

0 60 120

SCALE IN FEET
1" = 60'

BENZENE CONCENTRATION MAP
AMOCO CHEMICAL COMPANY
TORRANCE, CALIFORNIA

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SIMON HYDRO-SEARCH
5882 BOLSA AVENUE
HUNTINGTON BEACH, CALIFORNIA 92649

PROJECT NO: 512-345	DWG NO: 345001	FIGURE: 7
DATE: JANUARY 1992	REV. 2/21/92	

BPACC01107

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APPENDIX A

LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORMS

THE EARTH TECHNOLOGY CORP.
ANALYTICAL LABORATORIES
5702 BOLSA AVENUE
HUNTINGTON BEACH, CA 92649
Attn: Harvey Pierre
Phone: (714) 892-2565

Simon Environmental Eng.
5882 Bolsa Ave.
Huntington Beach, Ca. 92649

Attn: Leo Chaidez
Invoice Number:

Order #: 92-01-040
Date: 01/21/92 08:32
Work ID: TORRANCE/512-345
Date Received: 01/16/92
Date Completed: 01/21/92

SAMPLE IDENTIFICATION

Sample Number	Sample Description	Sample Number	Sample Description
01	OW-01-01	02	OW-01-02
03	OW-02-03	04	OW-02-04
05	OW-100-05	06	OW-100-06
07	OW-03-07	08	OW-03-08
09	OW-04-09	10	OW-04-10
11	OW-05-11	12	OW-05-12
13	OW-06-13	14	OW-06-14
15	OW-00-15	16	OW-00-16

MULTIPLY THE DETECTION LIMIT BY THE DILUTION FACTOR.
ND = Indicates analyte not detected.
B = Indicates the analyte was observed in associated blank as well as the sample.

Approval: Harvey Pierre 1/21/92
Harvey Pierre
Laboratory Manager
Date

BPACC01109

ETAL REPORT Work Order # 92-01-040

Received: 01/16/92

Results by Sample

AMPLE ID OW-01-01 FRACTION 01A TEST CODE 624 NAME Volatiles in water

Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	ND	20	1.0	01/17/92
Chloromethane	ND	10	1.0	01/17/92
Vinyl Chloride	ND	10	1.0	01/17/92
Bromomethane	ND	10	1.0	01/17/92
Chloroethane	ND	10	1.0	01/17/92
Trichlorofluoromethane	ND	10	1.0	01/17/92
Ethanol	ND	20	1.0	01/17/92
1,1-Dichloroethene	8.0	3.0	1.0	01/17/92
Acrolein	ND	10	1.0	01/17/92
Acetone	ND	20	1.0	01/17/92
Iodomethane	ND	10	1.0	01/17/92
Carbon Disulfide	ND	5.0	1.0	01/17/92
Methylene chloride	1000000	5.0	10000	01/18/92
Trans-1,2-Dichloroethene	ND	3.0	1.0	01/17/92
Acrylonitrile	ND	10	1.0	01/17/92
1,1-Dichloroethane	ND	3.0	1.0	01/17/92
2-Butanone	ND	20	1.0	01/17/92
cis-1,2-Dichloroethene	60	3.0	1.0	01/17/92
Chloroform	37	3.0	1.0	01/17/92
1,2-Dichloroethane	ND	3.0	1.0	01/17/92
Vinyl Acetate	ND	20	1.0	01/17/92
1,1,1-Trichloroethane	ND	3.0	1.0	01/17/92
Carbon Tetrachloride	ND	3.0	1.0	01/17/92
Benzene	3.0	3.0	1.0	01/17/92
Trichloroethene	2200	3.0	100	01/17/92
1,2-Dichloropropane	ND	5.0	1.0	01/17/92
Bromodichloromethane	ND	3.0	1.0	01/17/92
Dibromomethane	ND	10	1.0	01/17/92
2-Chloroethyl vinyl ether	ND	10	1.0	01/17/92
cis-1,3-Dichloropropene	ND	3.0	1.0	01/17/92
trans-1,3-Dichloropropene	ND	5.0	1.0	01/17/92
Ethyl methacrylate	ND	10	1.0	01/17/92
1,1,2-Trichloroethane	6.0	5.0	1.0	01/17/92
Dibromochloromethane	ND	3.0	1.0	01/17/92
Bromoform	ND	5.0	1.0	01/17/92
4-Methyl-2-Pentanone	ND	20	1.0	01/17/92
Toluene	4.0	3.0	1.0	01/17/92
2-Hexanone	ND	20	1.0	01/17/92
1,1,2,2-Tetrachloroethane	ND	3.0	1.0	01/17/92
Tetrachloroethene	190	3.0	1.0	01/17/92
Chlorobenzene	ND	3.0	1.0	01/17/92
Ethylbenzene	5.0	3.0	1.0	01/17/92
Xylene(total)	14	3.0	1.0	01/17/92
Styrene	ND	3.0	1.0	01/17/92
cis-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92
1,2,3-Trichloropropane	ND	10	1.0	01/17/92
trans-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92

Notes and Definitions for this Report:

MPLE ID OW-01-01 FRACTION 01A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

ANALYST CL
FILE ID *
UNITS ug/L
BATCH ID VOA1-92-010
COMMENTS * = >1V947; >1V956; >1V965

Received: 01/16/92 Results by Sample

ıMPLE ID OW-01-02 FRACTION 02A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
N-Nitrosodimethylamine	ND	10	1.0	01/18/92
2-Picoline	ND	50	1.0	01/18/92
Methyl_methanesulfonate	ND	50	1.0	01/18/92
Ethyl methanesulfonate	ND	50	1.0	01/18/92
Phenol	ND	10	1.0	01/18/92
Aniline	ND	10	1.0	01/18/92
bis(2-chloroethyl) ether	ND	5.0	1.0	01/18/92
2-Chlorophenol	ND	10	1.0	01/18/92
1,3-Dichlorobenzene	ND	5.0	1.0	01/18/92
1,4-Dichlorobenzene	ND	5.0	1.0	01/18/92
Benzyl alcohol	ND	10	1.0	01/18/92
1,2-Dichlorobenzene	ND	5.0	1.0	01/18/92
2-Methylphenol	ND	10	1.0	01/18/92
bis(2chloroisopropyl)ether	ND	5.0	1.0	01/18/92
Acetophenone	ND	50	1.0	01/18/92
4-Methylphenol	ND	10	1.0	01/18/92
N-Nitroso-di-n-propylamine	ND	5.0	1.0	01/18/92
Hexachloroethane	ND	5.0	1.0	01/18/92
Nitrobenzene	ND	5.0	1.0	01/18/92
N-Nitrosopiperidine	ND	50	1.0	01/18/92
Isophorone	ND	5.0	1.0	01/18/92
2-Nitrophenol	ND	10	1.0	01/18/92
2,4-Dimethylphenol	ND	10	1.0	01/18/92
Benzoic acid	ND	50	1.0	01/18/92
bis(2-Chloroethoxy)methane	ND	10	1.0	01/18/92
a,a-Dimethylphenethylamine	ND	50	1.0	01/18/92
2,4-Dichlorophenol	ND	10	1.0	01/18/92
1,2,4-Trichlorobenzene	ND	5.0	1.0	01/18/92
Naphthalene	ND	5.0	1.0	01/18/92
2,6-Dichlorophenol	ND	50	1.0	01/18/92
4-Chloroaniline	ND	20	1.0	01/18/92
Hexachlorobutadiene	ND	5.0	1.0	01/18/92
N-Nitroso-di-n-butylamine	ND	50	1.0	01/18/92
4-Chloro-3-methylphenol	ND	10	1.0	01/18/92
2-Methylnaphthalene	ND	5.0	1.0	01/18/92
1,2,4,5-Tetrachlorobenzene	ND	50	1.0	01/18/92
Hexachlorocyclopentadiene	ND	5.0	1.0	01/18/92
2,4,6-Trichlorophenol	ND	10	1.0	01/18/92
2,4,5-Trichlorophenol	ND	10	1.0	01/18/92
2-Chloronaphthalene	ND	5.0	1.0	01/18/92
1-Chloronaphthalene	ND	50	1.0	01/18/92
2-Nitroaniline	ND	50	1.0	01/18/92
Dimethyl phthalate	ND	5.0	1.0	01/18/92
Acenaphthylene	ND	5.0	1.0	01/18/92
2,6-Dinitrotoluene	ND	5.0	1.0	01/18/92
3-Nitroaniline	ND	50	1.0	01/18/92
Acenaphthene	ND	5.0	1.0	01/18/92
2,4-Dinitrophenol	ND	50	1.0	01/18/92
4-Nitrophenol	ND	50	1.0	01/18/92
Dibenzofuran	ND	5.0	1.0	01/18/92

MPLE ID OW-01-02 FRACTION 02A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

Pentachlorobenzene	ND	50	1.0	01/18/92
2,4-Dinitrotoluene	ND	5.0	1.0	01/18/92
1-Naphthylamine	ND	50	1.0	01/18/92
2-Naphthylamine	ND	50	1.0	01/18/92
2,3,4,6-Tetrachlorophenol	ND	50	1.0	01/18/92
Diethylphthalate	ND	5.0	1.0	01/18/92
4-Chlorophenyl-phenylether	ND	5.0	1.0	01/18/92
Fluorene	ND	5.0	1.0	01/18/92
4-Nitroaniline	ND	50	1.0	01/18/92
4,6-Dinitro-2-methylphenol	ND	50	1.0	01/18/92
Diphenylamine	ND	50	1.0	01/18/92
N-Nitrosodiphenylamine	ND	10	1.0	01/18/92
Azobenzene	ND	5.0	1.0	01/18/92
4-Bromophenyl-phenylether	ND	5.0	1.0	01/18/92
Phenacetin	ND	50	1.0	01/18/92
Hexachlorobenzene	ND	5.0	1.0	01/18/92
4-Aminobiphenyl	ND	50	1.0	01/18/92
Pentachlorophenol	ND	30	1.0	01/18/92
Pronamide	ND	50	1.0	01/18/92
Phenanthrene	ND	5.0	1.0	01/18/92
Anthracene	ND	5.0	1.0	01/18/92
Di-n-butylphthalate	ND	5.0	1.0	01/18/92
Fluoranthene	ND	5.0	1.0	01/18/92
Benzidine	ND	50	1.0	01/18/92
Pyrene	ND	5.0	1.0	01/18/92
p-Dimethylaminoazobenzene	ND	50	1.0	01/18/92
Butylbenzylphthalate	ND	5.0	1.0	01/18/92
3,3'-Dichlorobenzidine	ND	20	1.0	01/18/92
Benzo(a)anthracene	ND	5.0	1.0	01/18/92
Chrysene	ND	5.0	1.0	01/18/92
bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	01/18/92
Di-n-octyl phthalate	ND	5.0	1.0	01/18/92
7,12-Dimethylbenz(a)anthrace	ND	50	1.0	01/18/92
Benzo(b)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(k)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(a)pyrene	ND	5.0	1.0	01/18/92
3-Methylcholanthrene	ND	50	1.0	01/18/92
Dibenz(a,j)acridine	ND	50	1.0	01/18/92
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0	01/18/92
Dibenzo(a,h)anthracene	ND	5.0	1.0	01/18/92
Benzo(g,h,i)perylene	ND	5.0	1.0	01/18/92

Notes and Definitions for this Report:

EXTRACTED 01/17/92
ANALYST TT
FILE ID >AE755
UNITS ug/L
BATCH_ID 625-76
COMMENTS

Received: 01/16/92 Results by Sample

AMPLE ID OW-02-03 FRACTION 03A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	ND	20	1.0	01/17/92
Chloromethane	ND	10	1.0	01/17/92
Vinyl Chloride	ND	10	1.0	01/17/92
Bromomethane	ND	10	1.0	01/17/92
Chloroethane	ND	10	1.0	01/17/92
Trichlorofluoromethane	17	10	1.0	01/17/92
Ethanol	ND	20	1.0	01/17/92
1,1-Dichloroethene	ND	3.0	1.0	01/17/92
Acrolein	ND	10	1.0	01/17/92
Acetone	ND	20	1.0	01/17/92
Iodomethane	ND	10	1.0	01/17/92
Carbon Disulfide	ND	5.0	1.0	01/17/92
Methylene chloride	930	5.0	100	01/17/92
Trans-1,2-Dichloroethene	7.0	3.0	1.0	01/17/92
Acrylonitrile	ND	10	1.0	01/17/92
1,1-Dichloroethane	ND	3.0	1.0	01/17/92
2-Butanone	ND	20	1.0	01/17/92
cis-1,2-Dichloroethene	23	3.0	1.0	01/17/92
Chloroform	11	3.0	1.0	01/17/92
1,2-Dichloroethane	ND	3.0	1.0	01/17/92
Vinyl Acetate	ND	20	1.0	01/17/92
1,1,1-Trichloroethane	ND	3.0	1.0	01/17/92
Carbon Tetrachloride	ND	3.0	1.0	01/17/92
Benzene	ND	3.0	1.0	01/17/92
Trichloroethene	2700	3.0	100	01/17/92
1,2-Dichloropropane	ND	5.0	1.0	01/17/92
Bromodichloromethane	ND	3.0	1.0	01/17/92
Dibromomethane	ND	10	1.0	01/17/92
2-Chloroethyl vinyl ether	ND	10	1.0	01/17/92
cis-1,3-Dichloropropene	ND	3.0	1.0	01/17/92
trans-1,3-Dichloropropene	ND	5.0	1.0	01/17/92
Ethyl methacrylate	ND	10	1.0	01/17/92
1,1,2-Trichloroethane	ND	5.0	1.0	01/17/92
Dibromochloromethane	ND	3.0	1.0	01/17/92
Bromoform	ND	5.0	1.0	01/17/92
4-Methyl-2-Pentanone	ND	20	1.0	01/17/92
Toluene	ND	3.0	1.0	01/17/92
2-Hexanone	ND	20	1.0	01/17/92
1,1,2,2-Tetrachloroethane	ND	3.0	1.0	01/17/92
Tetrachloroethene	460	3.0	100	01/17/92
Chlorobenzene	ND	3.0	1.0	01/17/92
Ethylbenzene	ND	3.0	1.0	01/17/92
Xylene(total)	ND	3.0	1.0	01/17/92
Styrene	ND	3.0	1.0	01/17/92
cis-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92
1,2,3-Trichloropropane	ND	10	1.0	01/17/92
trans-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92

Notes and Definitions for this Report:

AMPLE ID OW-02-03 FRACTION 03A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

ANALYST CL
FILE ID >1V948; >1V957
UNITS ug/L
BATCH_ID VOA1-92-010
COMMENTS

Received: 01/16/92 Results by Sample

MPLE ID OW-02-04 FRACTION 04A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
N-Nitrosodimethylamine	ND	10	1.0	01/18/92
2-Picoline	ND	50	1.0	01/18/92
Methyl methanesulfonate	ND	50	1.0	01/18/92
Ethyl methanesulfonate	ND	50	1.0	01/18/92
Phenol	ND	10	1.0	01/18/92
Aniline	ND	10	1.0	01/18/92
bis(2-chloroethyl) ether	ND	5.0	1.0	01/18/92
2-Chlorophenol	ND	10	1.0	01/18/92
1,3-Dichlorobenzene	ND	5.0	1.0	01/18/92
1,4-Dichlorobenzene	ND	5.0	1.0	01/18/92
Benzyl alcohol	ND	10	1.0	01/18/92
1,2-Dichlorobenzene	ND	5.0	1.0	01/18/92
2-Methylphenol	ND	10	1.0	01/18/92
bis(2chloroisopropyl)ether	ND	5.0	1.0	01/18/92
Acetophenone	ND	50	1.0	01/18/92
4-Methylphenol	ND	10	1.0	01/18/92
N-Nitroso-di-n-propylamine	ND	5.0	1.0	01/18/92
Hexachloroethane	ND	5.0	1.0	01/18/92
Nitrobenzene	ND	5.0	1.0	01/18/92
N-Nitrosopiperidine	ND	50	1.0	01/18/92
Isophorone	ND	5.0	1.0	01/18/92
2-Nitrophenol	ND	10	1.0	01/18/92
2,4-Dimethylphenol	ND	10	1.0	01/18/92
Benzoic acid	ND	50	1.0	01/18/92
bis(2-Chloroethoxy)methane	ND	10	1.0	01/18/92
a,a-Dimethylphenethylamine	ND	50	1.0	01/18/92
2,4-Dichlorophenol	ND	10	1.0	01/18/92
1,2,4-Trichlorobenzene	ND	5.0	1.0	01/18/92
Naphthalene	ND	5.0	1.0	01/18/92
2,6-Dichlorophenol	ND	50	1.0	01/18/92
4-Chloroaniline	ND	20	1.0	01/18/92
Hexachlorobutadiene	ND	5.0	1.0	01/18/92
N-Nitroso-di-n-butylamine	ND	50	1.0	01/18/92
4-Chloro-3-methylphenol	ND	10	1.0	01/18/92
2-Methylnaphthalene	ND	5.0	1.0	01/18/92
1,2,4,5-Tetrachlorobenzene	ND	50	1.0	01/18/92
Hexachlorocyclopentadiene	ND	5.0	1.0	01/18/92
2,4,6-Trichlorophenol	ND	10	1.0	01/18/92
2,4,5-Trichlorophenol	ND	10	1.0	01/18/92
2-Chloronaphthalene	ND	5.0	1.0	01/18/92
1-Chloronaphthalene	ND	50	1.0	01/18/92
2-Nitroaniline	ND	50	1.0	01/18/92
Dimethyl phthalate	ND	5.0	1.0	01/18/92
Acenaphthylene	ND	5.0	1.0	01/18/92
2,6-Dinitrotoluene	ND	5.0	1.0	01/18/92
3-Nitroaniline	ND	50	1.0	01/18/92
Acenaphthene	ND	5.0	1.0	01/18/92
2,4-Dinitrophenol	ND	50	1.0	01/18/92
4-Nitrophenol	ND	50	1.0	01/18/92
Dibenzofuran	ND	5.0	1.0	01/18/92

AMPLE ID OW-02-04 FRACTION 04A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

Pentachlorobenzene	ND	50	1.0	01/18/92
2,4-Dinitrotoluene	ND	5.0	1.0	01/18/92
1-Naphthylamine	ND	50	1.0	01/18/92
2-Naphthylamine	ND	50	1.0	01/18/92
2,3,4,6-Tetrachlorophenol	ND	50	1.0	01/18/92
Diethylphthalate	ND	5.0	1.0	01/18/92
4-Chlorophenyl-phenylether	ND	5.0	1.0	01/18/92
Fluorene	ND	5.0	1.0	01/18/92
4-Nitroaniline	ND	50	1.0	01/18/92
4,6-Dinitro-2-methylphenol	ND	50	1.0	01/18/92
Diphenylamine	ND	50	1.0	01/18/92
N-Nitrosodiphenylamine	ND	10	1.0	01/18/92
Azobenzene	ND	5.0	1.0	01/18/92
4-Bromophenyl-phenylether	ND	5.0	1.0	01/18/92
Phenacetin	ND	50	1.0	01/18/92
Hexachlorobenzene	ND	5.0	1.0	01/18/92
4-Aminobiphenyl	ND	50	1.0	01/18/92
Pentachlorophenol	ND	30	1.0	01/18/92
Pronamide	ND	50	1.0	01/18/92
Phenanthrene	ND	5.0	1.0	01/18/92
Anthracene	ND	5.0	1.0	01/18/92
Di-n-butylphthalate	ND	5.0	1.0	01/18/92
Fluoranthene	ND	5.0	1.0	01/18/92
Benzidine	ND	50	1.0	01/18/92
Pyrene	ND	5.0	1.0	01/18/92
p-Dimethylaminoazobenzene	ND	50	1.0	01/18/92
Butylbenzylphthalate	ND	5.0	1.0	01/18/92
3,3'-Dichlorobenzidine	ND	20	1.0	01/18/92
Benzo(a)anthracene	ND	5.0	1.0	01/18/92
Chrysene	ND	5.0	1.0	01/18/92
bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	01/18/92
Di-n-octyl phthalate	ND	5.0	1.0	01/18/92
7,12-Dimethylbenz(a)anthrace	ND	50	1.0	01/18/92
Benzo(b)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(k)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(a)pyrene	ND	5.0	1.0	01/18/92
3-Methylcholanthrene	ND	50	1.0	01/18/92
Dibenz(a,j)acridine	ND	50	1.0	01/18/92
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0	01/18/92
Dibenzo(a,h)anthracene	ND	5.0	1.0	01/18/92
Benzo(g,h,i)perylene	ND	5.0	1.0	01/18/92

Notes and Definitions for this Report:

EXTRACTED 01/17/92
ANALYST TT
FILE ID >AE749
UNITS ug/L
BATCH_ID 625-76
COMMENTS

Received: 01/16/92

Results by Sample

AMPLE ID OW-100-05 FRACTION 05A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	ND	20	1.0	01/17/92
Chloromethane	ND	10	1.0	01/17/92
Vinyl Chloride	ND	10	1.0	01/17/92
Bromomethane	ND	10	1.0	01/17/92
Chloroethane	ND	10	1.0	01/17/92
Trichlorofluoromethane	18	10	1.0	01/17/92
Ethanol	ND	20	1.0	01/17/92
1,1-Dichloroethene	ND	3.0	1.0	01/17/92
Acrolein	ND	10	1.0	01/17/92
Acetone	ND	20	1.0	01/17/92
Iodomethane	ND	10	1.0	01/17/92
Carbon Disulfide	ND	5.0	1.0	01/17/92
Methylene chloride	25	5.0	1.0	01/17/92
Trans-1,2-Dichloroethene	8.0	3.0	1.0	01/17/92
Acrylonitrile	ND	10	1.0	01/17/92
1,1-Dichloroethane	ND	3.0	1.0	01/17/92
2-Butanone	ND	20	1.0	01/17/92
cis-1,2-Dichloroethene	24	3.0	1.0	01/17/92
Chloroform	13	3.0	1.0	01/17/92
1,2-Dichloroethane	ND	3.0	1.0	01/17/92
Vinyl Acetate	ND	20	1.0	01/17/92
1,1,1-Trichloroethane	ND	3.0	1.0	01/17/92
Carbon Tetrachloride	ND	3.0	1.0	01/17/92
Benzene	ND	3.0	1.0	01/17/92
Trichloroethene	2700	3.0	100	01/17/92
1,2-Dichloropropane	ND	5.0	1.0	01/17/92
Bromodichloromethane	ND	3.0	1.0	01/17/92
Dibromomethane	ND	10	1.0	01/17/92
2-Chloroethyl vinyl ether	ND	10	1.0	01/17/92
cis-1,3-Dichloropropene	ND	3.0	1.0	01/17/92
trans-1,3-Dichloropropene	ND	5.0	1.0	01/17/92
Ethyl methacrylate	ND	10	1.0	01/17/92
1,1,2-Trichloroethane	ND	5.0	1.0	01/17/92
Dibromochloromethane	ND	3.0	1.0	01/17/92
Bromoform	ND	5.0	1.0	01/17/92
4-Methyl-2-Pentanone	ND	20	1.0	01/17/92
Toluene	ND	3.0	1.0	01/17/92
2-Hexanone	ND	20	1.0	01/17/92
1,1,2,2-Tetrachloroethane	ND	3.0	1.0	01/17/92
Tetrachloroethene	390	3.0	100	01/17/92
Chlorobenzene	ND	3.0	1.0	01/17/92
Ethylbenzene	ND	3.0	1.0	01/17/92
Xylene(total)	ND	3.0	1.0	01/17/92
Styrene	ND	3.0	1.0	01/17/92
cis-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92
1,2,3-Trichloropropane	ND	10	1.0	01/17/92
trans-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92

Notes and Definitions for this Report:

MPLE ID OW-100-05 FRACTION 05A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

ANALYST CL
FILE ID >1V949; >1V958
UNITS ug/L
BATCH ID VOA1-92-010
COMMENTS

Received: 01/16/92 Results by Sample

AMPLE ID OW-100-06 FRACTION 06A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
N-Nitrosodimethylamine	ND	10	1.0	01/18/92
2-Picoline	ND	50	1.0	01/18/92
Methyl_methanesulfonate	ND	50	1.0	01/18/92
Ethyl methanesulfonate	ND	50	1.0	01/18/92
Phenol	ND	10	1.0	01/18/92
Aniline	ND	10	1.0	01/18/92
bis(2-chloroethyl) ether	ND	5.0	1.0	01/18/92
2-Chlorophenol	ND	10	1.0	01/18/92
1,3-Dichlorobenzene	ND	5.0	1.0	01/18/92
1,4-Dichlorobenzene	ND	5.0	1.0	01/18/92
Benzyl alcohol	ND	10	1.0	01/18/92
1,2-Dichlorobenzene	ND	5.0	1.0	01/18/92
2-Methylphenol	ND	10	1.0	01/18/92
bis(2chloroisopropyl)ether	ND	5.0	1.0	01/18/92
Acetophenone	ND	50	1.0	01/18/92
4-Methylphenol	ND	10	1.0	01/18/92
N-Nitroso-di-n-propylamine	ND	5.0	1.0	01/18/92
Hexachloroethane	ND	5.0	1.0	01/18/92
Nitrobenzene	ND	5.0	1.0	01/18/92
N-Nitrosopiperidine	ND	50	1.0	01/18/92
Isophorone	ND	5.0	1.0	01/18/92
2-Nitrophenol	ND	10	1.0	01/18/92
2,4-Dimethylphenol	ND	10	1.0	01/18/92
Benzoic acid	ND	50	1.0	01/18/92
bis(2-Chloroethoxy)methane	ND	10	1.0	01/18/92
a,a-Dimethylphenethylamine	ND	50	1.0	01/18/92
2,4-Dichlorophenol	ND	10	1.0	01/18/92
1,2,4-Trichlorobenzene	ND	5.0	1.0	01/18/92
Naphthalene	ND	5.0	1.0	01/18/92
2,6-Dichlorophenol	ND	50	1.0	01/18/92
4-Chloroaniline	ND	20	1.0	01/18/92
Hexachlorobutadiene	ND	5.0	1.0	01/18/92
N-Nitroso-di-n-butylamine	ND	50	1.0	01/18/92
4-Chloro-3-methylphenol	ND	10	1.0	01/18/92
2-Methylnaphthalene	ND	5.0	1.0	01/18/92
1,2,4,5-Tetrachlorobenzene	ND	50	1.0	01/18/92
Hexachlorocyclopentadiene	ND	5.0	1.0	01/18/92
2,4,6-Trichlorophenol	ND	10	1.0	01/18/92
2,4,5-Trichlorophenol	ND	10	1.0	01/18/92
2-Chloronaphthalene	ND	5.0	1.0	01/18/92
1-Chloronaphthalene	ND	50	1.0	01/18/92
2-Nitroaniline	ND	50	1.0	01/18/92
Dimethyl phthalate	ND	5.0	1.0	01/18/92
Acenaphthylene	ND	5.0	1.0	01/18/92
2,6-Dinitrotoluene	ND	5.0	1.0	01/18/92
3-Nitroaniline	ND	50	1.0	01/18/92
Acenaphthene	ND	5.0	1.0	01/18/92
2,4-Dinitrophenol	ND	50	1.0	01/18/92
4-Nitrophenol	ND	50	1.0	01/18/92
Dibenzofuran	ND	5.0	1.0	01/18/92

AMPLE ID OW-100-06 FRACTION 06A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

Pentachlorobenzene	ND	50	1.0	01/18/92
2,4-Dinitrotoluene	ND	5.0	1.0	01/18/92
1-Naphthylamine	ND	50	1.0	01/18/92
2-Naphthylamine	ND	50	1.0	01/18/92
2,3,4,6-Tetrachlorophenol	ND	50	1.0	01/18/92
Diethylphthalate	ND	5.0	1.0	01/18/92
4-Chlorophenyl-phenylether	ND	5.0	1.0	01/18/92
Fluorene	ND	5.0	1.0	01/18/92
4-Nitroaniline	ND	50	1.0	01/18/92
4,6-Dinitro-2-methylphenol	ND	50	1.0	01/18/92
Diphenylamine	ND	50	1.0	01/18/92
N-Nitrosodiphenylamine	ND	10	1.0	01/18/92
Azobenzene	ND	5.0	1.0	01/18/92
4-Bromophenyl-phenylether	ND	5.0	1.0	01/18/92
Phenacetin	ND	50	1.0	01/18/92
Hexachlorobenzene	ND	5.0	1.0	01/18/92
4-Aminobiphenyl	ND	50	1.0	01/18/92
Pentachlorophenol	ND	30	1.0	01/18/92
Pronamide	ND	50	1.0	01/18/92
Phenanthrene	ND	5.0	1.0	01/18/92
Anthracene	ND	5.0	1.0	01/18/92
Di-n-butylphthalate	ND	5.0	1.0	01/18/92
Fluoranthene	ND	5.0	1.0	01/18/92
Benzidine	ND	50	1.0	01/18/92
Pyrene	ND	5.0	1.0	01/18/92
p-Dimethylaminoazobenzene	ND	50	1.0	01/18/92
Butylbenzylphthalate	ND	5.0	1.0	01/18/92
3,3'-Dichlorobenzidine	ND	20	1.0	01/18/92
Benzo(a)anthracene	ND	5.0	1.0	01/18/92
Chrysene	ND	5.0	1.0	01/18/92
bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	01/18/92
Di-n-octyl phthalate	ND	5.0	1.0	01/18/92
7,12-Dimethylbenz(a)anthrace	ND	50	1.0	01/18/92
Benzo(b)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(k)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(a)pyrene	ND	5.0	1.0	01/18/92
3-Methylcholanthrene	ND	50	1.0	01/18/92
Dibenz(a,j)acridine	ND	50	1.0	01/18/92
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0	01/18/92
Dibenzo(a,h)anthracene	ND	5.0	1.0	01/18/92
Benzo(g,h,i)perylene	ND	5.0	1.0	01/18/92

Notes and Definitions for this Report:

EXTRACTED 01/17/92
ANALYST TT
FILE ID >AE750
UNITS ug/L
BATCH_ID 625-76
COMMENTS

Received: 01/16/92 Results by Sample

AMPLE ID OW-03-07 FRACTION 07A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	ND	20	1.0	01/17/92
Chloromethane	ND	10	1.0	01/17/92
Vinyl Chloride	ND	10	1.0	01/17/92
Bromomethane	ND	10	1.0	01/17/92
Chloroethane	ND	10	1.0	01/17/92
Trichlorofluoromethane	ND	10	1.0	01/17/92
Ethanol	ND	20	1.0	01/17/92
1,1-Dichloroethene	8.0	3.0	1.0	01/17/92
Acrolein	ND	10	1.0	01/17/92
Acetone	ND	20	1.0	01/17/92
Iodomethane	ND	10	1.0	01/17/92
Carbon Disulfide	ND	5.0	1.0	01/17/92
Methylene chloride	7.0	5.0	1.0	01/17/92
Trans-1,2-Dichloroethene	ND	3.0	1.0	01/17/92
Acrylonitrile	ND	10	1.0	01/17/92
1,1-Dichloroethane	ND	3.0	1.0	01/17/92
2-Butanone	ND	20	1.0	01/17/92
cis-1,2-Dichloroethene	59	3.0	1.0	01/17/92
Chloroform	8.0	3.0	1.0	01/17/92
1,2-Dichloroethane	ND	3.0	1.0	01/17/92
Vinyl Acetate	ND	20	1.0	01/17/92
1,1,1-Trichloroethane	ND	3.0	1.0	01/17/92
Carbon Tetrachloride	ND	3.0	1.0	01/17/92
Benzene	ND	3.0	1.0	01/17/92
Trichloroethene	3200	3.0	1.0	01/17/92
1,2-Dichloropropane	ND	5.0	1.0	01/17/92
Bromodichloromethane	ND	3.0	1.0	01/17/92
Dibromomethane	ND	10	1.0	01/17/92
2-Chloroethyl vinyl ether	ND	10	1.0	01/17/92
cis-1,3-Dichloropropene	ND	3.0	1.0	01/17/92
trans-1,3-Dichloropropene	ND	5.0	1.0	01/17/92
Ethyl methacrylate	ND	10	1.0	01/17/92
1,1,2-Trichloroethane	ND	5.0	1.0	01/17/92
Dibromochloromethane	ND	3.0	1.0	01/17/92
Bromoform	ND	5.0	1.0	01/17/92
4-Methyl-2-Pentanone	ND	20	1.0	01/17/92
Toluene	ND	3.0	1.0	01/17/92
2-Hexanone	ND	20	1.0	01/17/92
1,1,2,2-Tetrachloroethane	ND	3.0	1.0	01/17/92
Tetrachloroethene	430	3.0	1.0	01/17/92
Chlorobenzene	ND	3.0	1.0	01/17/92
Ethylbenzene	ND	3.0	1.0	01/17/92
Xylene(total)	ND	3.0	1.0	01/17/92
Styrene	ND	3.0	1.0	01/17/92
cis-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92
1,2,3-Trichloropropane	ND	10	1.0	01/17/92
trans-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92

Notes and Definitions for this Report:

MPLE ID OW-03-07 FRACTION 07A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

ANALYST CL
FILE ID >1V950; >1V959
UNITS ug/L
BATCH_ID VOA1-92-010
COMMENTS

Received: 01/16/92 Results by Sample

MPLE ID OW-03-08 FRACTION 08A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
N-Nitrosodimethylamine	ND	10	1.0	01/18/92
2-Picoline	ND	50	1.0	01/18/92
Methyl methanesulfonate	ND	50	1.0	01/18/92
Ethyl methanesulfonate	ND	50	1.0	01/18/92
Phenol	ND	10	1.0	01/18/92
Aniline	ND	10	1.0	01/18/92
bis(2-chloroethyl) ether	ND	5.0	1.0	01/18/92
2-Chlorophenol	ND	10	1.0	01/18/92
1,3-Dichlorobenzene	ND	5.0	1.0	01/18/92
1,4-Dichlorobenzene	ND	5.0	1.0	01/18/92
Benzyl alcohol	ND	10	1.0	01/18/92
1,2-Dichlorobenzene	ND	5.0	1.0	01/18/92
2-Methylphenol	ND	10	1.0	01/18/92
bis(2chloroisopropyl)ether	ND	5.0	1.0	01/18/92
Acetophenone	ND	50	1.0	01/18/92
4-Methylphenol	ND	10	1.0	01/18/92
N-Nitroso-di-n-propylamine	ND	5.0	1.0	01/18/92
Hexachloroethane	ND	5.0	1.0	01/18/92
Nitrobenzene	ND	5.0	1.0	01/18/92
N-Nitrosopiperidine	ND	50	1.0	01/18/92
Isophorone	ND	5.0	1.0	01/18/92
2-Nitrophenol	ND	10	1.0	01/18/92
2,4-Dimethylphenol	ND	10	1.0	01/18/92
Benzoic acid	ND	50	1.0	01/18/92
bis(2-Chloroethoxy)methane	ND	10	1.0	01/18/92
a,a-Dimethylphenethylamine	ND	50	1.0	01/18/92
2,4-Dichlorophenol	ND	10	1.0	01/18/92
1,2,4-Trichlorobenzene	ND	5.0	1.0	01/18/92
Naphthalene	ND	5.0	1.0	01/18/92
2,6-Dichlorophenol	ND	50	1.0	01/18/92
4-Chloroaniline	ND	20	1.0	01/18/92
Hexachlorobutadiene	ND	5.0	1.0	01/18/92
N-Nitroso-di-n-butylamine	ND	50	1.0	01/18/92
4-Chloro-3-methylphenol	ND	10	1.0	01/18/92
2-Methylnaphthalene	ND	5.0	1.0	01/18/92
1,2,4,5-Tetrachlorobenzene	ND	50	1.0	01/18/92
Hexachlorocyclopentadiene	ND	5.0	1.0	01/18/92
2,4,6-Trichlorophenol	ND	10	1.0	01/18/92
2,4,5-Trichlorophenol	ND	10	1.0	01/18/92
2-Chloronaphthalene	ND	5.0	1.0	01/18/92
1-Chloronaphthalene	ND	50	1.0	01/18/92
2-Nitroaniline	ND	50	1.0	01/18/92
Dimethyl phthalate	ND	5.0	1.0	01/18/92
Acenaphthylene	ND	5.0	1.0	01/18/92
2,6-Dinitrotoluene	ND	5.0	1.0	01/18/92
3-Nitroaniline	ND	50	1.0	01/18/92
Acenaphthene	ND	5.0	1.0	01/18/92
2,4-Dinitrophenol	ND	50	1.0	01/18/92
4-Nitrophenol	ND	50	1.0	01/18/92
Dibenzofuran	ND	5.0	1.0	01/18/92

AMPLE ID OW-03-08 FRACTION 08A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

Pentachlorobenzene	ND	50	1.0	01/18/92
2,4-Dinitrotoluene	ND	5.0	1.0	01/18/92
1-Naphthylamine	ND	50	1.0	01/18/92
2-Naphthylamine	ND	50	1.0	01/18/92
2,3,4,6-Tetrachlorophenol	ND	50	1.0	01/18/92
Diethylphthalate	ND	5.0	1.0	01/18/92
4-Chlorophenyl-phenylether	ND	5.0	1.0	01/18/92
Fluorene	ND	5.0	1.0	01/18/92
4-Nitroaniline	ND	50	1.0	01/18/92
4,6-Dinitro-2-methylphenol	ND	50	1.0	01/18/92
Diphenylamine	ND	50	1.0	01/18/92
N-Nitrosodiphenylamine	ND	10	1.0	01/18/92
Azobenzene	ND	5.0	1.0	01/18/92
4-Bromophenyl-phenylether	ND	5.0	1.0	01/18/92
Phenacetin	ND	50	1.0	01/18/92
Hexachlorobenzene	ND	5.0	1.0	01/18/92
4-Aminobiphenyl	ND	50	1.0	01/18/92
Pentachlorophenol	ND	30	1.0	01/18/92
Pronamide	ND	50	1.0	01/18/92
Phenanthrene	ND	5.0	1.0	01/18/92
Anthracene	ND	5.0	1.0	01/18/92
Di-n-butylphthalate	ND	5.0	1.0	01/18/92
Fluoranthene	ND	5.0	1.0	01/18/92
Benzidine	ND	50	1.0	01/18/92
Pyrene	ND	5.0	1.0	01/18/92
p-Dimethylaminoazobenzene	ND	50	1.0	01/18/92
Butylbenzylphthalate	ND	5.0	1.0	01/18/92
3,3'-Dichlorobenzidine	ND	20	1.0	01/18/92
Benzo(a)anthracene	ND	5.0	1.0	01/18/92
Chrysene	ND	5.0	1.0	01/18/92
bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	01/18/92
Di-n-octyl phthalate	ND	5.0	1.0	01/18/92
7,12-Dimethylbenz(a)anthrace	ND	50	1.0	01/18/92
Benzo(b)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(k)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(a)pyrene	ND	5.0	1.0	01/18/92
3-Methylcholanthrene	ND	50	1.0	01/18/92
Dibenz(a,j)acridine	ND	50	1.0	01/18/92
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0	01/18/92
Dibenzo(a,h)anthracene	ND	5.0	1.0	01/18/92
Benzo(g,h,i)perylene	ND	5.0	1.0	01/18/92

Notes and Definitions for this Report:

EXTRACTED 01/17/92
ANALYST TT
FILE ID >AE751
UNITS ug/L
BATCH_ID 625-76
COMMENTS

Received: 01/16/92 Results by Sample

MPLE ID OW-04-09 FRACTION 09A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	ND	20	1.0	01/17/92
Chloromethane	ND	10	1.0	01/17/92
Vinyl Chloride	ND	10	1.0	01/17/92
Bromomethane	ND	10	1.0	01/17/92
Chloroethane	ND	10	1.0	01/17/92
Trichlorofluoromethane	ND	10	1.0	01/17/92
Ethanol	ND	20	1.0	01/17/92
1,1-Dichloroethene	33	3.0	1.0	01/17/92
Acrolein	ND	10	1.0	01/17/92
Acetone	ND	20	1.0	01/17/92
Iodomethane	ND	10	1.0	01/17/92
Carbon Disulfide	ND	5.0	1.0	01/17/92
Methylene chloride	5.0	5.0	1.0	01/17/92
Trans-1,2-Dichloroethene	ND	3.0	1.0	01/17/92
Acrylonitrile	ND	10	1.0	01/17/92
1,1-Dichloroethane	ND	3.0	1.0	01/17/92
2-Butanone	ND	20	1.0	01/17/92
cis-1,2-Dichloroethene	190	3.0	1.0	01/17/92
Chloroform	19	3.0	1.0	01/17/92
1,2-Dichloroethane	ND	3.0	1.0	01/17/92
Vinyl Acetate	ND	20	1.0	01/17/92
1,1,1-Trichloroethane	ND	3.0	1.0	01/17/92
Carbon Tetrachloride	ND	3.0	1.0	01/17/92
Benzene	7.0	3.0	1.0	01/17/92
Trichloroethene	5500	3.0	100	01/17/92
1,2-Dichloropropane	ND	5.0	1.0	01/17/92
Bromodichloromethane	ND	3.0	1.0	01/17/92
Dibromomethane	ND	10	1.0	01/17/92
2-Chloroethyl vinyl ether	ND	10	1.0	01/17/92
cis-1,3-Dichloropropene	ND	3.0	1.0	01/17/92
trans-1,3-Dichloropropene	ND	5.0	1.0	01/17/92
Ethyl methacrylate	ND	10	1.0	01/17/92
1,1,2-Trichloroethane	ND	5.0	1.0	01/17/92
Dibromochloromethane	ND	3.0	1.0	01/17/92
Bromoform	ND	5.0	1.0	01/17/92
4-Methyl-2-Pentanone	ND	20	1.0	01/17/92
Toluene	ND	3.0	1.0	01/17/92
2-Hexanone	ND	20	1.0	01/17/92
1,1,2,2-Tetrachloroethane	ND	3.0	1.0	01/17/92
Tetrachloroethene	1300	3.0	100	01/17/92
Chlorobenzene	ND	3.0	1.0	01/17/92
Ethylbenzene	ND	3.0	1.0	01/17/92
Xylene(total)	ND	3.0	1.0	01/17/92
Styrene	ND	3.0	1.0	01/17/92
cis-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92
1,2,3-Trichloropropane	ND	10	1.0	01/17/92
trans-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92

Notes and Definitions for this Report:

MPLE ID OW-04-09 FRACTION 09A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

ANALYST CL
FILE ID >2B918; >1V951
UNITS ug/L
BATCH ID *
COMMENTS * = VOA2-92-006; VOA1-92-010

Received: 01/16/92 Results by Sample

ıMPLE ID CW-04-10 FRACTION 10A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
N-Nitrosodimethylamine	ND	10	1.0	01/18/92
2-Picoline	ND	50	1.0	01/18/92
Methyl_methanesulfonate	ND	50	1.0	01/18/92
Ethyl methanesulfonate	ND	50	1.0	01/18/92
Phenol	ND	10	1.0	01/18/92
Aniline	ND	10	1.0	01/18/92
bis(2-chloroethyl) ether	ND	5.0	1.0	01/18/92
2-Chlorophenol	ND	10	1.0	01/18/92
1,3-Dichlorobenzene	ND	5.0	1.0	01/18/92
1,4-Dichlorobenzene	ND	5.0	1.0	01/18/92
Benzyl alcohol	ND	10	1.0	01/18/92
1,2-Dichlorobenzene	ND	5.0	1.0	01/18/92
2-Methylphenol	ND	10	1.0	01/18/92
bis(2chloroisopropyl)ether	ND	5.0	1.0	01/18/92
Acetophenone	ND	50	1.0	01/18/92
4-Methylphenol	ND	10	1.0	01/18/92
N-Nitroso-di-n-propylamine	ND	5.0	1.0	01/18/92
Hexachloroethane	ND	5.0	1.0	01/18/92
Nitrobenzene	ND	5.0	1.0	01/18/92
N-Nitrosopiperidine	ND	50	1.0	01/18/92
Isophorone	ND	5.0	1.0	01/18/92
2-Nitrophenol	ND	10	1.0	01/18/92
2,4-Dimethylphenol	ND	10	1.0	01/18/92
Benzoic acid	ND	50	1.0	01/18/92
bis(2-Chloroethoxy)methane	ND	10	1.0	01/18/92
a,a-Dimethylphenethylamine	ND	50	1.0	01/18/92
2,4-Dichlorophenol	ND	10	1.0	01/18/92
1,2,4-Trichlorobenzene	ND	5.0	1.0	01/18/92
Naphthalene	ND	5.0	1.0	01/18/92
2,6-Dichlorophenol	ND	50	1.0	01/18/92
4-Chloroaniline	ND	20	1.0	01/18/92
Hexachlorobutadiene	ND	5.0	1.0	01/18/92
N-Nitroso-di-n-butylamine	ND	50	1.0	01/18/92
4-Chloro-3-methylphenol	ND	10	1.0	01/18/92
2-Methylnaphthalene	ND	5.0	1.0	01/18/92
1,2,4,5-Tetrachlorobenzene	ND	50	1.0	01/18/92
Hexachlorocyclopentadiene	ND	5.0	1.0	01/18/92
2,4,6-Trichlorophenol	ND	10	1.0	01/18/92
2,4,5-Trichlorophenol	ND	10	1.0	01/18/92
2-Chloronaphthalene	ND	5.0	1.0	01/18/92
1-Chloronaphthalene	ND	50	1.0	01/18/92
2-Nitroaniline	ND	50	1.0	01/18/92
Dimethyl phthalate	ND	5.0	1.0	01/18/92
Acenaphthylene	ND	5.0	1.0	01/18/92
2,6-Dinitrotoluene	ND	5.0	1.0	01/18/92
3-Nitroaniline	ND	50	1.0	01/18/92
Acenaphthene	ND	5.0	1.0	01/18/92
2,4-Dinitrophenol	ND	50	1.0	01/18/92
4-Nitrophenol	ND	50	1.0	01/18/92
Dibenzofuran	ND	5.0	1.0	01/18/92

MPLE ID OW-04-10 FRACTION 10A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

Pentachlorobenzene	ND	50	1.0	01/18/92
2,4-Dinitrotoluene	ND	5.0	1.0	01/18/92
1-Naphthylamine	ND	50	1.0	01/18/92
2-Naphthylamine	ND	50	1.0	01/18/92
2,3,4,6-Tetrachlorophenol	ND	50	1.0	01/18/92
Diethylphthalate	ND	5.0	1.0	01/18/92
4-Chlorophenyl-phenylether	ND	5.0	1.0	01/18/92
Fluorene	ND	5.0	1.0	01/18/92
4-Nitroaniline	ND	50	1.0	01/18/92
4,6-Dinitro-2-methylphenol	ND	50	1.0	01/18/92
Diphenylamine	ND	50	1.0	01/18/92
N-Nitrosodiphenylamine	ND	10	1.0	01/18/92
Azobenzene	ND	5.0	1.0	01/18/92
4-Bromophenyl-phenylether	ND	5.0	1.0	01/18/92
Phenacetin	ND	50	1.0	01/18/92
Hexachlorobenzene	ND	5.0	1.0	01/18/92
4-Aminobiphenyl	ND	50	1.0	01/18/92
Pentachlorophenol	ND	30	1.0	01/18/92
Pronamide	ND	50	1.0	01/18/92
Phenanthrene	ND	5.0	1.0	01/18/92
Anthracene	ND	5.0	1.0	01/18/92
Di-n-butylphthalate	ND	5.0	1.0	01/18/92
Fluoranthene	ND	5.0	1.0	01/18/92
Benzidine	ND	50	1.0	01/18/92
Pyrene	ND	5.0	1.0	01/18/92
p-Dimethylaminoazobenzene	ND	50	1.0	01/18/92
Butylbenzylphthalate	ND	5.0	1.0	01/18/92
3,3'-Dichlorobenzidine	ND	20	1.0	01/18/92
Benzo(a)anthracene	ND	5.0	1.0	01/18/92
Chrysene	ND	5.0	1.0	01/18/92
bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	01/18/92
Di-n-octyl phthalate	ND	5.0	1.0	01/18/92
7,12-Dimethylbenz(a)anthrace	ND	50	1.0	01/18/92
Benzo(b)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(k)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(a)pyrene	ND	5.0	1.0	01/18/92
3-Methylcholanthrene	ND	50	1.0	01/18/92
Dibenz(a,j)acridine	ND	50	1.0	01/18/92
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0	01/18/92
Dibenzo(a,h)anthracene	ND	5.0	1.0	01/18/92
Benzo(g,h,i)perylene	ND	5.0	1.0	01/18/92

Notes and Definitions for this Report:

EXTRACTED 01/17/92
ANALYST TT
FILE ID >AE752
UNITS ug/L
BATCH ID 625-76
COMMENTS

Received: 01/16/92 Results by Sample

AMPLE ID OW-05-11 FRACTION 11A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	ND	20	1.0	01/17/92
Chloromethane	ND	10	1.0	01/17/92
Vinyl Chloride	ND	10	1.0	01/17/92
Bromomethane	ND	10	1.0	01/17/92
Chloroethane	ND	10	1.0	01/17/92
Trichlorofluoromethane	14	10	1.0	01/17/92
Ethanol	ND	20	1.0	01/17/92
1,1-Dichloroethene	150	3.0	1.0	01/17/92
Acrolein	ND	10	1.0	01/17/92
Acetone	ND	20	1.0	01/17/92
Iodomethane	ND	10	1.0	01/17/92
Carbon Disulfide	ND	5.0	1.0	01/17/92
Methylene chloride	6.0	5.0	1.0	01/17/92
Trans-1,2-Dichloroethene	ND	3.0	1.0	01/17/92
Acrylonitrile	ND	10	1.0	01/17/92
1,1-Dichloroethane	10	3.0	1.0	01/17/92
2-Butanone	ND	20	1.0	01/17/92
cis-1,2-Dichloroethene	560	3.0	1.0	01/17/92
Chloroform	34	3.0	1.0	01/17/92
1,2-Dichloroethane	ND	3.0	1.0	01/17/92
Vinyl Acetate	ND	20	1.0	01/17/92
1,1,1-Trichloroethane	ND	3.0	1.0	01/17/92
Carbon Tetrachloride	ND	3.0	1.0	01/17/92
Benzene	22	3.0	1.0	01/17/92
Trichloroethene	14000	3.0	100	01/17/92
1,2-Dichloropropane	ND	5.0	1.0	01/17/92
Bromodichloromethane	ND	3.0	1.0	01/17/92
Dibromomethane	ND	10	1.0	01/17/92
2-Chloroethyl vinyl ether	ND	10	1.0	01/17/92
cis-1,3-Dichloropropene	ND	3.0	1.0	01/17/92
trans-1,3-Dichloropropene	ND	5.0	1.0	01/17/92
Ethyl methacrylate	ND	10	1.0	01/17/92
1,1,2-Trichloroethane	ND	5.0	1.0	01/17/92
Dibromochloromethane	ND	3.0	1.0	01/17/92
Bromoform	ND	5.0	1.0	01/17/92
4-Methyl-2-Pentanone	ND	20	1.0	01/17/92
Toluene	ND	3.0	1.0	01/17/92
2-Hexanone	ND	20	1.0	01/17/92
1,1,2,2-Tetrachloroethane	ND	3.0	1.0	01/17/92
Tetrachloroethene	5000	3.0	100	01/17/92
Chlorobenzene	ND	3.0	1.0	01/17/92
Ethylbenzene	ND	3.0	1.0	01/17/92
Xylene(total)	ND	3.0	1.0	01/17/92
Styrene	ND	3.0	1.0	01/17/92
cis-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92
1,2,3-Trichloropropane	ND	10	1.0	01/17/92
trans-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92

Notes and Definitions for this Report:

'AMPLE ID OW-05-11 FRACTION 11A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

ANALYST CL
FILE ID >1V952; >2B919
UNITS ug/L
BATCH_ID *
COMMENTS * = VOA1-92-010; VOA2-92-006

Received: 01/16/92 Results by Sample

AMPLE ID OW-05-12 FRACTION 12A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
N-Nitrosodimethylamine	ND	10	1.0	01/18/92
2-Picoline	ND	50	1.0	01/18/92
Methyl_methanesulfonate	ND	50	1.0	01/18/92
Ethyl methanesulfonate	ND	50	1.0	01/18/92
Phenol	ND	10	1.0	01/18/92
Aniline	ND	10	1.0	01/18/92
bis(2-chloroethyl) ether	ND	5.0	1.0	01/18/92
2-Chlorophenol	ND	10	1.0	01/18/92
1,3-Dichlorobenzene	ND	5.0	1.0	01/18/92
1,4-Dichlorobenzene	ND	5.0	1.0	01/18/92
Benzyl alcohol	ND	10	1.0	01/18/92
1,2-Dichlorobenzene	ND	5.0	1.0	01/18/92
2-Methylphenol	ND	10	1.0	01/18/92
bis(2chloroisopropyl)ether	ND	5.0	1.0	01/18/92
Acetophenone	ND	50	1.0	01/18/92
4-Methylphenol	ND	10	1.0	01/18/92
N-Nitroso-di-n-propylamine	ND	5.0	1.0	01/18/92
Hexachloroethane	ND	5.0	1.0	01/18/92
Nitrobenzene	ND	5.0	1.0	01/18/92
N-Nitrosopiperidine	ND	50	1.0	01/18/92
Isophorone	ND	5.0	1.0	01/18/92
2-Nitrophenol	ND	10	1.0	01/18/92
2,4-Dimethylphenol	ND	10	1.0	01/18/92
Benzoic acid	ND	50	1.0	01/18/92
bis(2-Chloroethoxy)methane	ND	10	1.0	01/18/92
a,a-Dimethylphenethylamine	ND	50	1.0	01/18/92
2,4-Dichlorophenol	ND	10	1.0	01/18/92
1,2,4-Trichlorobenzene	ND	5.0	1.0	01/18/92
Naphthalene	ND	5.0	1.0	01/18/92
2,6-Dichlorophenol	ND	50	1.0	01/18/92
4-Chloroaniline	ND	20	1.0	01/18/92
Hexachlorobutadiene	ND	5.0	1.0	01/18/92
N-Nitroso-di-n-butylamine	ND	50	1.0	01/18/92
4-Chloro-3-methylphenol	ND	10	1.0	01/18/92
2-Methylnaphthalene	ND	5.0	1.0	01/18/92
1,2,4,5-Tetrachlorobenzene	ND	50	1.0	01/18/92
Hexachlorocyclopentadiene	ND	5.0	1.0	01/18/92
2,4,6-Trichlorophenol	ND	10	1.0	01/18/92
2,4,5-Trichlorophenol	ND	10	1.0	01/18/92
2-Chloronaphthalene	ND	5.0	1.0	01/18/92
1-Chloronaphthalene	ND	50	1.0	01/18/92
2-Nitroaniline	ND	50	1.0	01/18/92
Dimethyl phthalate	ND	5.0	1.0	01/18/92
Acenaphthylene	ND	5.0	1.0	01/18/92
2,6-Dinitrotoluene	ND	5.0	1.0	01/18/92
3-Nitroaniline	ND	50	1.0	01/18/92
Acenaphthene	ND	5.0	1.0	01/18/92
2,4-Dinitrophenol	ND	50	1.0	01/18/92
4-Nitrophenol	ND	50	1.0	01/18/92
Dibenzofuran	ND	5.0	1.0	01/18/92

MPLE ID OW-05-12 FRACTION 12A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

Pentachlorobenzene	ND	50	1.0	01/18/92
2,4-Dinitrotoluene	ND	5.0	1.0	01/18/92
1-Naphthylamine	ND	50	1.0	01/18/92
2-Naphthylamine	ND	50	1.0	01/18/92
2,3,4,6-Tetrachlorophenol	ND	50	1.0	01/18/92
Diethylphthalate	ND	5.0	1.0	01/18/92
4-Chlorophenyl-phenylether	ND	5.0	1.0	01/18/92
Fluorene	ND	5.0	1.0	01/18/92
4-Nitroaniline	ND	50	1.0	01/18/92
4,6-Dinitro-2-methylphenol	ND	50	1.0	01/18/92
Diphenylamine	ND	50	1.0	01/18/92
N-Nitrosodiphenylamine	ND	10	1.0	01/18/92
Azobenzene	ND	5.0	1.0	01/18/92
4-Bromophenyl-phenylether	ND	5.0	1.0	01/18/92
Phenacetin	ND	50	1.0	01/18/92
Hexachlorobenzene	ND	5.0	1.0	01/18/92
4-Aminobiphenyl	ND	50	1.0	01/18/92
Pentachlorophenol	ND	30	1.0	01/18/92
Pronamide	ND	50	1.0	01/18/92
Phenanthrene	ND	5.0	1.0	01/18/92
Anthracene	ND	5.0	1.0	01/18/92
Di-n-butylphthalate	ND	5.0	1.0	01/18/92
Fluoranthene	ND	5.0	1.0	01/18/92
Benzidine	ND	50	1.0	01/18/92
Pyrene	ND	5.0	1.0	01/18/92
p-Dimethylaminoazobenzene	ND	50	1.0	01/18/92
Butylbenzylphthalate	ND	5.0	1.0	01/18/92
3,3'-Dichlorobenzidine	ND	20	1.0	01/18/92
Benzo(a)anthracene	ND	5.0	1.0	01/18/92
Chrysene	ND	5.0	1.0	01/18/92
bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	01/18/92
Di-n-octyl phthalate	ND	5.0	1.0	01/18/92
7,12-Dimethylbenz(a)anthrace	ND	50	1.0	01/18/92
Benzo(b)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(k)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(a)pyrene	ND	5.0	1.0	01/18/92
3-Methylcholanthrene	ND	50	1.0	01/18/92
Dibenz(a,j)acridine	ND	50	1.0	01/18/92
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0	01/18/92
Dibenzo(a,h)anthracene	ND	5.0	1.0	01/18/92
Benzo(g,h,i)perylene	ND	5.0	1.0	01/18/92

Notes and Definitions for this Report:

EXTRACTED 01/17/92
ANALYST TT
FILE ID >AE756
UNITS ug/L
BATCH_ID 625-76
COMMENTS

Received: 01/16/92 Results by Sample

MPLE ID OW-06-13 FRACTION 13A TEST CODE 624 NAME Volatiles in Water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	ND	20	1.0	01/17/92
Chloromethane	ND	10	1.0	01/17/92
Vinyl Chloride	ND	10	1.0	01/17/92
Bromomethane	ND	10	1.0	01/17/92
Chloroethane	ND	10	1.0	01/17/92
Trichlorofluoromethane	ND	10	1.0	01/17/92
Ethanol	ND	20	1.0	01/17/92
1,1-Dichloroethene	130	3.0	1.0	01/17/92
Acrolein	ND	10	1.0	01/17/92
Acetone	ND	20	1.0	01/17/92
Iodomethane	ND	10	1.0	01/17/92
Carbon Disulfide	ND	5.0	1.0	01/17/92
Methylene chloride	ND	5.0	1.0	01/17/92
Trans-1,2-Dichloroethene	ND	3.0	1.0	01/17/92
Acrylonitrile	ND	10	1.0	01/17/92
1,1-Dichloroethane	11	3.0	1.0	01/17/92
2-Butanone	ND	20	1.0	01/17/92
cis-1,2-Dichloroethene	300	3.0	1.0	01/17/92
Chloroform	69	3.0	1.0	01/17/92
1,2-Dichloroethane	ND	3.0	1.0	01/17/92
Vinyl Acetate	ND	20	1.0	01/17/92
1,1,1-Trichloroethane	ND	3.0	1.0	01/17/92
Carbon Tetrachloride	ND	3.0	1.0	01/17/92
Benzene	28	3.0	1.0	01/17/92
Trichloroethene	21000	3.0	100	01/17/92
1,2-Dichloropropane	ND	5.0	1.0	01/17/92
Bromodichloromethane	ND	3.0	1.0	01/17/92
Dibromomethane	ND	10	1.0	01/17/92
2-Chloroethyl vinyl ether	ND	10	1.0	01/17/92
cis-1,3-Dichloropropene	ND	3.0	1.0	01/17/92
trans-1,3-Dichloropropene	ND	5.0	1.0	01/17/92
Ethyl methacrylate	ND	10	1.0	01/17/92
1,1,2-Trichloroethane	ND	5.0	1.0	01/17/92
Dibromochloromethane	ND	3.0	1.0	01/17/92
Bromoform	ND	5.0	1.0	01/17/92
4-Methyl-2-Pentanone	ND	20	1.0	01/17/92
Toluene	ND	3.0	1.0	01/17/92
2-Hexanone	ND	20	1.0	01/17/92
1,1,2,2-Tetrachloroethane	ND	3.0	1.0	01/17/92
Tetrachloroethene	9400	3.0	100	01/17/92
Chlorobenzene	ND	3.0	1.0	01/17/92
Ethylbenzene	ND	3.0	1.0	01/17/92
Xylene(total)	ND	3.0	1.0	01/17/92
Styrene	ND	3.0	1.0	01/17/92
cis-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92
1,2,3-Trichloropropane	ND	10	1.0	01/17/92
trans-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92

Notes and Definitions for this Report:

AMPLE ID OW-06-13 FRACTION 13A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

ANALYST CL
FILE ID >2B920; >1V953
UNITS ug/L
BATCH_ID *
COMMENTS * = VOA2-92-006; VOA1-92-010

Received: 01/16/92 Results by Sample

SAMPLE ID OW-06-14 FRACTION 14A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
N-Nitrosodimethylamine	ND	10	1.0	01/18/92
2-Picoline	ND	50	1.0	01/18/92
Methyl_methanesulfonate	ND	50	1.0	01/18/92
Ethyl methanesulfonate	ND	50	1.0	01/18/92
Phenol	ND	10	1.0	01/18/92
Aniline	ND	10	1.0	01/18/92
bis(2-chloroethyl) ether	ND	5.0	1.0	01/18/92
2-Chlorophenol	ND	10	1.0	01/18/92
1,3-Dichlorobenzene	ND	5.0	1.0	01/18/92
1,4-Dichlorobenzene	ND	5.0	1.0	01/18/92
Benzyl alcohol	ND	10	1.0	01/18/92
1,2-Dichlorobenzene	5.0	5.0	1.0	01/18/92
2-Methylphenol	ND	10	1.0	01/18/92
bis(2chloroisopropyl)ether	ND	5.0	1.0	01/18/92
Acetophenone	ND	50	1.0	01/18/92
4-Methylphenol	ND	10	1.0	01/18/92
N-Nitroso-di-n-propylamine	ND	5.0	1.0	01/18/92
Hexachloroethane	ND	5.0	1.0	01/18/92
Nitrobenzene	ND	5.0	1.0	01/18/92
N-Nitrosopiperidine	ND	50	1.0	01/18/92
Isophorone	ND	5.0	1.0	01/18/92
2-Nitrophenol	ND	10	1.0	01/18/92
2,4-Dimethylphenol	ND	10	1.0	01/18/92
Benzoic acid	ND	50	1.0	01/18/92
bis(2-Chloroethoxy)methane	ND	10	1.0	01/18/92
a,a-Dimethylphenethylamine	ND	50	1.0	01/18/92
2,4-Dichlorophenol	ND	10	1.0	01/18/92
1,2,4-Trichlorobenzene	ND	5.0	1.0	01/18/92
Naphthalene	ND	5.0	1.0	01/18/92
2,6-Dichlorophenol	ND	50	1.0	01/18/92
4-Chloroaniline	ND	20	1.0	01/18/92
Hexachlorobutadiene	ND	5.0	1.0	01/18/92
N-Nitroso-di-n-butylamine	ND	50	1.0	01/18/92
4-Chloro-3-methylphenol	ND	10	1.0	01/18/92
2-Methylnaphthalene	ND	5.0	1.0	01/18/92
1,2,4,5-Tetrachlorobenzene	ND	50	1.0	01/18/92
Hexachlorocyclopentadiene	ND	5.0	1.0	01/18/92
2,4,6-Trichlorophenol	ND	10	1.0	01/18/92
2,4,5-Trichlorophenol	ND	10	1.0	01/18/92
2-Chloronaphthalene	ND	5.0	1.0	01/18/92
1-Chloronaphthalene	ND	50	1.0	01/18/92
2-Nitroaniline	ND	50	1.0	01/18/92
Dimethyl phthalate	ND	5.0	1.0	01/18/92
Acenaphthylene	ND	5.0	1.0	01/18/92
2,6-Dinitrotoluene	ND	5.0	1.0	01/18/92
3-Nitroaniline	ND	50	1.0	01/18/92
Acenaphthene	ND	5.0	1.0	01/18/92
2,4-Dinitrophenol	ND	50	1.0	01/18/92
4-Nitrophenol	ND	50	1.0	01/18/92
Dibenzofuran	ND	5.0	1.0	01/18/92

SAMPLE ID OW-06-14 FRACTION 14A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

Pentachlorobenzene	ND	50	1.0	01/18/92
2,4-Dinitrotoluene	ND	5.0	1.0	01/18/92
1-Naphthylamine	ND	50	1.0	01/18/92
2-Naphthylamine	ND	50	1.0	01/18/92
2,3,4,6-Tetrachlorophenol	ND	50	1.0	01/18/92
Diethylphthalate	ND	5.0	1.0	01/18/92
4-Chlorophenyl-phenylether	ND	5.0	1.0	01/18/92
Fluorene	ND	5.0	1.0	01/18/92
4-Nitroaniline	ND	50	1.0	01/18/92
4,6-Dinitro-2-methylphenol	ND	50	1.0	01/18/92
Diphenylamine	ND	50	1.0	01/18/92
N-Nitrosodiphenylamine	ND	10	1.0	01/18/92
Azobenzene	ND	5.0	1.0	01/18/92
4-Bromophenyl-phenylether	ND	5.0	1.0	01/18/92
Phenacetin	ND	50	1.0	01/18/92
Hexachlorobenzene	ND	5.0	1.0	01/18/92
4-Aminobiphenyl	ND	50	1.0	01/18/92
Pentachlorophenol	ND	30	1.0	01/18/92
Pronamide	ND	50	1.0	01/18/92
Phenanthrene	ND	5.0	1.0	01/18/92
Anthracene	ND	5.0	1.0	01/18/92
Di-n-butylphthalate	ND	5.0	1.0	01/18/92
Fluoranthene	ND	5.0	1.0	01/18/92
Benzidine	ND	50	1.0	01/18/92
Pyrene	ND	5.0	1.0	01/18/92
p-Dimethylaminoazobenzene	ND	50	1.0	01/18/92
Butylbenzylphthalate	ND	5.0	1.0	01/18/92
3,3'-Dichlorobenzidine	ND	20	1.0	01/18/92
Benzo(a)anthracene	ND	5.0	1.0	01/18/92
Chrysene	ND	5.0	1.0	01/18/92
bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	01/18/92
Di-n-octyl phthalate	ND	5.0	1.0	01/18/92
7,12-Dimethylbenz(a)anthrace	ND	50	1.0	01/18/92
Benzo(b)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(k)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(a)pyrene	ND	5.0	1.0	01/18/92
3-Methylcholanthrene	ND	50	1.0	01/18/92
Dibenz(a,j)acridine	ND	50	1.0	01/18/92
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0	01/18/92
Dibenzo(a,h)anthracene	ND	5.0	1.0	01/18/92
Benzo(g,h,i)perylene	ND	5.0	1.0	01/18/92

Notes and Definitions for this Report:

EXTRACTED 01/17/92
ANALYST TT
FILE ID >AE753
UNITS ug/L
BATCH ID 625-76
COMMENTS

Received: 01/16/92 Results by Sample

AMPLE ID OW-00-15 FRACTION 15A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	ND	20	100	01/17/92
Chloromethane	ND	10	100	01/17/92
Vinyl Chloride	ND	10	100	01/17/92
Bromomethane	ND	10	100	01/17/92
Chloroethane	ND	10	100	01/17/92
Trichlorofluoromethane	ND	10	100	01/17/92
Ethanol	ND	20	100	01/17/92
1,1-Dichloroethene	ND	3.0	100	01/17/92
Acrolein	ND	10	100	01/17/92
Acetone	ND	20	100	01/17/92
Iodomethane	ND	10	100	01/17/92
Carbon Disulfide	ND	5.0	100	01/17/92
Methylene chloride	ND	5.0	100	01/17/92
Trans-1,2-Dichloroethene	ND	3.0	100	01/17/92
Acrylonitrile	ND	10	100	01/17/92
1,1-Dichloroethane	ND	3.0	100	01/17/92
2-Butanone	ND	20	100	01/17/92
cis-1,2-Dichloroethene	ND	3.0	100	01/17/92
Chloroform	ND	3.0	100	01/17/92
1,2-Dichloroethane	ND	3.0	100	01/17/92
Vinyl Acetate	ND	20	100	01/17/92
1,1,1-Trichloroethane	ND	3.0	100	01/17/92
Carbon Tetrachloride	ND	3.0	100	01/17/92
Benzene	ND	3.0	100	01/17/92
Trichloroethene	ND	3.0	100	01/17/92
1,2-Dichloropropane	ND	5.0	100	01/17/92
Bromodichloromethane	ND	3.0	100	01/17/92
Dibromomethane	ND	10	100	01/17/92
2-Chloroethyl vinyl ether	ND	10	100	01/17/92
cis-1,3-Dichloropropene	ND	3.0	100	01/17/92
trans-1,3-Dichloropropene	ND	5.0	100	01/17/92
Ethyl methacrylate	ND	10	100	01/17/92
1,1,2-Trichloroethane	ND	5.0	100	01/17/92
Dibromochloromethane	ND	3.0	100	01/17/92
Bromoform	ND	5.0	100	01/17/92
4-Methyl-2-Pentanone	ND	20	100	01/17/92
Toluene	ND	3.0	100	01/17/92
2-Hexanone	ND	20	100	01/17/92
1,1,2,2-Tetrachloroethane	ND	3.0	100	01/17/92
Tetrachloroethene	ND	3.0	100	01/17/92
Chlorobenzene	ND	3.0	100	01/17/92
Ethylbenzene	ND	3.0	100	01/17/92
Xylene(total)	ND	3.0	100	01/17/92
Styrene	ND	3.0	100	01/17/92
cis-1,4-Dichloro-2-Butene	ND	10	100	01/17/92
1,2,3-Trichloropropane	ND	10	100	01/17/92
trans-1,4-Dichloro-2-Butene	ND	10	100	01/17/92

Notes and Definitions for this Report:

AMPLE ID CW-00-15 FRACTION 15A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

ANALYST CL
FILE ID >2B921
UNITS ug/L
BATCH ID VOA-92-006
COMMENTS

Received: 01/16/92 Results by Sample

MPLE ID OW-00-16 FRACTION 16A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
N-Nitrosodimethylamine	ND	10	1.0	01/18/92
2-Picoline	ND	50	1.0	01/18/92
Methyl_methanesulfonate	ND	50	1.0	01/18/92
Ethyl methanesulfonate	ND	50	1.0	01/18/92
Phenol	ND	10	1.0	01/18/92
Aniline	ND	10	1.0	01/18/92
bis(2-chloroethyl) ether	ND	5.0	1.0	01/18/92
2-Chlorophenol	ND	10	1.0	01/18/92
1,3-Dichlorobenzene	ND	5.0	1.0	01/18/92
1,4-Dichlorobenzene	ND	5.0	1.0	01/18/92
Benzyl alcohol	ND	10	1.0	01/18/92
1,2-Dichlorobenzene	ND	5.0	1.0	01/18/92
2-Methylphenol	ND	10	1.0	01/18/92
bis(2chloroisopropyl)ether	ND	5.0	1.0	01/18/92
Acetophenone	ND	50	1.0	01/18/92
4-Methylphenol	ND	10	1.0	01/18/92
N-Nitroso-di-n-propylamine	ND	5.0	1.0	01/18/92
Hexachloroethane	ND	5.0	1.0	01/18/92
Nitrobenzene	ND	5.0	1.0	01/18/92
N-Nitrosopiperidine	ND	50	1.0	01/18/92
Isophorone	ND	5.0	1.0	01/18/92
2-Nitrophenol	ND	10	1.0	01/18/92
2,4-Dimethylphenol	ND	10	1.0	01/18/92
Benzoic acid	ND	50	1.0	01/18/92
bis(2-Chloroethoxy)methane	ND	10	1.0	01/18/92
a,a-Dimethylphenethylamine	ND	50	1.0	01/18/92
2,4-Dichlorophenol	ND	10	1.0	01/18/92
1,2,4-Trichlorobenzene	ND	5.0	1.0	01/18/92
Naphthalene	ND	5.0	1.0	01/18/92
2,6-Dichlorophenol	ND	50	1.0	01/18/92
4-Chloroaniline	ND	20	1.0	01/18/92
Hexachlorobutadiene	ND	5.0	1.0	01/18/92
N-Nitroso-di-n-butylamine	ND	50	1.0	01/18/92
4-Chloro-3-methylphenol	ND	10	1.0	01/18/92
2-Methylnaphthalene	ND	5.0	1.0	01/18/92
1,2,4,5-Tetrachlorobenzene	ND	50	1.0	01/18/92
Hexachlorocyclopentadiene	ND	5.0	1.0	01/18/92
2,4,6-Trichlorophenol	ND	10	1.0	01/18/92
2,4,5-Trichlorophenol	ND	10	1.0	01/18/92
2-Chloronaphthalene	ND	5.0	1.0	01/18/92
1-Chloronaphthalene	ND	50	1.0	01/18/92
2-Nitroaniline	ND	50	1.0	01/18/92
Dimethyl phthalate	ND	5.0	1.0	01/18/92
Acenaphthylene	ND	5.0	1.0	01/18/92
2,6-Dinitrotoluene	ND	5.0	1.0	01/18/92
3-Nitroaniline	ND	50	1.0	01/18/92
Acenaphthene	ND	5.0	1.0	01/18/92
2,4-Dinitrophenol	ND	50	1.0	01/18/92
4-Nitrophenol	ND	50	1.0	01/18/92
Dibenzofuran	ND	5.0	1.0	01/18/92

MPLE ID OW-00-16 FRACTION 16A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

Pentachlorobenzene	ND	50	1.0	01/18/92
2,4-Dinitrotoluene	ND	5.0	1.0	01/18/92
1-Naphthylamine	ND	50	1.0	01/18/92
2-Naphthylamine	ND	50	1.0	01/18/92
2,3,4,6-Tetrachlorophenol	ND	50	1.0	01/18/92
Diethylphthalate	ND	5.0	1.0	01/18/92
4-Chlorophenyl-phenylether	ND	5.0	1.0	01/18/92
Fluorene	ND	5.0	1.0	01/18/92
4-Nitroaniline	ND	50	1.0	01/18/92
4,6-Dinitro-2-methylphenol	ND	50	1.0	01/18/92
Diphenylamine	ND	50	1.0	01/18/92
N-Nitrosodiphenylamine	ND	10	1.0	01/18/92
Azobenzene	ND	5.0	1.0	01/18/92
4-Bromophenyl-phenylether	ND	5.0	1.0	01/18/92
Phenacetin	ND	50	1.0	01/18/92
Hexachlorobenzene	ND	5.0	1.0	01/18/92
4-Aminobiphenyl	ND	50	1.0	01/18/92
Pentachlorophenol	ND	30	1.0	01/18/92
Pronamide	ND	50	1.0	01/18/92
Phenanthrene	ND	5.0	1.0	01/18/92
Anthracene	ND	5.0	1.0	01/18/92
Di-n-butylphthalate	ND	5.0	1.0	01/18/92
Fluoranthene	ND	5.0	1.0	01/18/92
Benzidine	ND	50	1.0	01/18/92
Pyrene	ND	5.0	1.0	01/18/92
p-Dimethylaminoazobenzene	ND	50	1.0	01/18/92
Butylbenzylphthalate	ND	5.0	1.0	01/18/92
3,3'-Dichlorobenzidine	ND	20	1.0	01/18/92
Benzo(a)anthracene	ND	5.0	1.0	01/18/92
Chrysene	ND	5.0	1.0	01/18/92
bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	01/18/92
Di-n-octyl phthalate	ND	5.0	1.0	01/18/92
7,12-Dimethylbenz(a)anthrace	ND	50	1.0	01/18/92
Benzo(b)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(k)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(a)pyrene	ND	5.0	1.0	01/18/92
3-Methylcholanthrene	ND	50	1.0	01/18/92
Dibenz(a,j)acridine	ND	50	1.0	01/18/92
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0	01/18/92
Dibenzo(a,h)anthracene	ND	5.0	1.0	01/18/92
Benzo(g,h,i)perylene	ND	5.0	1.0	01/18/92

Notes and Definitions for this Report:

EXTRACTED 01/17/92
ANALYST TT
FILE ID >AE754
UNITS ug/L
BATCH ID 625-76
COMMENTS

QC SUMMARY DATA SHEETS

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET
EPA METHOD 8240

Lab Sample No.: 011792BLANK
Client Sample No.: 011792BLANK

Batch Number: VOA1-92-010
Client: ETAL

Data File: >1V946
Matrix: WATER

Sample wt/vol: 5.0 mL
Date Received: 00/00/00

Analyst: CORA
Date Analyzed: 01/17/92

Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
75-71-8	Dichlorodifluoromethane	20.	U
74-87-3	Chloromethane	10.	U
75-01-4	Vinyl Chloride	10.	U
74-83-9	Bromomethane	10.	U
75-00-3	Chloroethane	10.	U
75-69-4	Trichlorofluoromethane	10.	U
64-17-5	Ethanol	20.	U
75-35-4	1,1-Dichloroethene	3.	U
107-02-8	Acrolein	10.	U
67-64-1	Acetone	20.	U
74-88-4	Iodomethane	10.	U
75-15-0	Carbon Disulfide	5.	U
75-09-2	Methylene Chloride	5.	U
156-60-5	trans-1,2-Dichloroethene	3.	U
107-13-1	Acrylonitrile	10.	U
75-34-3	1,1-Dichloroethane	3.	U
78-93-3	2-Butanone	20.	U
156-59-2	cis-1,2-Dichloroethene	3.	U
67-66-3	Chloroform	3.	U
107-06-2	1,2-Dichloroethane	3.	U
108-05-4	Vinyl Acetate	20.	U
71-55-6	1,1,1-Trichloroethane	3.	U
56-23-5	Carbon Tetrachloride	3.	U
71-43-2	Benzene	3.	U
79-01-6	Trichloroethene	3.	U
78-87-5	1,2-Dichloropropane	5.	U
75-27-4	Bromodichloromethane	3.	U
74-95-3	Dibromomethane	10.	U
110-75-8	2-Chloroethylvinyl ether	10.	U
10061-01-5	cis-1,3-Dichloropropene	3.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U
97-63-2	Ethyl Methacrylate	10.	U
79-00-5	1,1,2-Trichloroethane	5.	U

U = Compound undetected at the listed practical quantitation limit.
@ = Compound was found in sample. B = Compound was found in blank.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET
EPA METHOD 8240

ab Sample No.: 011792BLANK

Client Sample No.: 011792BLANK

Batch Number: VOA1-92-010

Client: ETAL

ata File: >1V946

Matrix: WATER

ample wt/vol: 5.0 mL

Date Received: 00/00/00

Analyst: CORA

Date Analyzed: 01/17/92

ilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
124-48-1	Dibromochloromethane	3.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-pentanone	20.	U
108-88-3	Toluene	3.	U
591-78-6	2-Hexanone	20.	U
79-34-5	1,1,2,2-Tetrachloroethane	3.	U
127-18-4	Tetrachloroethene	3.	U
108-90-7	Chlorobenzene	3.	U
100-41-4	Ethylbenzene	3.	U
95-47-6	Xylene (total)	3.	U
100-42-5	Styrene	3.	U
1476-11-5	cis-1,4-Dichloro-2-Butene	10.	U
96-18-4	1,2,3-Trichloropropane	10.	U
110-57-6	trans-1,4-Dichloro-2-Butene	10.	U

U = Compound undetected at the listed practical quantitation limit.
@ = Compound was found in sample. B = Compound was found in blank.

LABORATORY CONTROL WATER SAMPLE SPIKE/SPIKE DUPLICATE RECOVERY

ıb Name:=== ETAL ===

Lab Sample No.: 011792BLANK

Date Analyzed: 01/17/92

Batch Number: VOA1-92-010

ıalyst: CORA

NCR Number:

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.00	0.00	43.00	86	61-145
Trichloroethene	50.00	0.00	46.00	92	71-120
Benzene	50.00	0.00	47.00	94	76-127
Toluene	50.00	0.00	49.00	97	76-125
Chlorobenzene	50.00	0.00	45.00	90	75-130

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.00	39.00	78	9	14	61-145
Trichloroethene	50.00	49.00	98	6	14	71-120
Benzene	50.00	47.00	94	0	11	76-127
Toluene	50.00	53.00	106	8	13	76-125
Chlorobenzene	50.00	47.00	93	3	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

Values outside of qc limits

ıPD: 0 out of 5 outside limits
pike Recovery: 0 out of 10 outside limits

ıOMMENTS: _____

2A
WATER VOLATILE SURROGATE RECOVERY

ab Name:=== ETAL ===

Date Analyzed: 1/17/92 Batch Number: VOA1-92-010

nalyst: CORA NCR Number:

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	011792BLAN	109	105	97		0
02	LCS	100	103	95		0
03	01-040-01A	90	113	37 *		1
04	01-040-03A	102	99	82		0
05	01-040-05A	108	105	91		0
06	01-040-07A	103	103	92		0
07	01-040-09A	100	102	90		0
08	01-040-11A	108	111	97		0
09	01-040-13A	107	109	94		0
10	LCSD	105	110	107		0
11	01-040-01A	102	101	100	1:100	0
12	01-040-03A	107	105	104	1:100	0
13	01-040-05A	109	104	106	1:100	0
14	01-040-07A	104	103	100	1:100	0
15						
16						
17						
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20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

		QC LIMITS
S1 (TOL)	= Toluene-d8	(88-110)
S2 (BFB)	= Bromofluorobenzene	(86-115)
S3 (DCE)	= 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

FORM II VOA-1 1/87 Rev.

BPACC01146

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET
EPA METHOD 8240

ab Sample No.: 011892BLANK
Client Sample No.: 011892BLANK

Batch Number: VOA1-92-011
Client: ETAL

ata File: >1V964
Matrix: WATER

ample wt/vol: 5.0 mL
Date Received: 00/00/00

Analyst: THIZAR
Date Analyzed: 01/18/92

ilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
75-71-8	Dichlorodifluoromethane	20.	U
74-87-3	Chloromethane	10.	U
75-01-4	Vinyl Chloride	10.	U
74-83-9	Bromomethane	10.	U
75-00-3	Chloroethane	10.	U
75-69-4	Trichlorofluoromethane	10.	U
64-17-5	Ethanol	20.	U
75-35-4	1,1-Dichloroethene	3.	U
107-02-8	Acrolein	10.	U
67-64-1	Acetone	20.	U
74-88-4	Iodomethane	10.	U
75-15-0	Carbon Disulfide	5.	U
75-09-2	Methylene Chloride	7.	@
156-60-5	trans-1,2-Dichloroethene	3.	U
107-13-1	Acrylonitrile	10.	U
75-34-3	1,1-Dichloroethane	3.	U
78-93-3	2-Butanone	20.	U
156-59-2	cis-1,2-Dichloroethene	3.	U
67-66-3	Chloroform	3.	U
107-06-2	1,2-Dichloroethane	3.	U
108-05-4	Vinyl Acetate	20.	U
71-55-6	1,1,1-Trichloroethane	3.	U
56-23-5	Carbon Tetrachloride	3.	U
71-43-2	Benzene	3.	U
79-01-6	Trichloroethene	3.	U
78-87-5	1,2-Dichloropropane	5.	U
75-27-4	Bromodichloromethane	3.	U
74-95-3	Dibromomethane	10.	U
110-75-8	2-Chloroethylvinyl ether	10.	U
10061-01-5	cis-1,3-Dichloropropene	3.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U
97-63-2	Ethyl Methacrylate	10.	U
79-00-5	1,1,2-Trichloroethane	5.	U

U = Compound undetected at the listed practical quantitation limit.
@ = Compound was found in sample. B = Compound was found in blank.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET
EPA METHOD 8240

ab Sample No.: 011892BLANK
Client Sample No.: 011892BLANK

Batch Number: VOA1-92-011
Client: ETAL

ata File: >1V964
Matrix: WATER

Sample wt/vol: 5.0 mL
Date Received: 00/00/00

..nalyst: THIZAR
Date Analyzed: 01/18/92

ilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
124-48-1	Dibromochloromethane	3.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-pentanone	20.	U
108-88-3	Toluene	3.	U
591-78-6	2-Hexanone	20.	U
79-34-5	1,1,2,2-Tetrachloroethane	3.	U
127-18-4	Tetrachloroethene	3.	U
108-90-7	Chlorobenzene	3.	U
100-41-4	Ethylbenzene	3.	U
95-47-6	Xylene (total)	3.	U
100-42-5	Styrene	3.	U
1476-11-5	cis-1,4-Dichloro-2-Butene	10.	U
96-18-4	1,2,3-Trichloropropane	10.	U
110-57-6	trans-1,4-Dichloro-2-Butene	10.	U

U = Compound undetected at the listed practical quantitation limit.
@ = Compound was found in sample. B = Compound was found in blank.

LABORATORY CONTROL WATER SAMPLE SPIKE AND SPIKE DUPLICATE RECOVERY

Lab Name:=== ETAL === Lab Sample No.: 011892BLANK

Date Analyzed: 1/18/92 Batch Number: VOA1-92-011

Analyst: CORA NCR Number:

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.00	0.00	39.00	78	61-145
Trichloroethene	50.00	0.00	52.00	103	71-120
Benzene	50.00	0.00	53.00	105	76-127
Toluene	50.00	0.00	57.00	113	76-125
Chlorobenzene	50.00	0.00	51.00	101	75-130

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.00	40.00	79	1	14	61-145
Trichloroethene	50.00	47.00	94	9	14	71-120
Benzene	50.00	52.00	104	0	11	76-127
Toluene	50.00	56.00	112	0	13	76-125
Chlorobenzene	50.00	50.00	99	2	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

FORM III VOA-1 1/87 Rev.

2A
WATER VOLATILE SURROGATE RECOVERY

ab Name:=== ETAL ===

Date Analyzed: 01/18/92 Batch Number: VOA1-92-011

nalyst: THIZAR NCR Number:

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	011892BLAN	104	104	94		0
02	LCS	106	103	92		0
03	LCSD	97	94	96		0
04	01-040-01A	99	100	97	10,000	0
05	01-040-15A	106	103	85	1:50	0
06						
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	QC LIMITS
S1 (TOL) = Toluene-d8	(88-110)
S2 (BFB) = Bromofluorobenzene	(86-115)
S3 (DCE) = 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

FORM II VOA-1 1/87 Rev.

BPACC01150

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET
EPA METHOD 8240

Lab Sample No.: 011892BLANK
Client Sample No.: 011892BLANK

Batch Number: VOA2-92-006
Client: ETAL

Data File: >2B910
Matrix: WATER

Sample wt/vol: 5.0 mL
Date Received: 00/00/00

Analyst: CORA
Date Analyzed: 01/17/92

Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
75-71-8	Dichlorodifluoromethane	20.	U
74-87-3	Chloromethane	10.	U
75-01-4	Vinyl Chloride	10.	U
74-83-9	Bromomethane	10.	U
75-00-3	Chloroethane	10.	U
75-69-4	Trichlorofluoromethane	10.	U
64-17-5	Ethanol	20.	U
75-35-4	1,1-Dichloroethene	3.	U
107-02-8	Acrolein	10.	U
67-64-1	Acetone	20.	U
74-88-4	Iodomethane	10.	U
75-15-0	Carbon Disulfide	5.	U
75-09-2	Methylene Chloride	5.	U
156-60-5	trans-1,2-Dichloroethene	3.	U
107-13-1	Acrylonitrile	10.	U
75-34-3	1,1-Dichloroethane	3.	U
78-93-3	2-Butanone	20.	U
156-59-2	cis-1,2-Dichloroethene	3.	U
67-66-3	Chloroform	3.	U
107-06-2	1,2-Dichloroethane	3.	U
108-05-4	Vinyl Acetate	20.	U
71-55-6	1,1,1-Trichloroethane	3.	U
56-23-5	Carbon Tetrachloride	3.	U
71-43-2	Benzene	3.	U
79-01-6	Trichloroethene	3.	U
78-87-5	1,2-Dichloropropane	5.	U
75-27-4	Bromodichloromethane	3.	U
74-95-3	Dibromomethane	10.	U
110-75-8	2-Chloroethylvinyl ether	10.	U
10061-01-5	cis-1,3-Dichloropropene	3.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U
97-63-2	Ethyl Methacrylate	10.	U
79-00-5	1,1,2-Trichloroethane	5.	U

U = Compound undetected at the listed practical quantitation limit.
@ = Compound was found in sample. B = Compound was found in blank.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET
EPA METHOD 8240

Lab Sample No.: 011892BLANK

Client Sample No.: 011892BLANK

Batch Number: VOA2-92-006

Client: ETAL

Data File: >2B910

Matrix: WATER

Sample wt/vol: 5.0 mL

Date Received: 00/00/00

Analyst: CORA

Date Analyzed: 01/17/92

Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
124-48-1	Dibromochloromethane	3.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-pentanone	20.	U
108-88-3	Toluene	3.	U
591-78-6	2-Hexanone	20.	U
79-34-5	1,1,2,2-Tetrachloroethane	3.	U
127-18-4	Tetrachloroethene	3.	U
108-90-7	Chlorobenzene	3.	U
100-41-4	Ethylbenzene	3.	U
95-47-6	Xylene (total)	3.	U
100-42-5	Styrene	3.	U
1476-11-5	cis-1,4-Dichloro-2-Butene	10.	U
96-18-4	1,2,3-Trichloropropane	10.	U
110-57-6	trans-1,4-Dichloro-2-Butene	10.	U

U = Compound undetected at the listed practical quantitation limit.
@ = Compound was found in sample. B = Compound was found in blank.

LABORATORY CONTROL WATER SAMPLE SPIKE/SPIKE DUPLICATE RECOVERY

Lab Name:=== ETAL ===

Lab Sample No.: 011892BLANK

Date Analyzed: 01/17/92

Batch Number: VOA2-92-006

Analyst: CORA

NCR Number:

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.00	0.00	41.00	82	61-145
Trichloroethene	50.00	0.00	48.00	95	71-120
Benzene	50.00	0.00	47.00	94	76-127
Toluene	50.00	0.00	47.00	94	76-125
Chlorobenzene	50.00	0.00	48.00	96	75-130

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.00	44.00	88	7	14	61-145
Trichloroethene	50.00	46.00	91	4	14	71-120
Benzene	50.00	44.00	87	7	11	76-127
Toluene	50.00	45.00	90	4	13	76-125
Chlorobenzene	50.00	46.00	92	4	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

2A
WATER VOLATILE SURROGATE RECOVERY

Lab Name:=== ETAL ===

Date Analyzed: 1/17/92 Batch Number: VOA2-92-006

Analyst: CORA NCR Number:

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	011892BLAN	96	87	106		0
02	LCS	99	89	103		0
03	LCSD	100	89	108		0
04	01-040-09A	99	89	113	1:100	0
05	01-040-11A	97	86	111	1:100	0
06	01-040-13A	96	87	112	1:100	0
07	01-040-15A	96	89	110	1:100	0
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	QC LIMITS
S1 (TOL) = Toluene-d8	(88-110)
S2 (BFB) = Bromofluorobenzene	(86-115)
S3 (DCE) = 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

FORM II VOA-1 1/87 Rev.

EPA METHOD 8270

Lab Sample No.: 01040-LMB

Client Sample No.: CONTROL SAMPLE

Batch Number: 025-70

Client: SIMON-EEI

Data File: [illegible]

Matrix: WATER

Sample Wt/Vol: 1000 mL

Date Received: 01/10/91

Dilution Factor: 1.0

Date Extracted: 01/17/92

Analyst: [illegible]

Date Analyzed: 01/18/92

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	U
62-75-9	N-Nitrosodimethylamine	10.	U
109-06-8	2-Picoline	50.	U
66-27-3	Methyl methanesulfonate	50.	U
62-50-0	Ethyl methanesulfonate	50.	U
108-95-2	Phenol	10.	U
62-53-3	Aniline	10.	U
111-44-4	bis(2-Chloroethyl)Ether	5.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	5.	U
106-46-7	1,4-Dichlorobenzene	5.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	5.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	5.	U
98-86-2	Acetophenone	50.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	5.	U
67-72-1	Hexachloroethane	5.	U
98-95-3	Nitrobenzene	5.	U
100-75-4	N-Nitrosopiperidine	50.	U
78-59-1	Isophorone	5.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
122-09-8	a,a-Dimethylphenethylamine	50.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	5.	U
91-20-3	Naphthalene	5.	U
87-65-0	2,6-Dichlorophenol	50.	U
106-47-8	4-Chloroaniline	20.	U
87-68-3	Hexachlorobutadiene	5.	U
924-16-3	N-Nitroso-di-n-butylamine	50.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	5.	U
95-94-3	1,2,4,5-Tetrachlorobenzene	50.	U
77-47-4	Hexachlorocyclopentadiene	5.	U
88-06-2	2,4,6-Trichlorophenol	10.	U

U = Compound undetected at the listed practical quantitation limit.
Ø = Compound was found in sample. B = Compound was found in blank.

BPACC01155

EPA METHOD 8270

Lab Sample No.: 01040-LIB

Client Sample No.: CONTROL SAMPLE

Batch Number: 025-76

Client: SIMON-EEI

Data File: 2HE248

Matrix: WATER

Sample wt/vol: 1000 mL

Date Received: 01/16/91

Dilution Factor: 1.0

Date Extracted: 01/17/92

Analyst: TRIZHR

Date Analyzed: 01/18/92

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
95-95-4	2,4,5-Trichlorophenol	10.	U
91-58-7	2-Chloronaphthalene	5.	U
90-13-1	1-Chloronaphthalene	50.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	5.	U
208-96-8	Acenaphthylene	5.	U
606-20-2	2,6-Dinitrotoluene	5.	U
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	5.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	5.	U
608-93-5	Pentachlorobenzene	50.	U
121-14-2	2,4-Dinitrotoluene	5.	U
134-32-7	1-Naphthylamine	50.	U
91-59-8	2-Naphthylamine	50.	U
58-90-2	2,3,4,6-Tetrachlorophenol	50.	U
84-66-2	Diethylphthalate	5.	U
7005-72-3	4-Chlorophenyl-phenylether	5.	U
86-73-7	Fluorene	5.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
122-39-4	Diphenylamine	50.	U
86-30-6	N-Nitrosodiphenylamine	10.	U
103-33-3	Azobenzene	5.	U
101-55-3	4-Bromophenyl-phenylether	5.	U
62-44-2	Phenacetin	50.	U
118-74-1	Hexachlorobenzene	5.	U
92-67-1	4-Aminobiphenyl	50.	U
87-86-5	Pentachlorophenol	30.	U
23950-58-5	Pronamide	50.	U
85-01-8	Phenanthrene	5.	U
120-12-7	Anthracene	5.	U
84-74-2	Di-n-butylphthalate	5.	U
206-44-0	Fluoranthene	5.	U
92-87-5	Benzidine	50.	U
129-00-0	Pyrene	5.	U
60-11-7	p-Dimethylaminoazobenzene	50.	U

U = Compound undetected at the listed practical quantitation limit.
Q = Compound was found in sample. B = Compound was found in blank.

BPACC01156

Lab Sample No.: 01040-LMB

Client Sample No.: CONTROL SAMPLE

Batch Number: 0279-70

Client: SIMON-EEI

Data File: >AE748

Matrix: WATER

Sample wt/vol: 1000 mL

Date Received: 01/16/91

Dilution Factor: 1.0

Date Extracted: 01/17/92

Analyst: THIZAR

Date Analyzed: 01/18/92

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
85-68-7	Butylbenzylphthalate	5.	U
91-94-1	3,3 -Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	5.	U
218-01-9	Chrysene	5.	U
117-81-7	bis(2-Ethylhexyl)phthalate	5.	U
117-84-0	Di-n-octylphthalate	5.	U
57-97-6	7,12-Dimethylbenz(a)anthrac	50.	U
205-99-2	benzo(b)fluoranthene	5.	U
207-08-9	Benzo(k)fluoranthene	5.	U
50-32-8	Benzo(a)pyrene	5.	U
56-49-5	3-Methylcholanthrene	50.	U
224-42-0	Dibenz(a,j)acridine	50.	U
193-39-5	Indeno(1,2,3-cd)pyrene	5.	U
53-70-3	Dibenzo(a,h)anthracene	5.	U
191-24-2	Benzo(g,h,i)perylene	5.	U

U = Compound undetected at the listed practical quantitation limit.
@ = Compound was found in sample. B = Compound was found in blank.

Lab Name: ETHL

Lab Sample No. 01040-LMB

Date Analyzed: 01/18/92

Batch Number: 625-76

Analyst: THIZAR

NCR Number:

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC LIMITS REC.
Phenol	100.00	0.00	33.00	32	12-110
2-Chlorophenol	100.00	0.00	71.00	71	27-123
1,4-Dichlorobenzene	50.00	0.00	38.00	75	36- 97
N-Nitroso-di-n-prop.(1)	50.00	0.00	50.00	99	41-116
1,2,4-Trichlorobenzene	50.00	0.00	32.00	64	39- 98
4-Chloro-3-methylphenol	100.00	0.00	60.00	59	23- 97
Acenaphthene	50.00	0.00	40.00	80	46-118
4-Nitrophenol	100.00	0.00	25.00	24	10- 80
2,4-Dinitrotoluene	50.00	0.00	40.00	79	24- 96
Pentachlorophenol	100.00	0.00	49.00	49	9-103
Pyrene	50.00	0.00	41.00	82	26-127

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	100.00	29.00	28	13	42	12-110
2-Chlorophenol	100.00	54.00	53	29	40	27-123
1,4-Dichlorobenzene	50.00	29.00	57	27	28	36- 97
N-Nitroso-di-n-prop.(1)	50.00	38.00	76	26	38	41-116
1,2,4-Trichlorobenzene	50.00	30.00	59	8	28	39- 98
4-Chloro-3-methylphenol	100.00	62.00	62	4	42	23- 97
Acenaphthene	50.00	41.00	81	1	31	46-118
4-Nitrophenol	100.00	26.00	26	8	50	10- 80
2,4-Dinitrotoluene	50.00	35.00	69	13	38	24- 96
Pentachlorophenol	100.00	51.00	50	2	50	9-103
Pyrene	50.00	34.00	68	18	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of qc limits

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS:

FORM III SV-1 1/87 Rev.

BPACC01158

Lab Name: ETHL

Date Analyzed: 1/18/92 Batch Number: 625-76

Analyst: THIZAR NCR Number:

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	OTHER	TOT OUT
01	01040-LMB	65	90	76	38	48	82		0
02	01040-LCS	67	94	84	39	52	80		0
03	01040-LCSD	68	81	75	30	40	67		0
04	01040-04A	76	102	80	44	52	78		0
05	01040-06A	61	90	79	45	51	81		0
06	01040-08A	66	90	73	47	56	81		0
07	01040-10A	59	91	67	41	48	78		0
08	01040-14A	62	75	70	42	49	89		0
09	01040-16A	57	79	77	37	45	80		0
10	01040-02A	1 *	93	72	23	6 *	18		2
11	01040-12A	58	80	57	38	45	76		0
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		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(35-114)
S2 (FBP)	= 2-Fluorobiphenyl	(43-116)
S3 (TPH)	= Terphenyl-d14	(33-141)
S4 (PHL)	= Phenol-d5	(10-110)
S5 (2FP)	= 2-Fluorophenol	(21-110)
S6 (TBP)	= 2,4,6-Tribromophenol	(10-123)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

FORM II SV-1 1/87 Rev.

BPACC01159

CHAIN OF CUSTODY AND ANALYSIS REQUEST

01.040

SIMON-EEI

Project Name/No. 512-345
Project Location TORRANCE
Samplers' Name GALVIN F. LEE
Signature [signature]
Laboratory

SIMON - EEI
714-891-7446

ANALYSIS REQUESTED

SAMPLE ID	DATE	TIME	SAMPLE LOCATION, MEDIA, TYPE, DESCRIPTION	624	625								Number of Containers	Remarks
OW-01-01	1-16-92	1250		X									2	SEND ANALYSES TO: LEO CHAIDEZ
OW-01-02		1250			X								1	AT ADDRESS LISTED ABOVE
OW-02-03		1402		X									2	
OW-02-04		1402			X								1	
OW-100-05		1410		X									2	
OW-100-06		1410			X								1	
OW-03-07		1519		X									2	
OW-03-08		1519			X								1	
OW-04-09		1510		X									2	
OW-04-10		1510			X								1	
OW-05-11		1615		X									2	
OW-05-12		1615			X								1	
OW-06-13		1625		X									2	
OW-06-14		1625			X								1	
OW-00-15	1-16-92	1620		X									2	
				Total Number of Containers:										

Relinquished by:	Date/Time	Received by:	Relinquished by:	Date/Time	Received by:
[signature]	1-16-92 1745				GREG WRANIC
Relinquished by:	**Date/Time**	**Received by:**	**Relinquished by:**	**Date/Time**	**Received for Lab by:**
					[signature] GREG WRANIC

Method of Shipment to Laboratory: Agent Person Shipping:

Distribution: Laboratory should sign and return WHITE COPY with analyses. YELLOW, sampler retains.

BPACC01160

CHAIN OF CUSTODY AND ANALYSIS REQUEST

01.040

SIMON-EEI

Project Name/No. 512-345
Project Location TORRANCE
Samplers' Name CALVIN F. LEE
Signature [signature]
Laboratory

SIMON – EEI
714-891-7446

ANALYSIS REQUESTED

SAMPLE ID	DATE	TIME	SAMPLE LOCATION, MEDIA, TYPE, DESCRIPTION	625	Number of Containers	Remarks
W-00-16	1-16-92	1620		X	1	SEND ANALYSES TO: LEO CHAIDEZ
						AT ADDRESS LISTED ABOVE
				Total Number of Containers:		

Relinquished by:	Date/Time	Received by:	Relinquished by:	Date/Time	Received by:
[signature]	1-16-92 1745				GREG WEAVER
Relinquished by:	Date/Time	Received by:	Relinquished by:	Date/Time	Received for Lab by:
					[signature] 1-16-92

Method of Shipment to Laboratory: Agent Person Shipping:

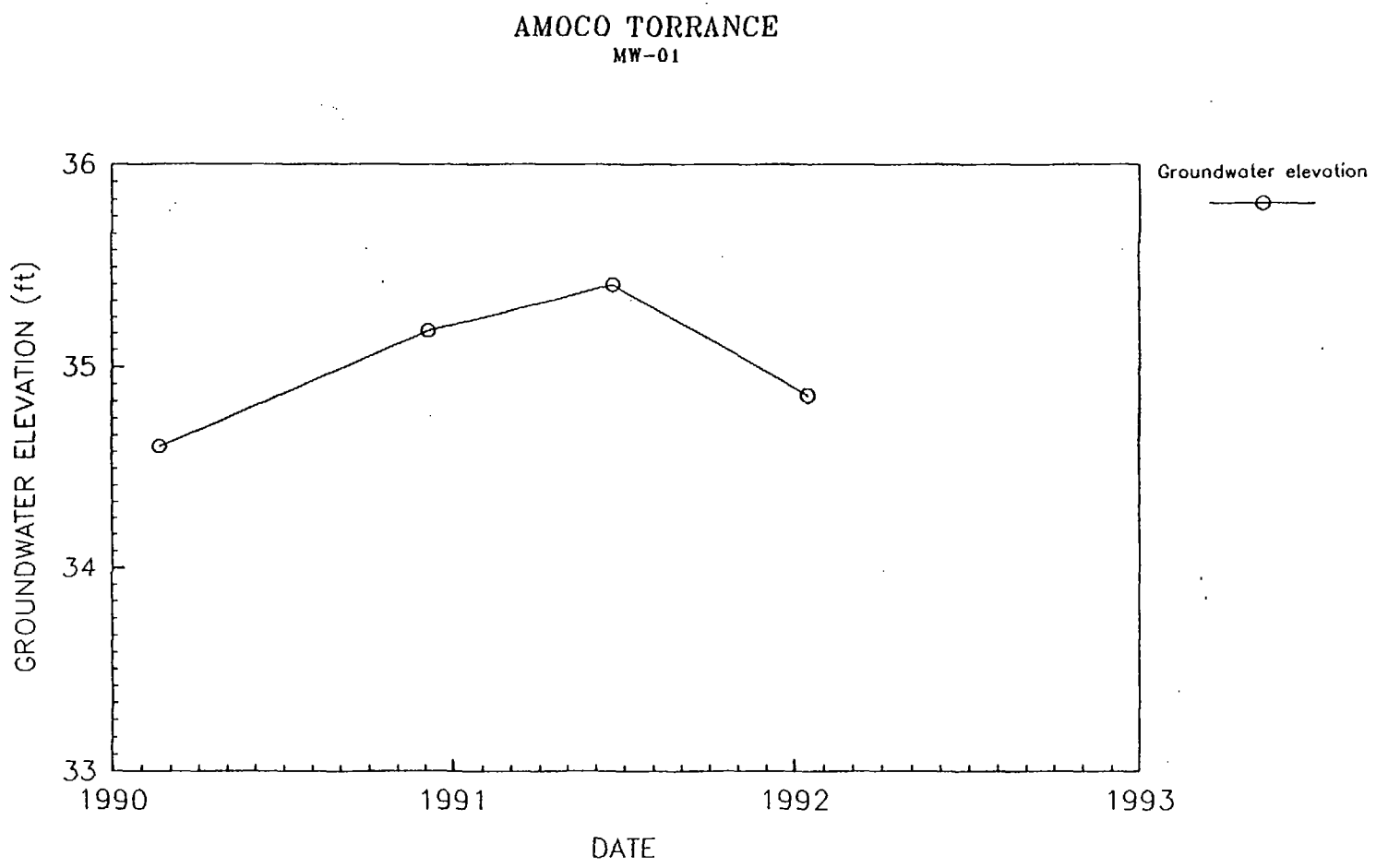
Distribution: Laboratory should sign and return WHITE COPY with analyses. YELLOW, sampler retains.

BPACC01161

DRAFT

APPENDIX B

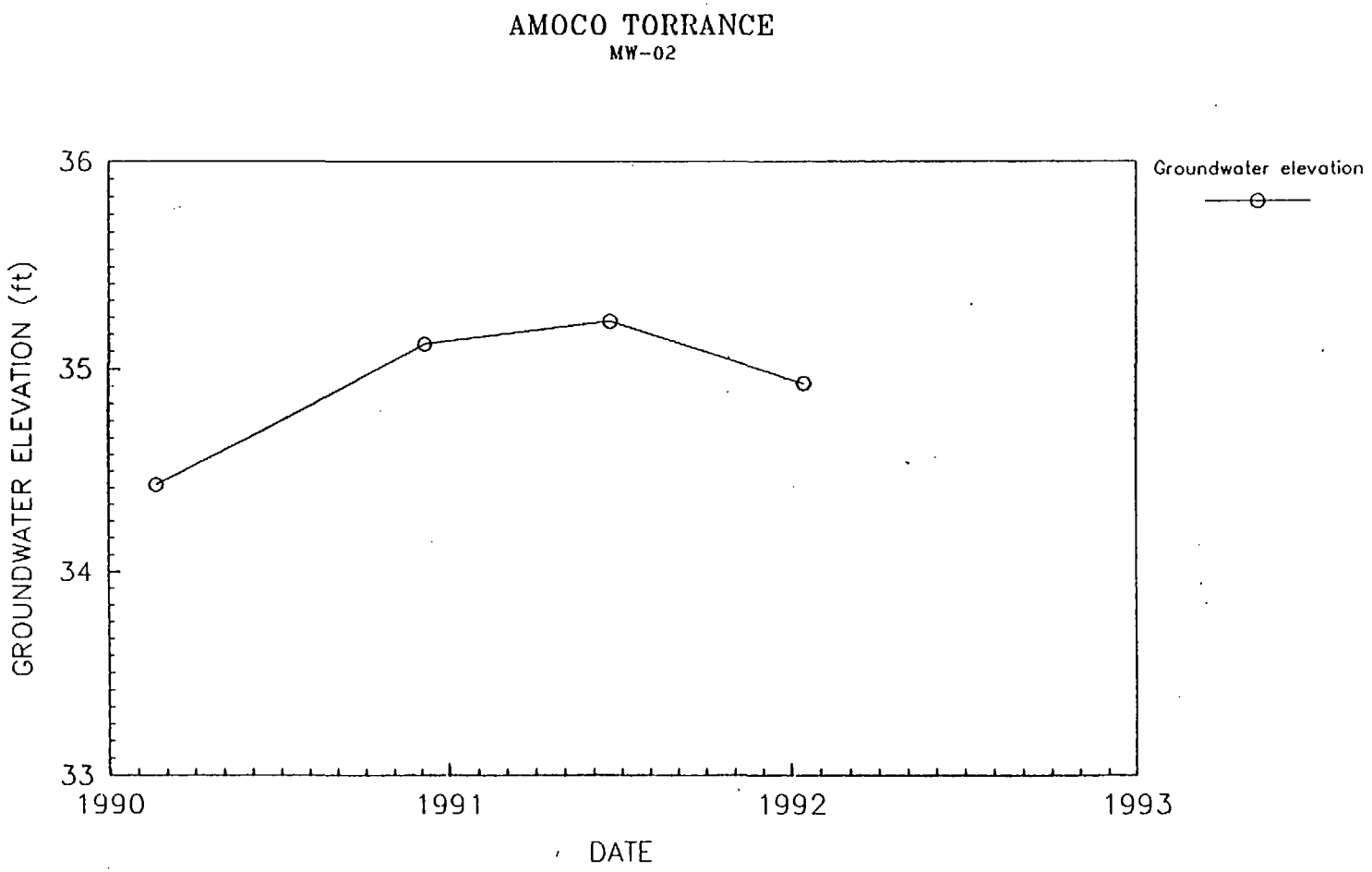
MONITORING WELL HYDROGRAPHS



MONITORING WELL HYDROGRAPH
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

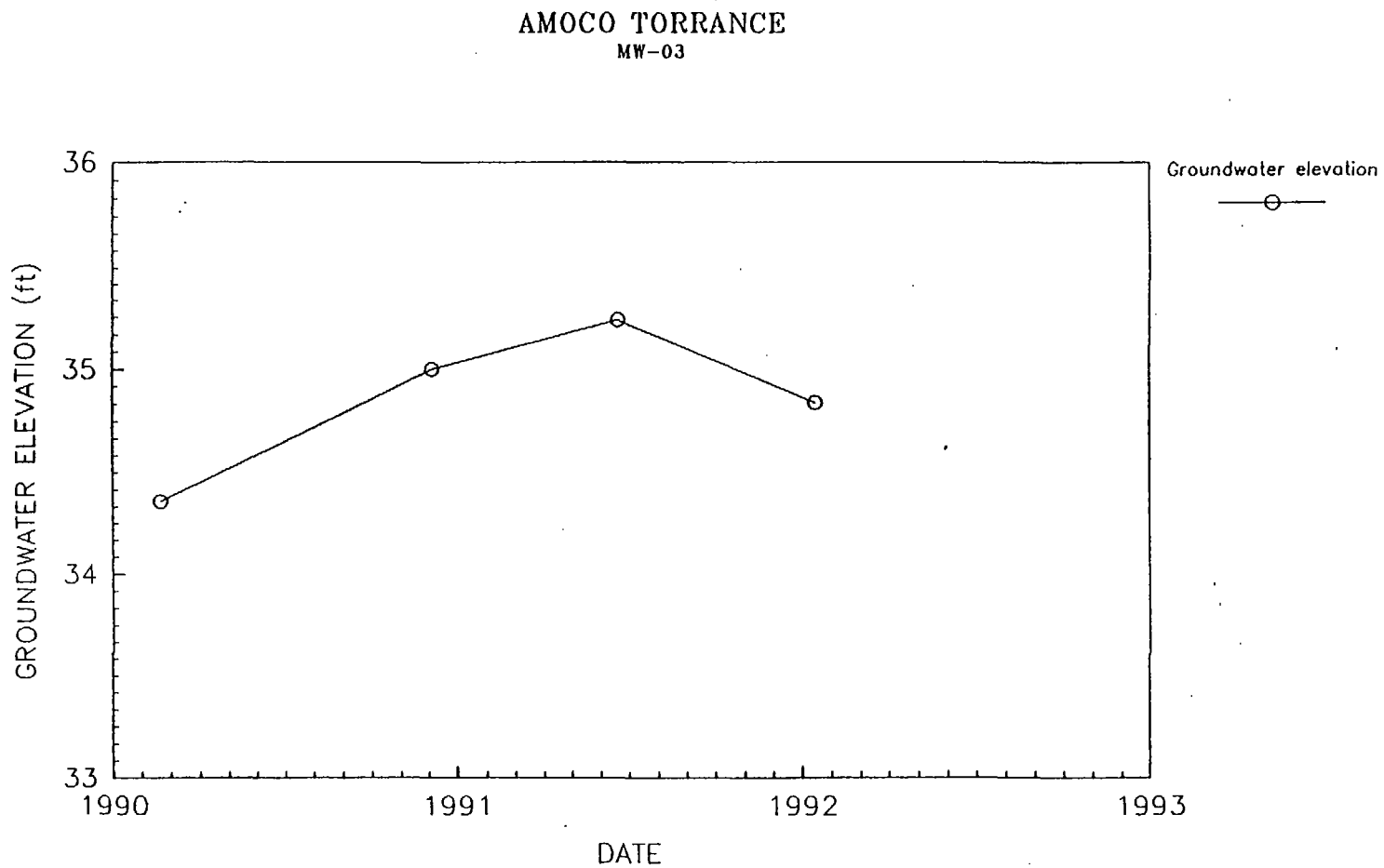


MONITORING WELL HYDROGRAPH
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

BPACC01164

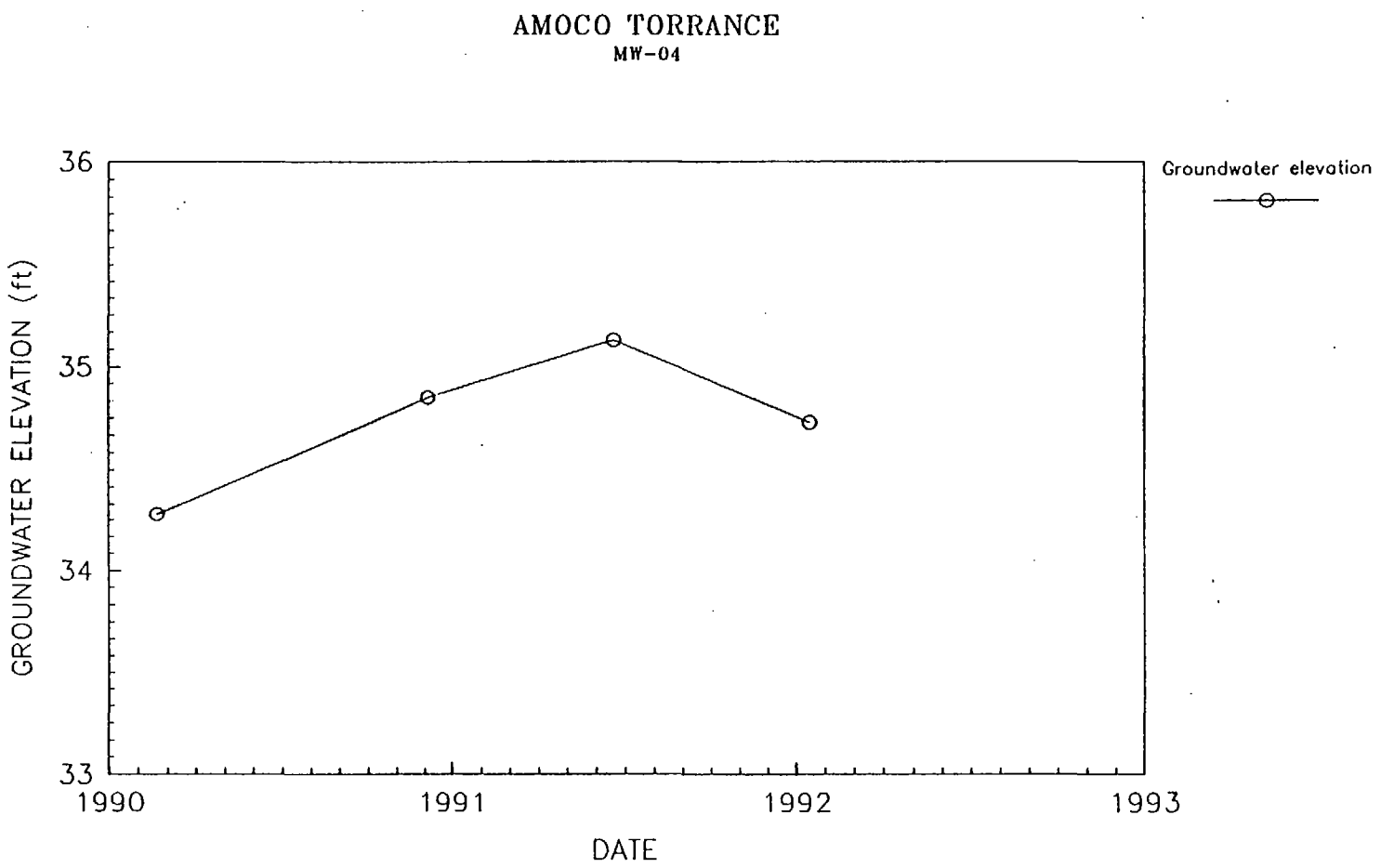


MONITORING WELL HYDROGRAPH
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

BPACC01165



MONITORING WELL HYDROGRAPH
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

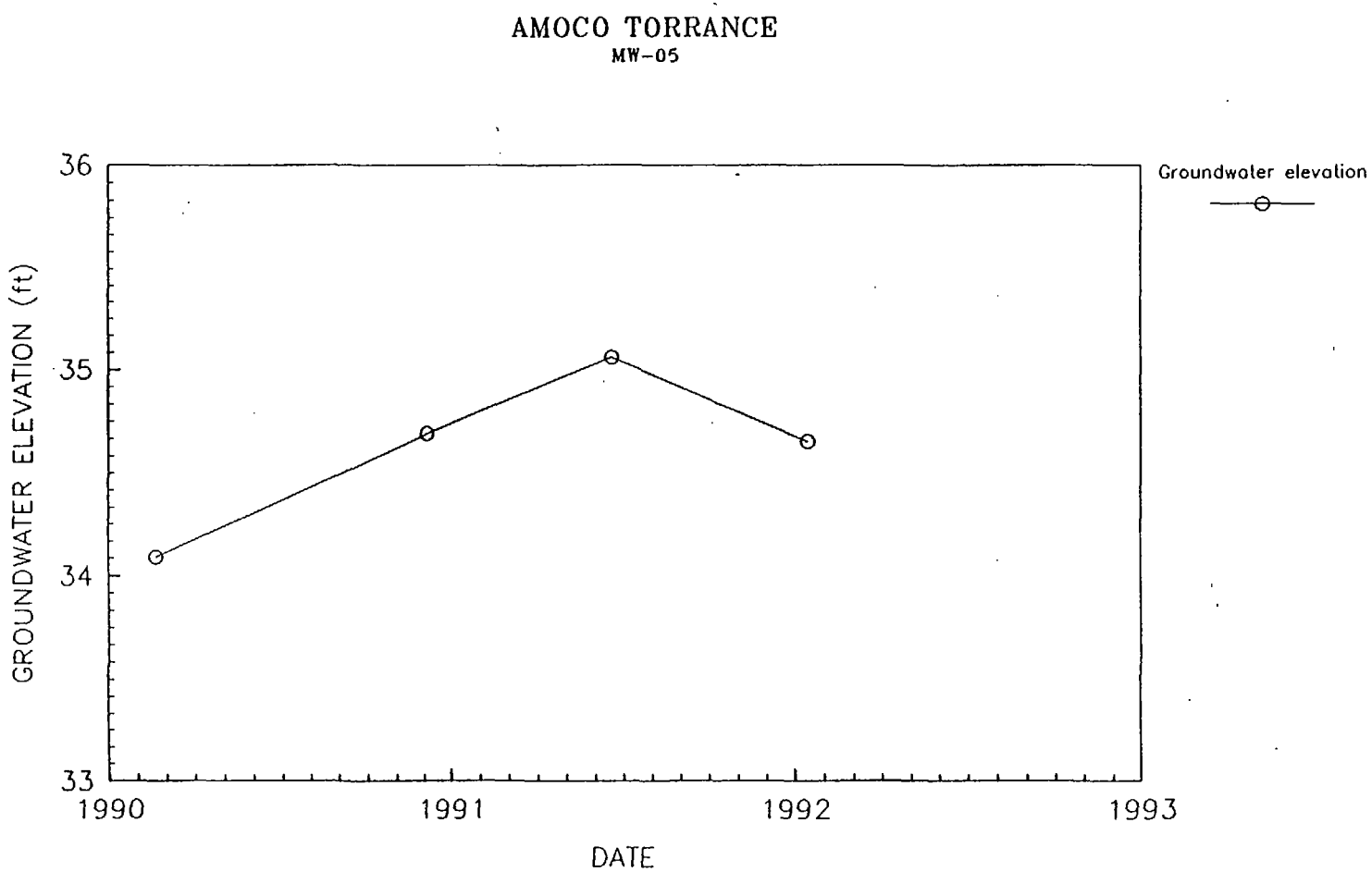
simon-EEI Inc.

PROJECT NO: 512-345

DATE: JANUARY, 1992

FIGURE NO:

BPACC01166



MONITORING WELL HYDROGRAPH
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

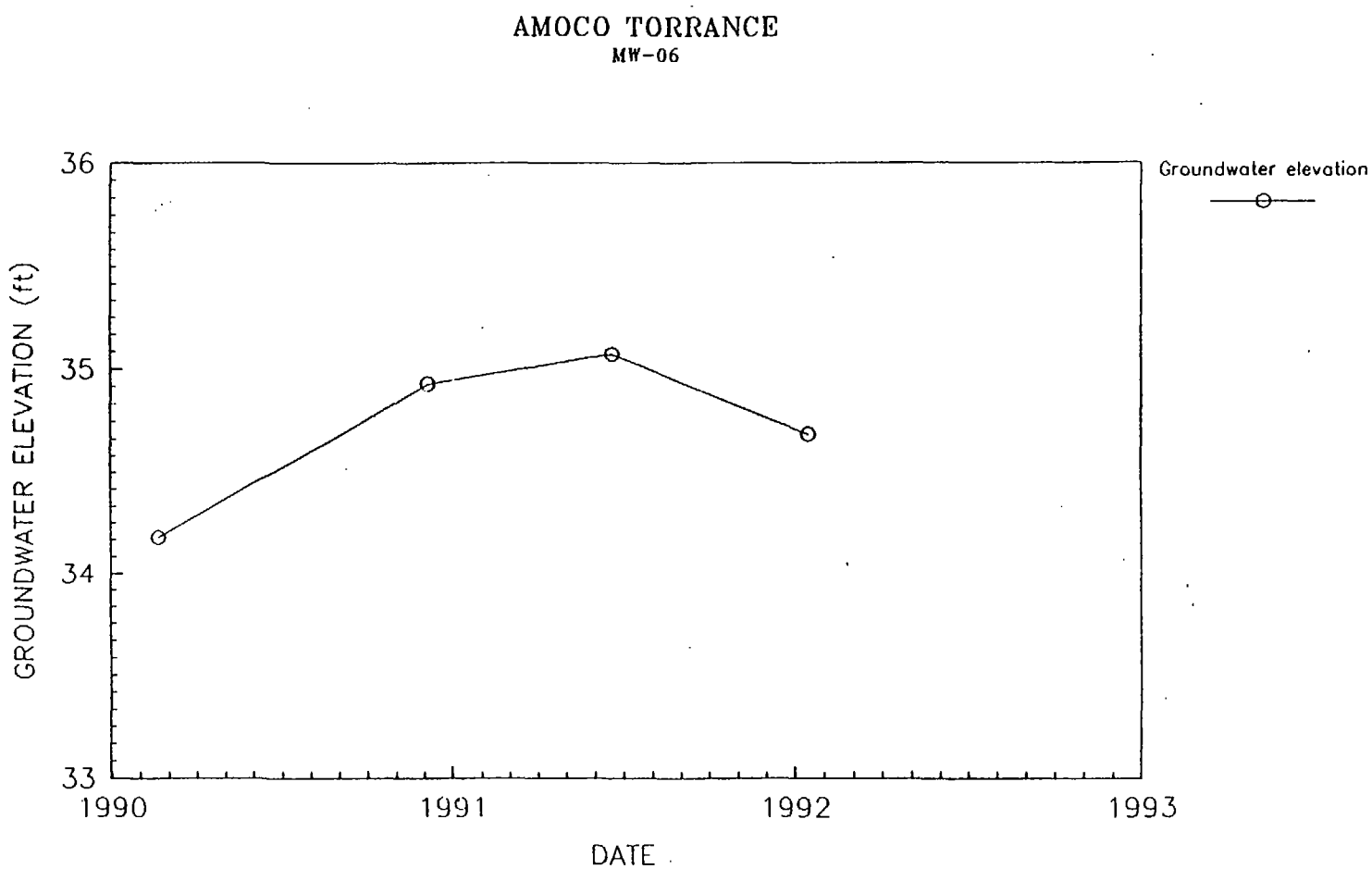
simon-EEI Inc.

PROJECT NO: 512-345

DATE: JANUARY, 1992

FIGURE NO:

BPACC01167



MONITORING WELL HYDROGRAPH
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

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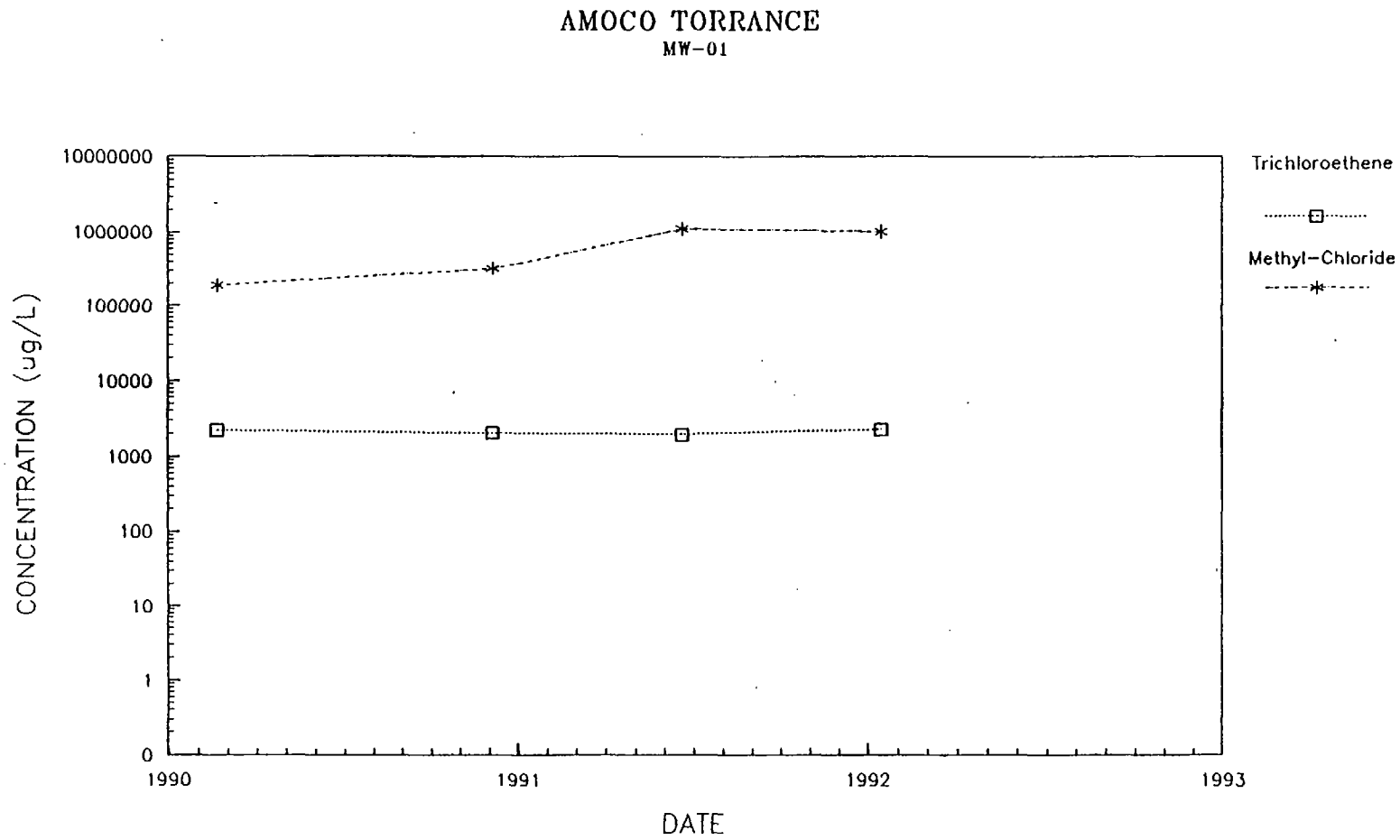
APPENDIX C

GRAPHS OF SELECTED ORGANIC COMPOUNDS OVER TIME

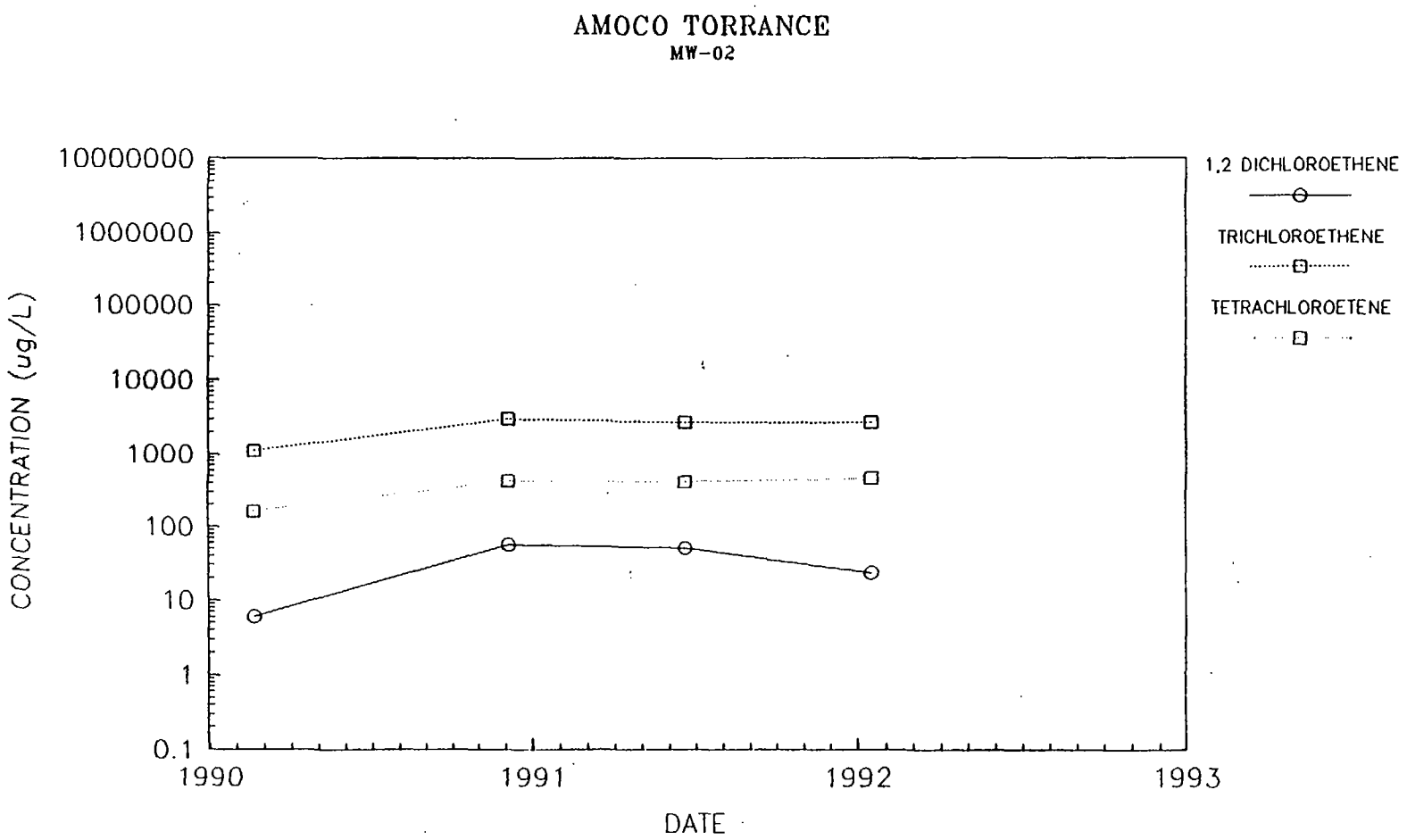


SELECTED ORGANIC COMPOUNDS VERSUS TIME
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

BPACC01170

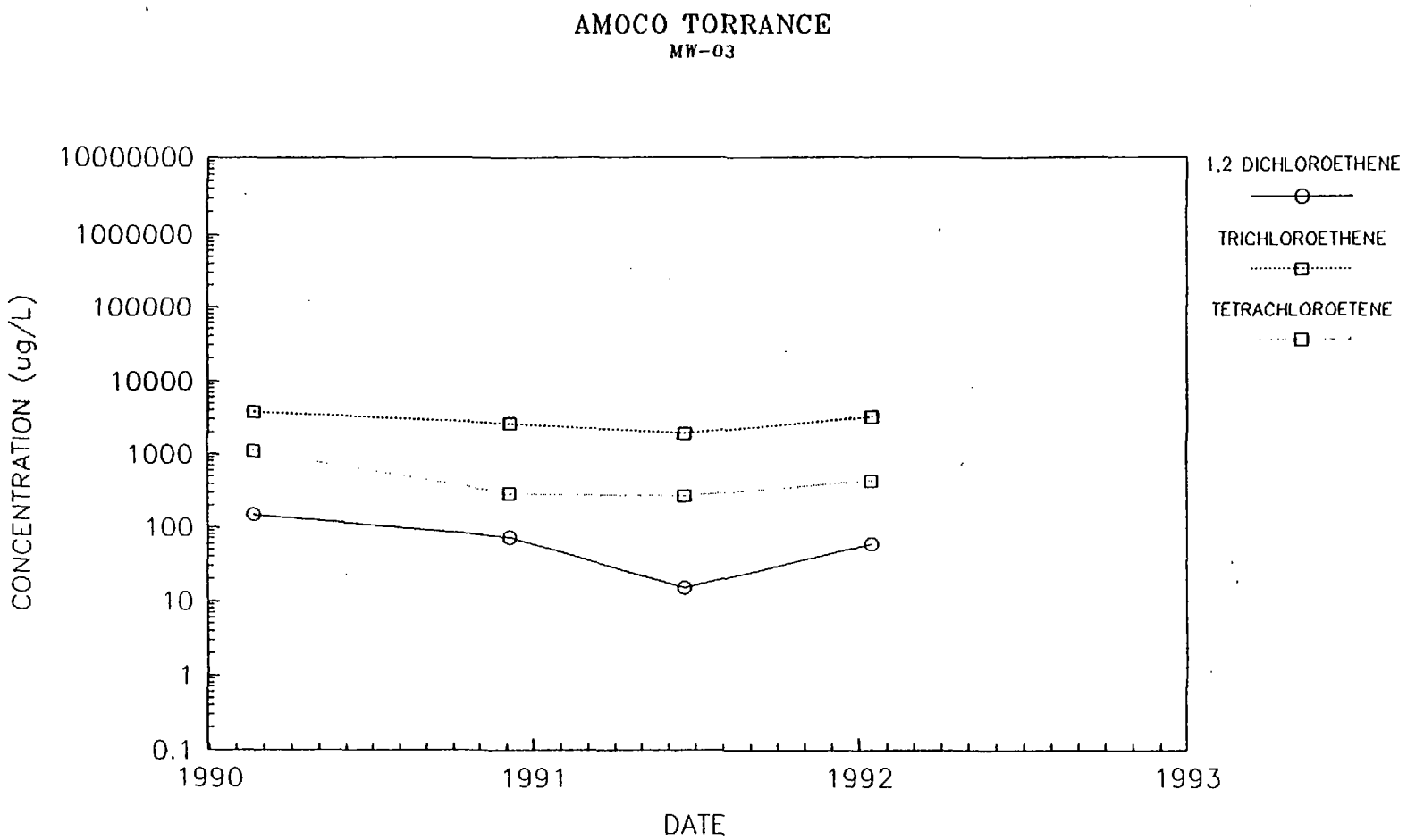


SELECTED ORGANIC COMPOUNDS VERSUS TIME
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

BPACC01171

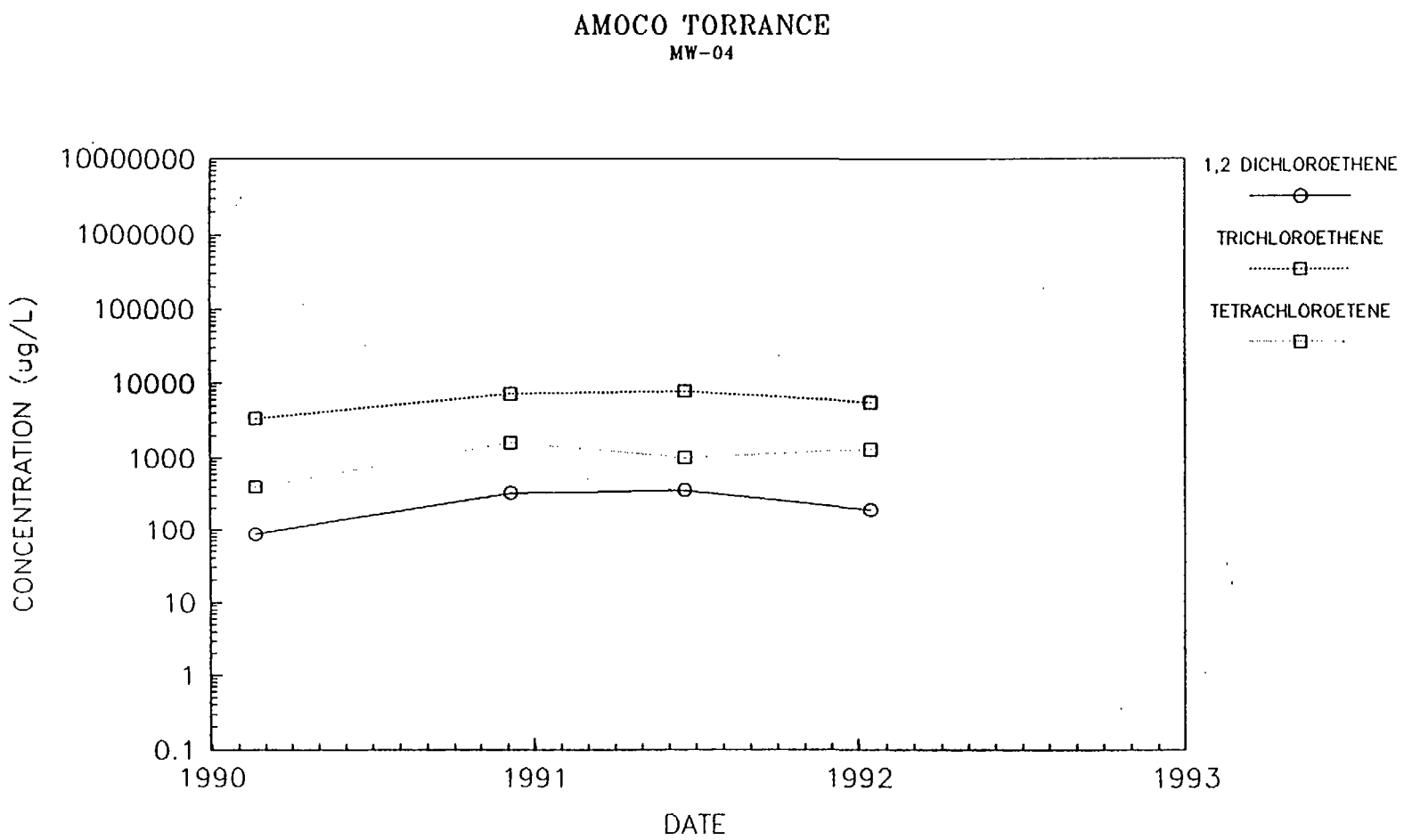


SELECTED ORGANIC COMPOUNDS VERSUS TIME
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

BPACC01172

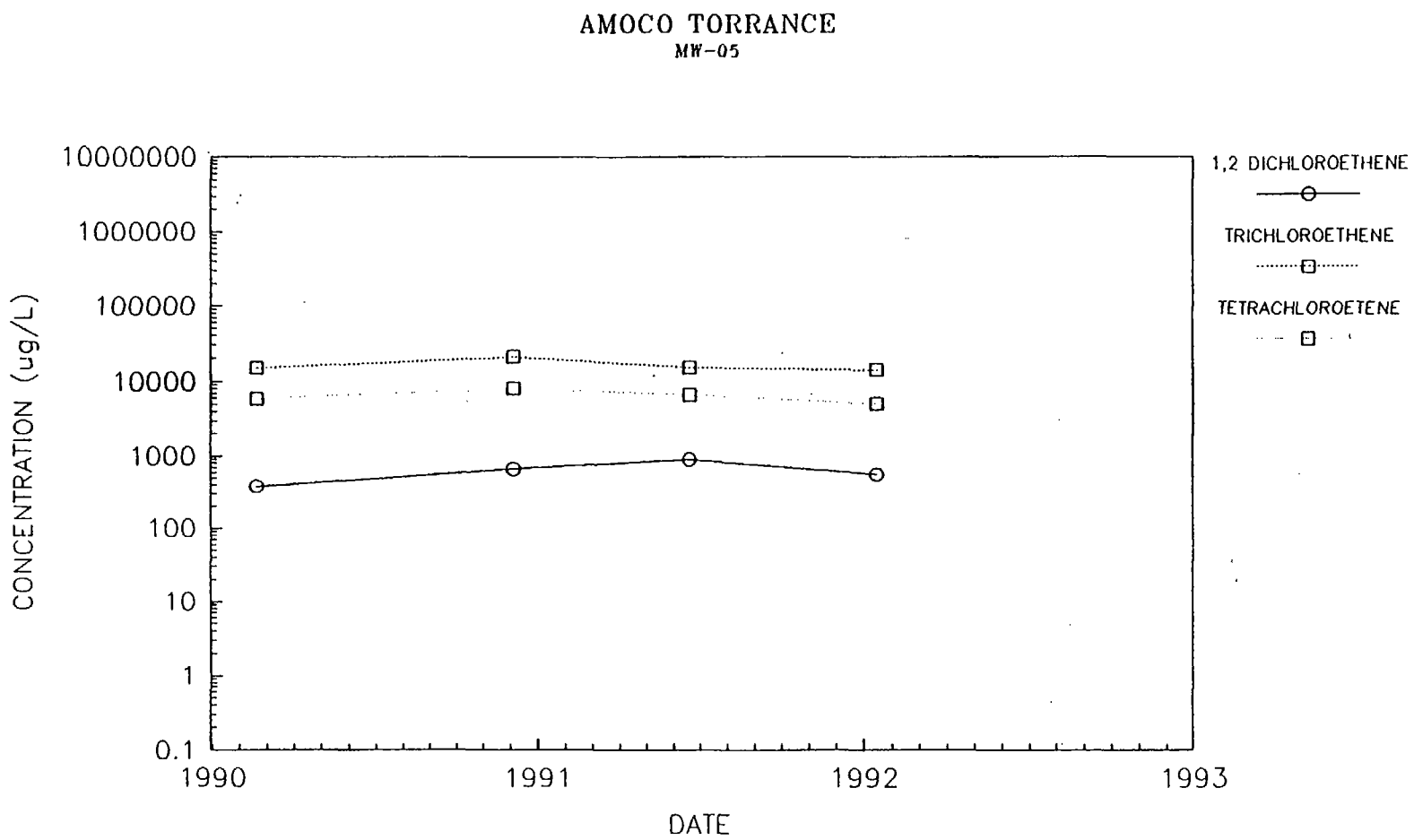


SELECTED ORGANIC COMPOUNDS VERSUS TIME
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

BPACC0173

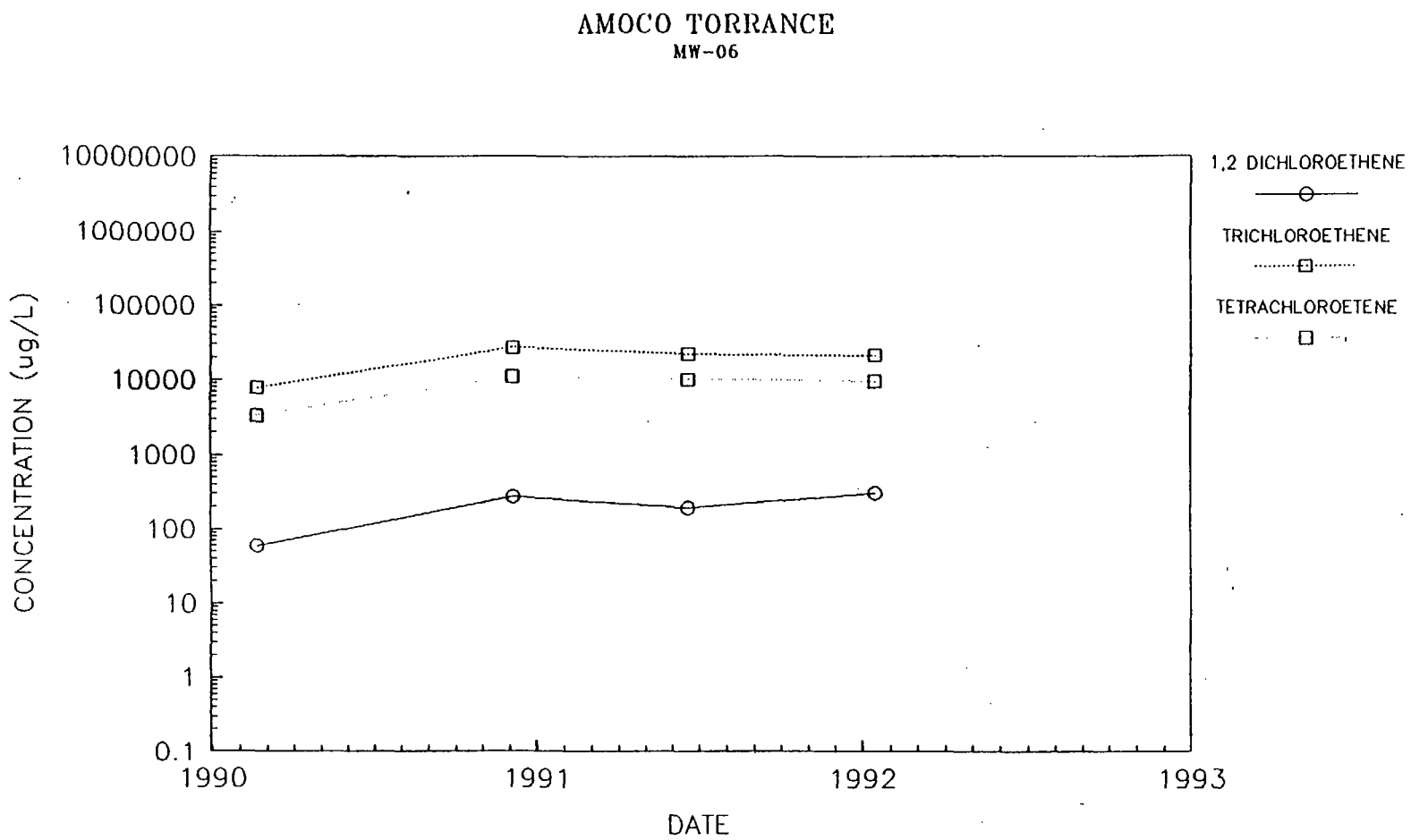


SELECTED ORGANIC COMPOUNDS VERSUS TIME
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

BPACC01174



SELECTED ORGANIC COMPOUNDS VERSUS TIME
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

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APPENDIX D

MONITORING WELL SAMPLING PROTOCOL

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APPENDIX D

MONITORING WELL SAMPLING PROTOCOL

Sampling was conducted using disposable polyethylene bailers having controlled flow emptying devices. Samples were collected in clean 40-milliliter glass vials having lids with Teflon lined septa and containing hydrochloric acid as a preservative.

Subsequent to collection, each vial was visually checked to ensure no air was entrapped within the vial. A sample label was then affixed to each vial and contained the following information: date, job number, well number, sample number, collectors initials and requested analysis. A custody seal was placed across each container lid to ensure sample integrity prior to analysis. Sealed and labeled sample containers were placed immediately into an ice chest containing blue ice for transport to the analytical laboratory at the end of the field day. Chain-of-custody forms were completed in the field and accompanied the samples to the analytical laboratory.

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JANUARY, 1992 BIANNUAL GROUNDWATER SAMPLING AND ANALYSIS REPORT AMOCO CHEMICAL COMPANY TORRANCE, CALIFORNIA

February 26, 1992

Simon Hydro-Search
5882 Bolsa Avenue
Huntington Beach, California 92649

Project No. 512-345

DRAFT

February 26, 1992

AMOCO Chemical Company
1225 West 196th Street
Torrance, California 90502

Attention: Mr. Robert F. Doerr
Environmental Coordinator

Subject: January, 1992 Biannual
Groundwater Sampling and Analysis Report
Amoco Chemical Company
Torrance, California
Project No. 512-345

Dear Mr. Doerr:

Enclosed please find the above referenced report. The report also includes a summary of the sampling methodology.

If there are any questions concerning this report, please do not hesitate to contact us. Simon Hydro-Search appreciates the opportunity to provide environmental services to Amoco Chemical Company.

Sincerely,

Leobardo Chaidez
Geologist

N. Mark Reese
Operations Manager

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PROFESSIONAL CERTIFICATION **DRAFT**

JANUARY, 1992 BIANNUAL
GROUNDWATER SAMPLING AND ANALYSIS REPORT
AMOCO CHEMICAL COMPANY
TORRANCE, CALIFORNIA

512-345
February 26, 1992

This report has been prepared by the staff of Simon Hydro-Search under the professional supervision of the person whose seal and signature appear hereon.

The findings, recommendations, specifications or professional opinions are presented, within the limits prescribed by the client, after being prepared in accordance with generally accepted professional engineering and geologic practice. There is no other warranty, either expressed or implied.

N. Mark Reese
Operations Manager
Registered Geologist #4880

Leobardo Chaidez
Geologist

Stephen P. Walter
Senior Geologist

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JANUARY, 1992 BIANNUAL
GROUNDWATER SAMPLING AND ANALYSIS REPORT
AMOCO CHEMICAL COMPANY
TORRANCE, CALIFORNIA

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3.0	PREVIOUS INVESTIGATIONS	2
4.0	WORK COMPLETED	2
5.0	SITE GEOLOGY AND HYDROGEOLOGY	3
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2	Monitoring Well Gauging Data
3	Selected Organic Compounds Over Time
4	Maximum Detected Soil and Groundwater Laboratory Results at the Amoco and McDonnell Douglas Facilities

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2	Groundwater Elevation Contour Map
3	Cis-1,2 Dichloroethene Concentration Map
4	Trichloroethene Concentration Map
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A	Laboratory Reports and Chain-of-Custody Form
B	Monitoring Well Hydrographs
C	Graphs of Selected Organic Compounds Over Time
D	Groundwater Monitoring Well Sampling Protocol
E	Previous Investigative Reports

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JANUARY, 1992 BIANNUAL
GROUNDWATER SAMPLING AND ANALYSIS REPORT
AMOCO CHEMICAL COMPANY
TORRANCE, CALIFORNIA

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EXECUTIVE SUMMARY

On January 16, 1992, six monitoring wells at the Amoco Chemical Company were gauged for depth to groundwater, sampled and analyzed by EPA Methods 624 and 625. Groundwater occurs at an average depth of 64.5 feet and flows to the south at a gradient of approximately 0.0016 ft./ft. Detectable concentrations of volatile compounds were present in all wells and, with the exception of methylene chloride, increase in the down gradient direction. The methylene chloride concentration is 1,000,000 ug/l at the northwest corner of the facility and decreases five orders of magnitude downgradient to the south/southeast across the facility.

Compound	Maximum Concentration (ug/l)	Minimum Concentration (ug/l)	CADHS MCL (ug/l)	CADHS AL (ug/l)
Benzene	28	ND<3	1	--
Chloroform	69	8	unregulated	not listed
1,2-Dichlorobenzene	5	ND<5	unregulated	130
1,1-Dichloroethane	11	ND<3	5	--
1,1-Dichloroethene	150	ND<3	6	--
Cis-1,2-Dichloroethene	560	23	6	--
Trans-1,2-Dichloroethene	7	ND<3	10	--
Ethylbenzene	5	ND<3	680	--
Methylene Chloride	1,000,000	ND<5	unregulated	40
Tetrachloroethene	9,400	190	5	--
Toluene	4	ND<3	unregulated	100
1,1,2-Trichloroethane	6	ND<5	32	--
Trichloroethene	21,000	2,200	5	--
Trichlorofluoromethane	17	ND<10	150	--
Xylenes	14	ND<3	1,750	--
All Other Semi-Volatile Organic Compounds	ND	ND	--	--

ND = Not detected at limit shown.
MCL = Maximum contaminant level for drinking water as set by the California Department of Health Services, October 24, 1990.
AL = Action level for drinking water as set by the California Department of Health Services, October 24, 1990.

Five of the compounds (benzene, ethylbenzene, toluene, TCE, and PCE) detected in the groundwater samples have been previously detected in soil samples collected from borings at the Amoco facility. All of the compounds detected in the groundwater samples, with two exceptions, have also been detected in the soil and/or groundwater samples from the McDonnell Douglas facility located approximately 800 feet west of the Amoco facility. The two exceptions are 1,2-dichlorobenzene which was detected in one well at a concentration equal to the detection limit (5 ug/l) and trichlorofluoromethene which is a common lab solvent.

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JANUARY, 1992 BIANNUAL GROUNDWATER SAMPLING AND ANALYSIS REPORT AMOCO CHEMICAL COMPANY TORRANCE, CALIFORNIA

1.0 INTRODUCTION

The purpose of the groundwater sampling was to evaluate the concentration of volatile and semi-volatile organic compounds in water samples collected from six on site monitoring wells. This report contains the results of the January 16, 1992 sampling event performed by Simon Hydro-Search (Simon).

2.0 SITE DESCRIPTION

Amoco Chemical Company operates a facility at 1225 West 196th Street, Torrance, California for the conversion of styrene monomer to styrene polymer (Figure 1). This facility is located approximately 800 feet east of the McDonnell Douglas Aircraft C6 facility.

3.0 PREVIOUS INVESTIGATIONS

Initial groundwater samples were obtained from six wells located on site in early 1989 and analyzed by Amoco's laboratory in Joliet, Illinois. Simon (formerly Engineering Enterprises) was requested by Amoco to collect water samples from the wells in February, 1990 to confirm analytical results that indicated that no organic compounds were detected. Results from this event indicated the presence of volatile organic compounds in all wells. A new sampling event was conducted three weeks after, and reported results verified the previously reported concentrations. Soil samples collected from the site during previous investigations had detectable concentrations of volatile compounds. A subsequent review of California Regional Water Quality Control Board files determined that the soil and groundwater beneath the McDonnell Douglas facility was also impacted by volatile organic compounds. A list of previous investigation reports is included as Appendix E.

Amoco requested Simon to conduct groundwater sampling and analysis on a biannual basis beginning December, 1990.

4.0 WORK COMPLETED

Groundwater samples from six onsite monitoring wells were collected and chemically analyzed by EPA Methods 624 and 625 for volatile and semi-volatile compounds, respectively. This report was prepared to present analytical data and concentration trends over time.

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The groundwater sampling methods used are discussed in Appendix D.

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5.0 SITE GEOLOGY AND HYDROGEOLOGY

The site is located in the western basin of the Coastal Plain in Los Angeles County. The Pleistocene deposits (Quaternary rocks) which underlie most of the area contain the semiperched water body that occurs less than 100 feet below surface level (Geological Survey Water-Supply Paper 1461, U.S. Department of the Interior, 1959).

Groundwater occurs under water table conditions at depths of 63 to 66 feet below ground surface (Table 2). Groundwater flow direction is towards the south with a gradient of approximately 0.0016 ft./ft. as shown on the water table elevation contour map (Figure 2). Monitoring well hydrographs are included in Appendix B.

6.0 GROUNDWATER LABORATORY ANALYTICAL RESULTS

Six groundwater samples plus a field blank (OW-00) and a duplicate of well OW-2 (OW-100) were analyzed by a State certified laboratory using EPA Methods 624 and 625 for volatile and semi-volatile compounds, respectively. Laboratory reports and chain-of-custody forms are included in Appendix A.

The groundwater from each of the six wells had detectable concentrations of volatile (halogenated and aromatic) organic compounds (Table 1). 1,2-dichlorobenzene was the only semi-volatile compound reported. It had a concentration of 5 ug/l in monitoring well OW-6.

Eleven halogenated compounds were detected in the groundwater samples. Five of these compounds (1,1-DCA, 1,1-DCE, cis-1,2-DCE, TCE, and PCE)[1], had concentrations that were greater then their respective CADHS MCLs[2]. Two of these five (TCE and PCE) have been detected in soil samples previously collected from borings on the Amoco facility. The remaining three compounds (1,1-DCA, 1,1-DCE, and C-1,2-DCE) can be formed by heterogenous surface reactions involving TCE and/or PCE. All five of these compounds have also been detected in the soil and/or groundwater beneath the McDonnell Douglas facility.

1 1,1-DCA: 1,1-dichloroethane; 1,1-DCE: 1,1-dichloroethene; cis-1,2-DCE: cis-1,2-dichloroethene; trans-1,2-DCE: trans-1,2-dichloroethene; PCE: tetrachloroethene; 1,1,2-TCA: 1,1,2-trichloroethane, TCE: trichloroethene

2 Maximum Contaminant Levels (MCLs) and Action Levels (ALs) for drinking water in California are established by the California Department of Health Services (CADHS). "MCLs are enforceable primary drinking water standards, adopted into regulation under the Safe Drinking Water Act, which must be met by all public drinking water systems to which they apply. They are risk-management numbers based on comprehensive risk assessments, exposure levels, analytical detection limits, feasibility of removal and removal costs. In cases where no MCL has been established, ALs serve as non-enforceable health-based guidance numbers, which are only affected by analytical detection limits. They are provided by the Department as interim guidance for "safe" levels of contaminants in drinking water". Alexis M. Milea, P.E., Standards and Technology Unit, Office of Drinking Water, California Department of Health Services, October 24, 1990.

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Three of the eleven detected halogenated compounds (trans-1,2-DCE, 1,1,2 TCA, and trichlorofluoromethane) were detected at concentrations less than their respective CADHS MCLs. Trans-1,2-DCE and 1,1,2-TCA were not detected in the Amoco soil samples but they can be formed by TCE and/or PCE heterogenous surface reactions. Trans-1,2-DCE has been reported in the groundwater and 1,1,2-TCA has been reported in the soil of the McDonnell Douglas facility. Trichlorofluoromethane is a common laboratory solvent.

The three remaining detected halogenated compounds are 1,2-dichlorobenzene, chloroform, and methylene chloride. The detected 1,2-dichlorobenzene concentration was less then the CADHS AL (there is no MCL set for this compound). There is no established CADHS MCL or AL for chloroform. The detected methylene chloride concentration was greater than the CADHS AL (there is no MCL set for this compound). 1,2-dichlorobenzene has not been detected in either the soil or groundwater beneath the McDonnell Douglas facility and it was not detected in the Amoco soil samples. Chloroform is present in the groundwater beneath McDonnell Douglas facility at approximately the same concentration as in the groundwater beneath the Amoco facility. The maximum methylene chloride concentration detected in the soil beneath the McDonnell Douglas facility is 20,000 mg/kg. It has not been detected in the soil beneath the Amoco facility or in the groundwater beneath the McDonnell Douglas facility.

Four aromatic compounds, (benzene, ethylbenzene, toluene, and xylenes) were detected in the groundwater samples. The benzene concentration was greater than its MCL but the remaining three were detected at concentrations less than their applicable MCL or AL. Benzene, ethylbenzene, and toluene have been detected in the soil beneath the Amoco facility and in either the soil or groundwater beneath the McDonnell Douglas facility. Xylenes were not detected in the Amoco soil samples but were detected in the soil beneath the McDonnell Douglas facility.

A comparison of the compounds detected in the soil and groundwater beneath the Amoco and McDonnell Douglas facilities is given in Table 4. Groundwater concentration maps of cis-1,2-DCE, TCE, PCE, methylene chloride, and benzene are enclosed as figures 3 through 7. Graphs showing selected detected compound concentrations through time for the six Amoco monitoring wells are enclosed as Appendix C.

7.0 CONCLUSIONS

Halogenated and aromatic hydrocarbons have been detected in the soil and groundwater beneath the Amoco facility and beneath the McDonnell Douglas facility. There are five common contaminants (1,1,1-TCA, TCE, PCE, ethylbenzene, and toluene) detected in the soil of each site and eight common contaminants (chloroform, 1,1-DCA, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, TCE, benzene, and toluene) detected in the groundwater of each site. Additional field investigation, records research, and soil and groundwater plume mapping is necessary to determine the origin and distribution of the contaminant plumes.

GROUNDWATER LABORATORY ANALYTICAL RESULTS

TABLE 1

Report: JANUARY, 1992 BIANNUAL GROUNDWATER MONITORING REPORT
Client: AMOCO
Facility: AMOCO Chemical Company
Location: 1225 West 196th Street/Normandie
City: Torrance, California

SIMON Hydro-Search
Project: 512-345
Contract: NA
Date: 18-Feb-92

SAMPLE DESCRIPTION | LABORATORY RESULTS — ND = Not Detected above limit shown, NA = Not Anaylzed, Unregulated = Monitoring Required per CADHS, Not Listed = No CADHS Levels Established

Sample Date	Well/Sample Name	Benzene EPA 624 (ug/l)	Chloroform EPA 624 (ug/l)	1,2-Dichloro benzene EPA 625 (ug/l)	1,1-Dichloro ethane EPA 624 (ug/l)	1,1-Dichloro ethene EPA 624 (ug/l)	cis-1,2-Dichloro ethene EPA 624 (ug/l)	trans-1,2-Dichloro ethene EPA 624 (ug/l)	Ethyl benzene EPA 624 (ug/l)	Methylene Chloride EPA 624 (ug/l)	Tetrachloro ethene EPA 624 (ug/l)	Toluene EPA 624 (ug/l)	1,1,2-Tri chloro ethane EPA 624 (ug/l)	Trichloro ethane EPA 624 (ug/l)	Trichloro fluoro methane EPA 624 (ug/l)	Xylenes Total EPA 624 (ug/l)	All Other Semi-Volatile Compounds EPA 625 (ug/l)
CADHS MCL as of 18 OCT 90		1	unregulated	unregulated	5	6	6	10	680	unregulated	5	unregulated	32	5	150	1,750	
CADHS AL as of 18 OCT 90			not listed	130						40		100					
01/16/92	OW-00 field blank	ND<3	ND<3	ND<5	ND<3	ND<3	ND<3	ND<3	ND<3	ND<5	ND<3	ND<3	ND<5	ND<3	ND<10	ND<3	none detected
01/16/92	OW-01	3	37	ND<5	ND<3	8	60	ND<3	5	1,000,000	190	4	6	2,200	ND<10	14	none detected
01/16/92	OW-02	ND<3	11	ND<5	ND<3	ND<3	23	7	ND<3	930	460	ND<3	ND<5	2,700	17	ND<3	none detected
01/16/92	OW-02 Duplicate	ND<3	13	ND<5	ND<3	ND<3	24	8	ND<3	25	390	ND<3	ND<5	2,700	18	ND<3	none detected
01/16/92	OW-03	ND<3	8	ND<5	ND<3	8	59	ND<3	ND<3	7	430	ND<3	ND<5	3,200	ND<10	ND<3	none detected
01/16/92	OW-04	7	19	ND<5	ND<3	33	190	ND<3	ND<3	5	1,300	ND<3	ND<5	5,500	ND<10	ND<3	none detected
01/16/92	OW-05	22	34	ND<5	10	150	560	ND<3	ND<3	8	5,500	ND<3	ND<5	14,000	14	ND<3	none detected
01/16/92	OW-06	28	69	5	11	130	300	ND<3	ND<3	ND<5	9,400	ND<3	ND<5	21,000	ND<10	ND<3	none detected

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TABLE 2

AMOCO CHEMICAL COMPANY
SELECTED ORGANIC COMPOUNDS OVER TIME

Well No.	Date	Units	1,1 Dichloro-ethene	Cis-1,2 Dichloroethene	Trichloro-ethene	Tetrachloro-ethene	Methyl-Chloride
01	2/21/90	ug/l	<1500	<1500	2200	<1500	190,000
	12/05/90		<1000	<1000	2000	<1000	320,000
	6/20/91		<5000	<5000	<5000	<5000	1,100,000
	1/16/92		8	60	2200	190	1,000,000
02	2/21/90	ug/l	<5	6	1100	160	<25
	12/05/90		<10	56	3000	420	<10
	6/20/91		<20	50	2700	410	<20
	1/16/92		<3	23	2700	460	930
03	2/21/90	ug/l	35	150	3800	1100	<20
	12/05/90		<20	73	2600	290	<20
	6/20/91		<20	<20	1900	270	<20
	1/16/92		8	59	3200	430	7
04	2/21/90	ug/l	45	87	3400	400	<15
	12/05/90		46	330	7200	1600	<40
	6/20/91		<50	360	7800	1000	<50
	1/16/92		33	190	5500	1300	5
05	2/21/90	ug/l	<80	380	15000	5900	<400
	12/05/90		<100	670	21000	8100	<100
	6/20/91		<200	900	15000	6600	<200
	1/16/92		150	560	14000	5000	6
06	2/21/90	ug/l	56	59	7800	3300	<40
	12/05/90		<100	270	27000	11000	<100
	6/20/91		<200	<200	22000	10000	<200
	1/16/92		130	300	21000	9400	<5

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TABLE 3

MEASURED GROUNDWATER ELEVATIONS

Well Casing	Casing Elevation (Assumed)	Groundwater Elevation January 16, 1992	Groundwater Elevation June 25, 1992	Change in Elevation
OW-1	100.86	34.86	35.41	-0.55
OW-2	99.63	34.93	35.23	-0.30
OW-3	98.56	34.84	35.24	-0.40
OW-4	99.19	34.73	35.13	-0.40
OW-5	97.99	34.65	35.06	-0.41
OW-6	99.67	34.69	35.07	-0.38

NOTE: Elevation in Feet

Casing elev. - groundwater elev. = groundwater depth

100 ft - 35 ft = 65 ft

(i.e. water depth is not 35 ft)

h:\simon\word\amoco\0221tbl3

DRAFT

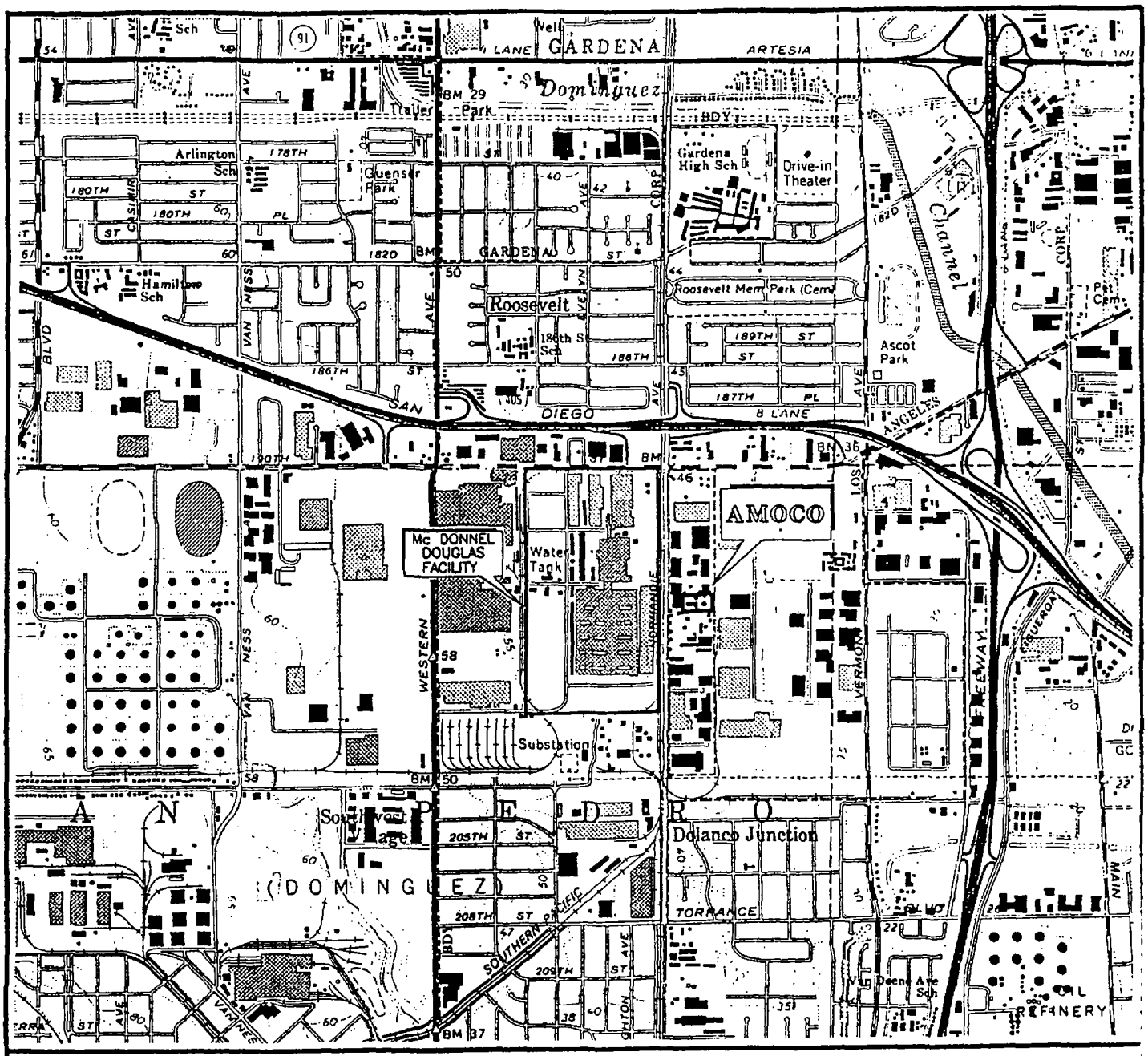
MAXIMUM DETECTED SOIL & GROUNDWATER LABORATORY RESULTS AT THE AMOCO AND McDONNELL DOUGLAS FACILITIES

TABLE 4

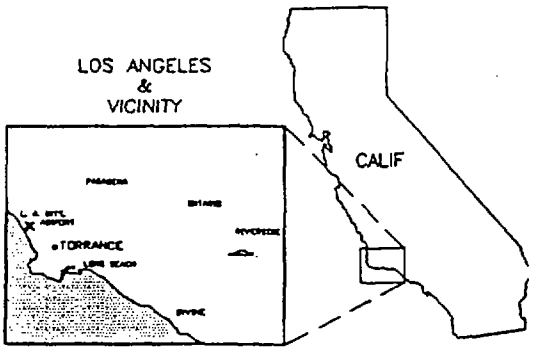
Report: JANUARY, 1992 BIANNUAL GROUNDWATER MONITORING REPORT
Client: AMOCO
Facility: AMOCO Chemical Company
Location: 1225 West 196th Street/Normandie
City: Torrance, California

SIMON Hydro-Search
Project: 512-345
Contract: NA
Date: 18-Feb-92

All Reported Detected Compounds	Maximum Detected Concentrations			
	AMOCO Chemical Company		Mcdonnell Douglas Aircraft	
	soil (mg/kg)	water (mg/l)	soil (mg/kg)	water (mg/l)
1,1-dichloroethane		0.011	0.09	88
1,1-dichloroethene		0.15	600	1
1,1,1-trichloroethane	0.07		59000	78
1,1,2-trichloroethane		0.006	4	
1,2-dichlorobenzene		0.005		
benzene	0.05	0.028		0.16
butyl cellosolve			0.7	
carbon disulfide	0.14			
chlorobenzene		2.8		
chloroform		0.069		0.039
cis-1,2-dichloroethene		0.9		0.041
ethylbenzene	140	0.005	51	
methyl ethyl ketone			9.2	
methyl isobutyl ketone			8.4	70
methylene chloride		1100	20000	
styrene	330			
tetrachloroethene	75	11	140	
toluene	1.1	0.004	1900	80
trans-1,2-dichloroethene		0.008		1
trichloroethene	90	27	45	11
trichlorofluoromethane		0.018		
xylenes total		0.21	390	



SOURCE: USGS 7.5 minute topo sheet, Torrance quad.



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BPACC01191

N

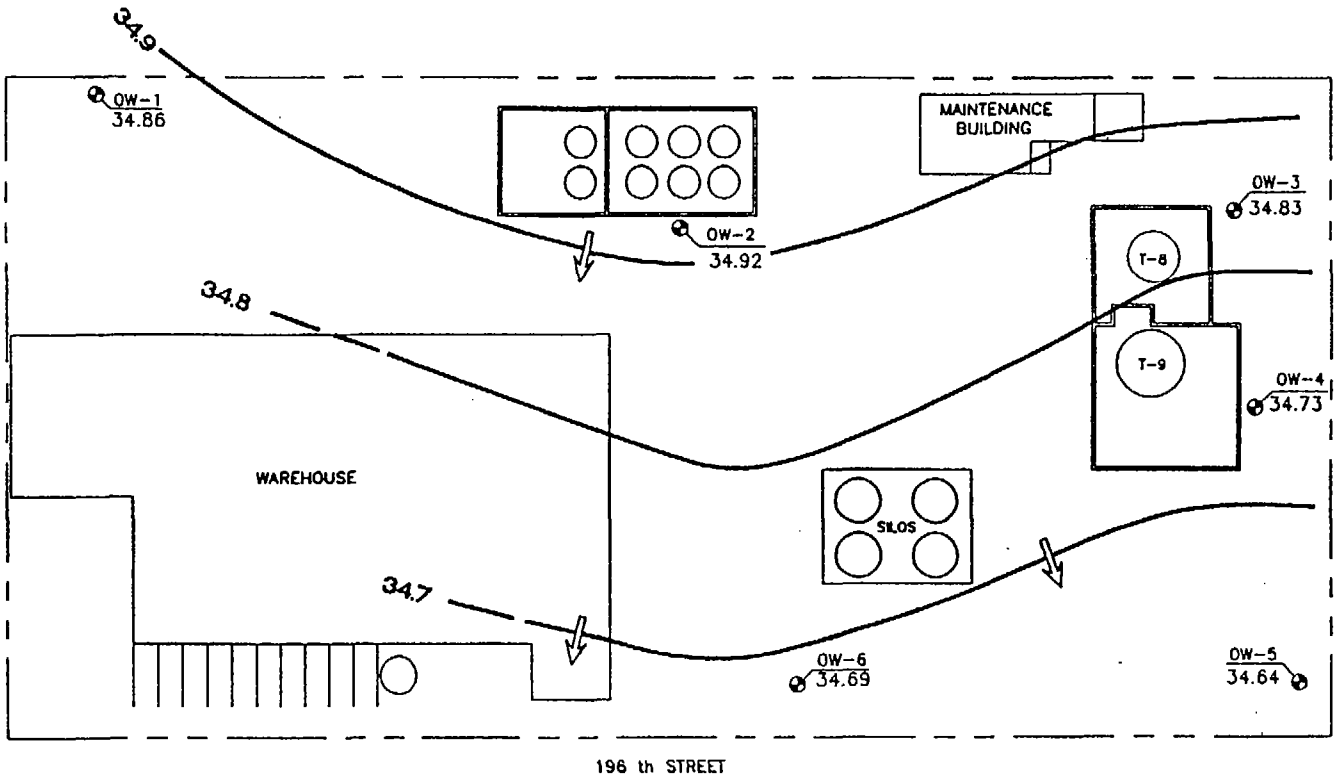
0 2000 4000

SCALE IN FEET

SITE LOCATION MAP
AMOCO CHEMICAL FACILITY
TORRANCE, CALIFORNIA

SIMON HYDRO-SEARCH
5882 BOLSA AVENUE
HUNTINGTON BEACH, CALIFORNIA 92649

PROJECT NO: 512-345	FIGURE NO: 1
DATE: JANUARY, 1992	



EXPLANATION

OW-3 MONITORING WELL NUMBER
34.83 GROUNDWATER ELEVATION (feet)

34.7 GROUNDWATER ELEVATION CONTOUR (dashed where inferred)

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

NOTE:

1. Data collected Jan. 16, 1992.
2. Contour intreval = 0.10 feet.

N

0 60 120

SCALE IN FEET
1" = 60'

GROUNDWATER ELEVATION CONTOUR MAP
AMOCO CHEMICAL COMPANY
TORRANCE, CALIFORNIA

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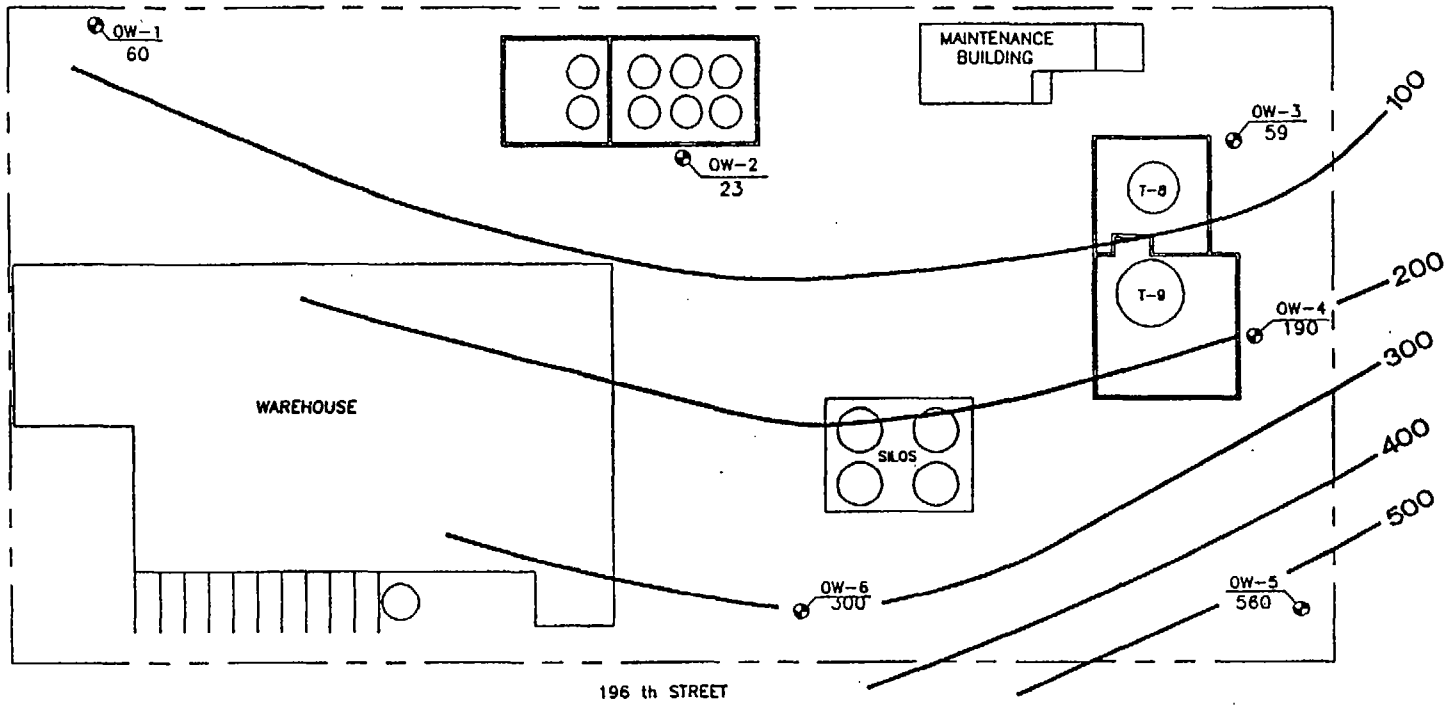
SIMON HYDRO-SEARCH
5882 BOLSA AVENUE
HUNTINGTON BEACH, CALIFORNIA 92649

PROJECT NO: 512-345	DWG NO: 345001	FIGURE: 2
DATE: JANUARY, 1992	REV. 2/21/92	

BPACC0192



EXPLANATION

OW-3	MONITORING WELL NUMBER
59	CIS-1,2 DICHLOROETHENE CONCENTRATION (ug/L)
500	CIS- 1,2 DICHLOROETHENE CONTOUR (Dashed where inferred)

NOTE: 1. Data collected Jan. 16, 1992

2. Contour Interval = 100(ug/l)

N

0 60 120

SCALE IN FEET
1" = 60'

CIS - 1,2 DICHLOROETHENE
CONCENTRATION MAP
AMOCO CHEMICAL COMPANY
TORRANCE, CALIFORNIA

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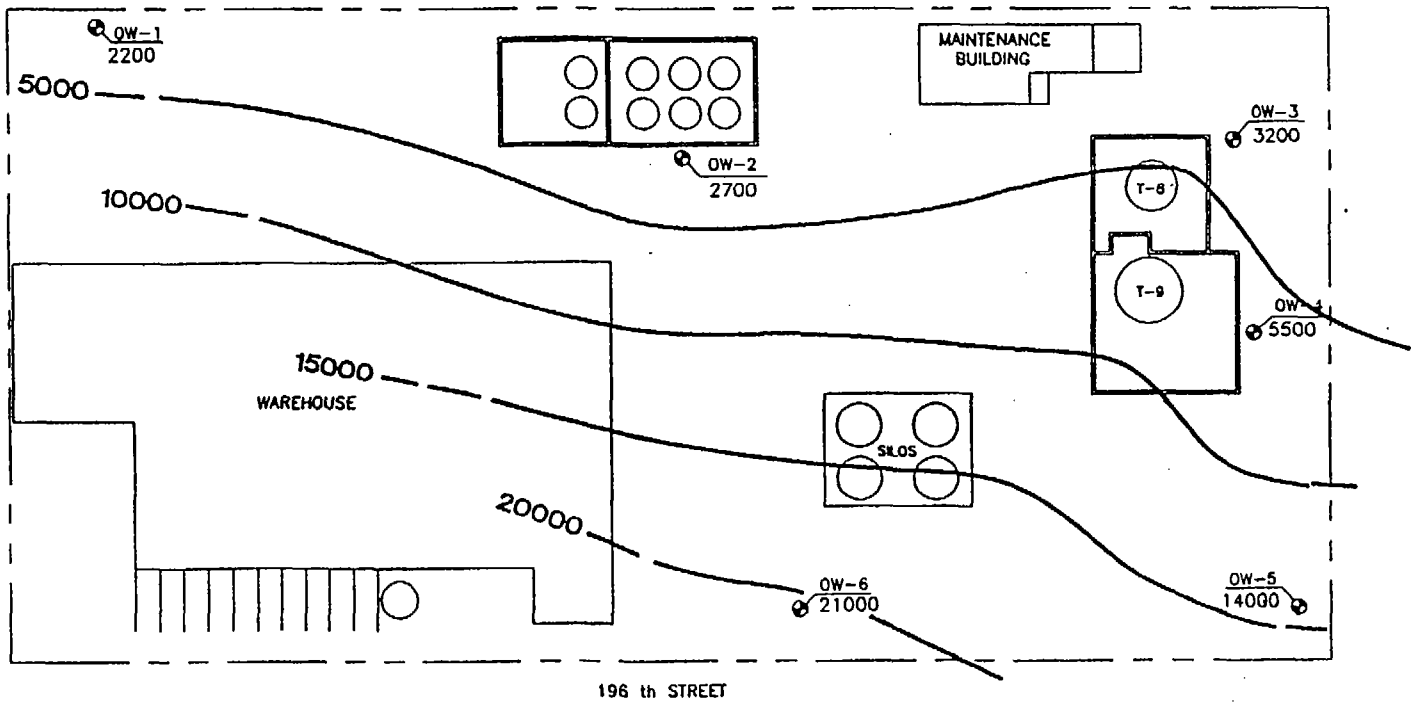
SIMON HYDRO-SEARCH
5882 BOLSA AVENUE
HUNTINGTON BEACH, CALIFORNIA 92649

PROJECT NO: 512-345	DWG NO: 345001	FIGURE: 3
DATE: JANUARY, 1992	REV. 2/21/92	

BPACC01193



EXPLANATION

OW-3	MONITORING WELL NUMBER
1900	TRICHLOROETHENE CONCENTRATION (ug/L)
5000	TRICHLOROETHENE CONTOUR (Dashed where inferred)

1. Data collected Jan. 16, 1992.
2. Contour interval = 5000 ug/L.

N

0 60 120

SCALE IN FEET
1" = 60'

TRICHLOROETHENE CONCENTRATION MAP
AMOCO CHEMICAL COMPANY
TORRANCE, CALIFORNIA

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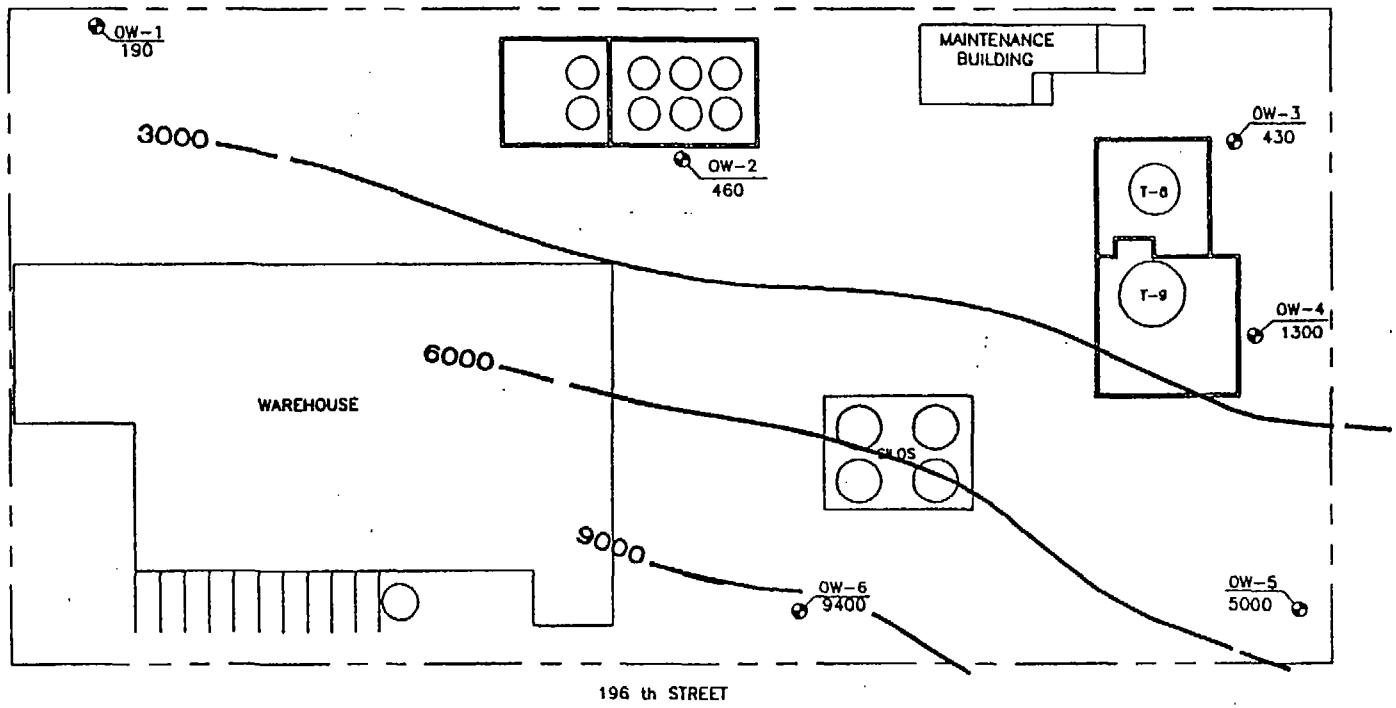
SIMON HYDRO-SEARCH
5882 BOLSA AVENUE
HUNTINGTON BEACH, CALIFORNIA 92649

PROJECT NO: 512-345	DWG NO: 345001	FIGURE: 4
DATE: JANUARY 1992	REV. 2/21/92	

BPACC01194



EXPLANATION

OW-3 MONITORING WELL NUMBER
430 TETRACHLOROETHYLENE CONCENTRATION (ug/L)

3000 TETRACHLOROETHYLENE CONTOUR (Dashed where inferred)

1. Data collected Jan. 16, 1992.
2. Contour interval = 3000 ug/L.

N

0 60 120

SCALE IN FEET
1" = 60'

TETRACHLOROETHENE CONCENTRATION MAP
AMOCO CHEMICAL COMPANY
TORRANCE, CALIFORNIA

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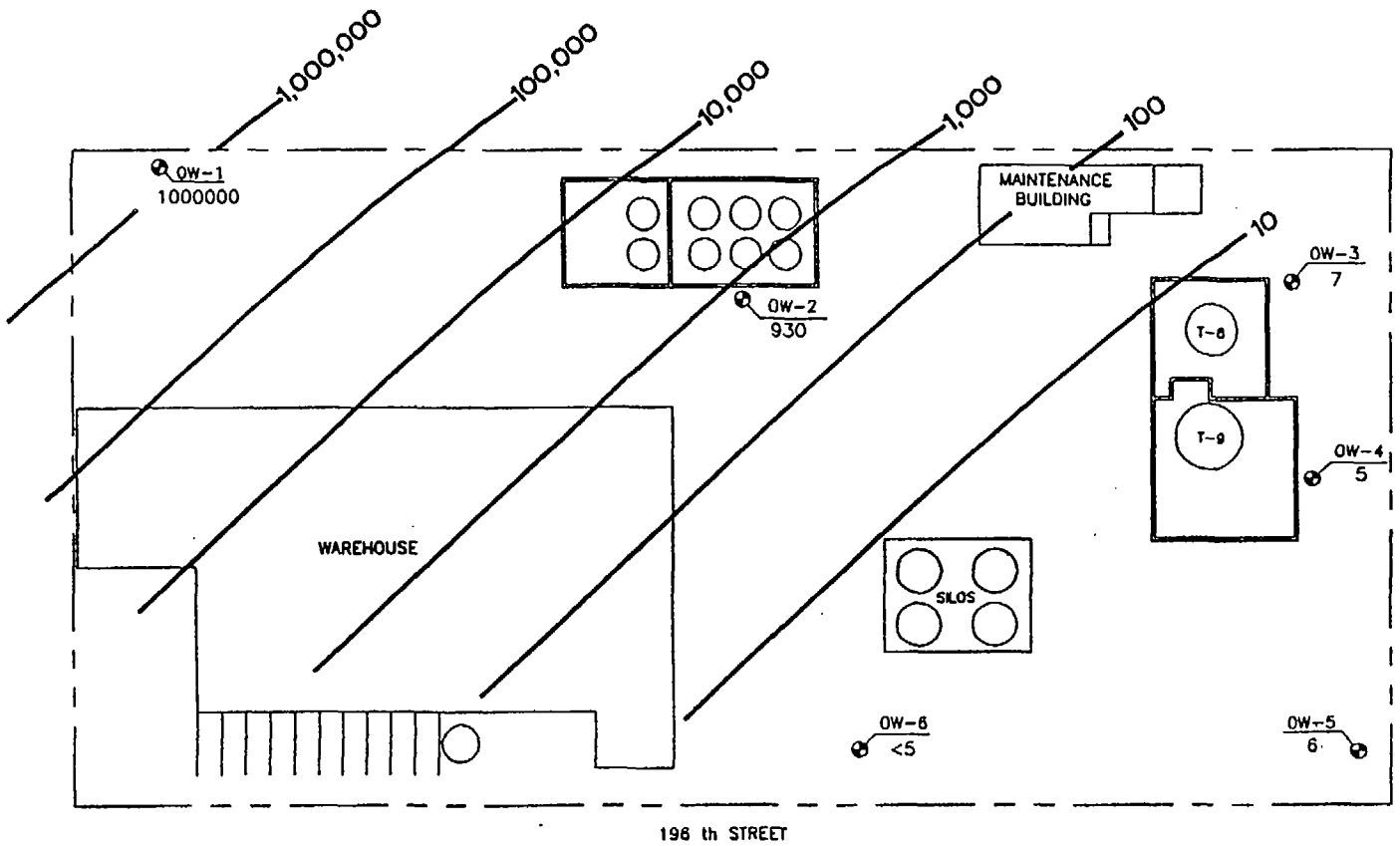
SIMON HYDRO-SEARCH
5882 BOLSA AVENUE
HUNTINGTON BEACH, CALIFORNIA 92649

PROJECT NO: 512-345	DWG NO: 345001	FIGURE: 5
DATE: JANUARY, 1992	REV. 2/21/92	

BPACC01195



EXPLANATION

OW-3 MONITORING WELL NUMBER
7 METHYLENE CHLORIDE CONCENTRATION (ug/l)

10 METHYLENE CHLORIDE CONTOUR (Dashed where inferred)

NOTE: 1. Data collected Jan 16, 1992.
2. <5 = not detected above limit shown.

N

0 60 120

SCALE IN FEET
1" = 60'

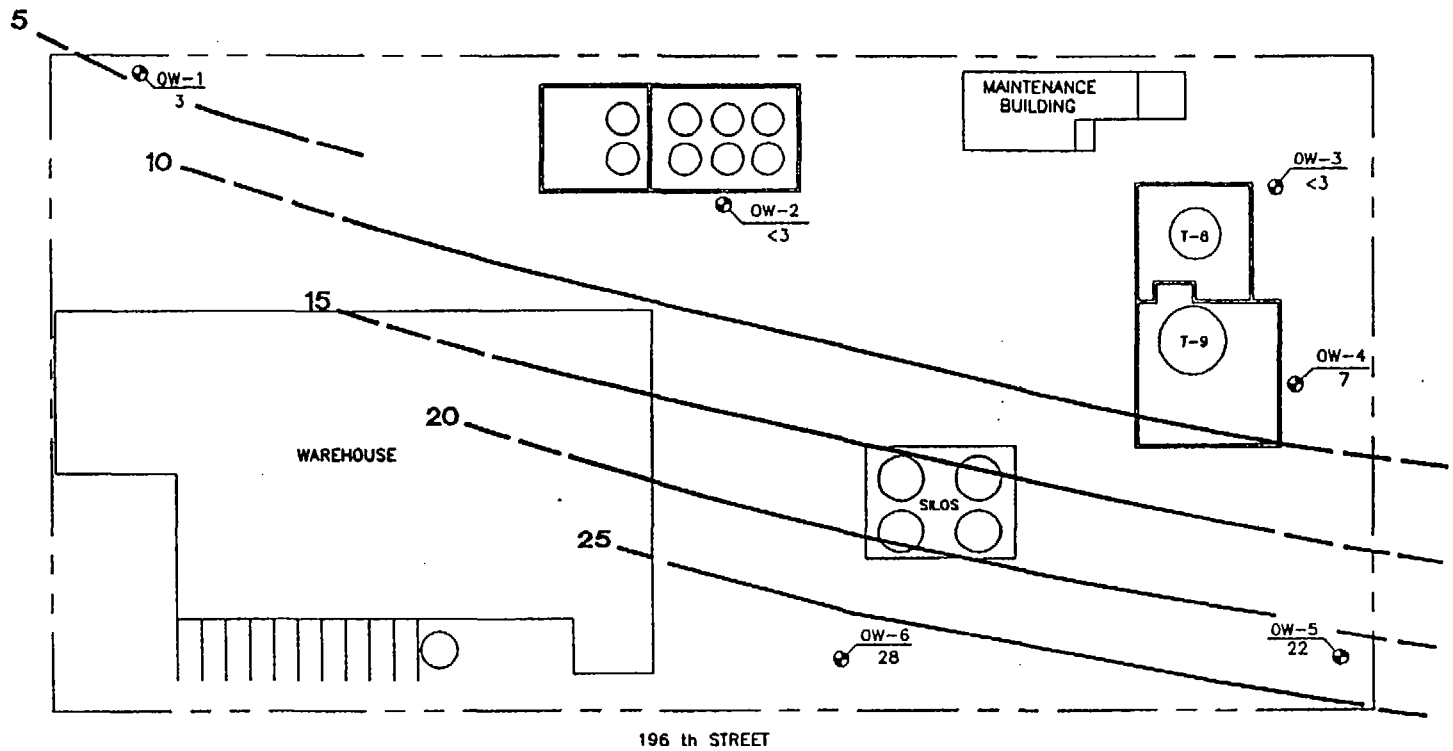
METHYLENE CHLORIDE CONCENTRATION MAP
AMOCO CHEMICAL COMPANY
TORRANCE, CALIFORNIA

DRAFT

SIMON HYDRO-SEARCH
5882 BOLSA AVENUE
HUNTINGTON BEACH, CALIFORNIA 92649

PROJECT NO: 512-345	DWG NO: 345001	FIGURE: 6
DATE: JANUARY 1992	REV. 2/21/92	

BPACC01196



EXPLANATION

OW-3 MONITORING WELL NUMBER
BENZENE CONCENTRATION (ug/l)

5 BENZENE CONTOUR
(Dashed where inferred)

NOTE: 1. Data collected Jan. 16, 1992.
2. Contour interval = 5 ug/l.
3. < 3 = not detected above limit shown.

N

0 60 120

SCALE IN FEET
1" = 60'

BENZENE CONCENTRATION MAP
AMOCO CHEMICAL COMPANY
TORRANCE, CALIFORNIA

DRAFT

SIMON HYDRO-SEARCH
5882 BOLSA AVENUE
HUNTINGTON BEACH, CALIFORNIA 92649

PROJECT NO: 512-345	DWG NO: 345001	FIGURE: 7
DATE: JANUARY 1992	REV. 2/21/92	

BPACC01197

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APPENDIX A

LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORMS

THE EARTH TECHNOLOGY CORP.
ANALYTICAL LABORATORIES
5702 BOLSA AVENUE
HUNTINGTON BEACH, CA 92649
Attn: Harvey Pierre
Phone: (714) 892-2565

Simon Environmental Eng.
5882 Bolsa Ave.
Huntington Beach, Ca. 92649

Attn: Leo Chaidez
Invoice Number:

Order #: 92-01-040
Date: 01/21/92 08:32
Work ID: TORRANCE/512-345
Date Received: 01/16/92
Date Completed: 01/21/92

SAMPLE IDENTIFICATION

Sample Number	Sample Description	Sample Number	Sample Description
01	OW-01-01	02	OW-01-02
03	OW-02-03	04	OW-02-04
05	OW-100-05	06	OW-100-06
07	OW-03-07	08	OW-03-08
09	OW-04-09	10	OW-04-10
11	OW-05-11	12	OW-05-12
13	OW-06-13	14	OW-06-14
15	OW-00-15	16	OW-00-16

MULTIPLY THE DETECTION LIMIT BY THE DILUTION FACTOR.
ND = Indicates analyte not detected.
B = Indicates the analyte was observed in associated blank as well as the sample.

Approval: Harvey Pierre 1/21/92
Harvey Pierre
Laboratory Manager
Date

BPACC01199

Received: 01/16/92

Results by Sample

SAMPLE ID OW-01-01 FRACTION 01A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	ND	20	1.0	01/17/92
Chloromethane	ND	10	1.0	01/17/92
Vinyl Chloride	ND	10	1.0	01/17/92
Bromomethane	ND	10	1.0	01/17/92
Chloroethane	ND	10	1.0	01/17/92
Trichlorofluoromethane	ND	10	1.0	01/17/92
Ethanol	ND	20	1.0	01/17/92
1,1-Dichloroethene	8.0	3.0	1.0	01/17/92
Acrolein	ND	10	1.0	01/17/92
Acetone	ND	20	1.0	01/17/92
Iodomethane	ND	10	1.0	01/17/92
Carbon Disulfide	ND	5.0	1.0	01/17/92
Methylene chloride	1000000	5.0	10000	01/18/92
Trans-1,2-Dichloroethene	ND	3.0	1.0	01/17/92
Acrylonitrile	ND	10	1.0	01/17/92
1,1-Dichloroethane	ND	3.0	1.0	01/17/92
2-Butanone	ND	20	1.0	01/17/92
cis-1,2-Dichloroethene	60	3.0	1.0	01/17/92
Chloroform	37	3.0	1.0	01/17/92
1,2-Dichloroethane	ND	3.0	1.0	01/17/92
Vinyl Acetate	ND	20	1.0	01/17/92
1,1,1-Trichloroethane	ND	3.0	1.0	01/17/92
Carbon Tetrachloride	ND	3.0	1.0	01/17/92
Benzene	3.0	3.0	1.0	01/17/92
Trichloroethene	2200	3.0	100	01/17/92
1,2-Dichloropropane	ND	5.0	1.0	01/17/92
Bromodichloromethane	ND	3.0	1.0	01/17/92
Dibromomethane	ND	10	1.0	01/17/92
2-Chloroethyl vinyl ether	ND	10	1.0	01/17/92
cis-1,3-Dichloropropene	ND	3.0	1.0	01/17/92
trans-1,3-Dichloropropene	ND	5.0	1.0	01/17/92
Ethyl methacrylate	ND	10	1.0	01/17/92
1,1,2-Trichloroethane	6.0	5.0	1.0	01/17/92
Dibromochloromethane	ND	3.0	1.0	01/17/92
Bromoform	ND	5.0	1.0	01/17/92
4-Methyl-2-Pentanone	ND	20	1.0	01/17/92
Toluene	4.0	3.0	1.0	01/17/92
2-Hexanone	ND	20	1.0	01/17/92
1,1,2,2-Tetrachloroethane	ND	3.0	1.0	01/17/92
Tetrachloroethene	190	3.0	1.0	01/17/92
Chlorobenzene	ND	3.0	1.0	01/17/92
Ethylbenzene	5.0	3.0	1.0	01/17/92
Xylene(total)	14	3.0	1.0	01/17/92
Styrene	ND	3.0	1.0	01/17/92
cis-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92
1,2,3-Trichloropropane	ND	10	1.0	01/17/92
trans-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92

Notes and Definitions for this Report:

AMPLE ID OW-01-01 FRACTION 01A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

ANALYST CL
FILE ID *
UNITS ug/L
BATCH_ID VOA1-92-010
COMMENTS * = >1V947; >1V956; >1V965

Received: 01/16/92 Results by Sample

SAMPLE ID OW-01-02 FRACTION 02A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
N-Nitrosodimethylamine	ND	10	1.0	01/18/92
2-Picoline	ND	50	1.0	01/18/92
Methyl_methanesulfonate	ND	50	1.0	01/18/92
Ethyl methanesulfonate	ND	50	1.0	01/18/92
Phenol	ND	10	1.0	01/18/92
Aniline	ND	10	1.0	01/18/92
bis(2-chloroethyl) ether	ND	5.0	1.0	01/18/92
2-Chlorophenol	ND	10	1.0	01/18/92
1,3-Dichlorobenzene	ND	5.0	1.0	01/18/92
1,4-Dichlorobenzene	ND	5.0	1.0	01/18/92
Benzyl alcohol	ND	10	1.0	01/18/92
1,2-Dichlorobenzene	ND	5.0	1.0	01/18/92
2-Methylphenol	ND	10	1.0	01/18/92
bis(2chloroisopropyl)ether	ND	5.0	1.0	01/18/92
Acetophenone	ND	50	1.0	01/18/92
4-Methylphenol	ND	10	1.0	01/18/92
N-Nitroso-di-n-propylamine	ND	5.0	1.0	01/18/92
Hexachloroethane	ND	5.0	1.0	01/18/92
Nitrobenzene	ND	5.0	1.0	01/18/92
N-Nitrosopiperidine	ND	50	1.0	01/18/92
Isophorone	ND	5.0	1.0	01/18/92
2-Nitrophenol	ND	10	1.0	01/18/92
2,4-Dimethylphenol	ND	10	1.0	01/18/92
Benzoic acid	ND	50	1.0	01/18/92
bis(2-Chloroethoxy)methane	ND	10	1.0	01/18/92
a,a-Dimethylphenethylamine	ND	50	1.0	01/18/92
2,4-Dichlorophenol	ND	10	1.0	01/18/92
1,2,4-Trichlorobenzene	ND	5.0	1.0	01/18/92
Naphthalene	ND	5.0	1.0	01/18/92
2,6-Dichlorophenol	ND	50	1.0	01/18/92
4-Chloroaniline	ND	20	1.0	01/18/92
Hexachlorobutadiene	ND	5.0	1.0	01/18/92
N-Nitroso-di-n-butylamine	ND	50	1.0	01/18/92
4-Chloro-3-methylphenol	ND	10	1.0	01/18/92
2-Methylnaphthalene	ND	5.0	1.0	01/18/92
1,2,4,5-Tetrachlorobenzene	ND	50	1.0	01/18/92
Hexachlorocyclopentadiene	ND	5.0	1.0	01/18/92
2,4,6-Trichlorophenol	ND	10	1.0	01/18/92
2,4,5-Trichlorophenol	ND	10	1.0	01/18/92
2-Chloronaphthalene	ND	5.0	1.0	01/18/92
1-Chloronaphthalene	ND	50	1.0	01/18/92
2-Nitroaniline	ND	50	1.0	01/18/92
Dimethyl phthalate	ND	5.0	1.0	01/18/92
Acenaphthylene	ND	5.0	1.0	01/18/92
2,6-Dinitrotoluene	ND	5.0	1.0	01/18/92
3-Nitroaniline	ND	50	1.0	01/18/92
Acenaphthene	ND	5.0	1.0	01/18/92
2,4-Dinitrophenol	ND	50	1.0	01/18/92
4-Nitrophenol	ND	50	1.0	01/18/92
Dibenzofuran	ND	5.0	1.0	01/18/92

MPLE ID OW-01-02 FRACTION 02A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

Pentachlorobenzene	ND	50	1.0	01/18/92
2,4-Dinitrotoluene	ND	5.0	1.0	01/18/92
1-Naphthylamine	ND	50	1.0	01/18/92
2-Naphthylamine	ND	50	1.0	01/18/92
2,3,4,6-Tetrachlorophenol	ND	50	1.0	01/18/92
Diethylphthalate	ND	5.0	1.0	01/18/92
4-Chlorophenyl-phenylether	ND	5.0	1.0	01/18/92
Fluorene	ND	5.0	1.0	01/18/92
4-Nitroaniline	ND	50	1.0	01/18/92
4,6-Dinitro-2-methylphenol	ND	50	1.0	01/18/92
Diphenylamine	ND	50	1.0	01/18/92
N-Nitrosodiphenylamine	ND	10	1.0	01/18/92
Azobenzene	ND	5.0	1.0	01/18/92
4-Bromophenyl-phenylether	ND	5.0	1.0	01/18/92
Phenacetin	ND	50	1.0	01/18/92
Hexachlorobenzene	ND	5.0	1.0	01/18/92
4-Aminobiphenyl	ND	50	1.0	01/18/92
Pentachlorophenol	ND	30	1.0	01/18/92
Pronamide	ND	50	1.0	01/18/92
Phenanthrene	ND	5.0	1.0	01/18/92
Anthracene	ND	5.0	1.0	01/18/92
Di-n-butylphthalate	ND	5.0	1.0	01/18/92
Fluoranthene	ND	5.0	1.0	01/18/92
Benzidine	ND	50	1.0	01/18/92
Pyrene	ND	5.0	1.0	01/18/92
p-Dimethylaminoazobenzene	ND	50	1.0	01/18/92
Butylbenzylphthalate	ND	5.0	1.0	01/18/92
3,3'-Dichlorobenzidine	ND	20	1.0	01/18/92
Benzo(a)anthracene	ND	5.0	1.0	01/18/92
Chrysene	ND	5.0	1.0	01/18/92
bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	01/18/92
Di-n-octyl phthalate	ND	5.0	1.0	01/18/92
7,12-Dimethylbenz(a)anthrace	ND	50	1.0	01/18/92
Benzo(b)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(k)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(a)pyrene	ND	5.0	1.0	01/18/92
3-Methylcholanthrene	ND	50	1.0	01/18/92
Dibenz(a,j)acridine	ND	50	1.0	01/18/92
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0	01/18/92
Dibenzo(a,h)anthracene	ND	5.0	1.0	01/18/92
Benzo(g,h,i)perylene	ND	5.0	1.0	01/18/92

Notes and Definitions for this Report:

EXTRACTED 01/17/92
ANALYST TT
FILE ID >AE755
UNITS ug/L
BATCH_ID 625-76
COMMENTS

Received: 01/16/92 Results by Sample

AMPLE ID OW-02-03 FRACTION 03A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	ND	20	1.0	01/17/92
Chloromethane	ND	10	1.0	01/17/92
Vinyl Chloride	ND	10	1.0	01/17/92
Bromomethane	ND	10	1.0	01/17/92
Chloroethane	ND	10	1.0	01/17/92
Trichlorofluoromethane	17	10	1.0	01/17/92
Ethanol	ND	20	1.0	01/17/92
1,1-Dichloroethene	ND	3.0	1.0	01/17/92
Acrolein	ND	10	1.0	01/17/92
Acetone	ND	20	1.0	01/17/92
Iodomethane	ND	10	1.0	01/17/92
Carbon Disulfide	ND	5.0	1.0	01/17/92
Methylene chloride	930	5.0	100	01/17/92
Trans-1,2-Dichloroethene	7.0	3.0	1.0	01/17/92
Acrylonitrile	ND	10	1.0	01/17/92
1,1-Dichloroethane	ND	3.0	1.0	01/17/92
2-Butanone	ND	20	1.0	01/17/92
cis-1,2-Dichloroethene	23	3.0	1.0	01/17/92
Chloroform	11	3.0	1.0	01/17/92
1,2-Dichloroethane	ND	3.0	1.0	01/17/92
Vinyl Acetate	ND	20	1.0	01/17/92
1,1,1-Trichloroethane	ND	3.0	1.0	01/17/92
Carbon Tetrachloride	ND	3.0	1.0	01/17/92
Benzene	ND	3.0	1.0	01/17/92
Trichloroethene	2700	3.0	100	01/17/92
1,2-Dichloropropane	ND	5.0	1.0	01/17/92
Bromodichloromethane	ND	3.0	1.0	01/17/92
Dibromomethane	ND	10	1.0	01/17/92
2-Chloroethyl vinyl ether	ND	10	1.0	01/17/92
cis-1,3-Dichloropropene	ND	3.0	1.0	01/17/92
trans-1,3-Dichloropropene	ND	5.0	1.0	01/17/92
Ethyl methacrylate	ND	10	1.0	01/17/92
1,1,2-Trichloroethane	ND	5.0	1.0	01/17/92
Dibromochloromethane	ND	3.0	1.0	01/17/92
Bromoform	ND	5.0	1.0	01/17/92
4-Methyl-2-Pentanone	ND	20	1.0	01/17/92
Toluene	ND	3.0	1.0	01/17/92
2-Hexanone	ND	20	1.0	01/17/92
1,1,2,2-Tetrachloroethane	ND	3.0	1.0	01/17/92
Tetrachloroethene	460	3.0	100	01/17/92
Chlorobenzene	ND	3.0	1.0	01/17/92
Ethylbenzene	ND	3.0	1.0	01/17/92
Xylene(total)	ND	3.0	1.0	01/17/92
Styrene	ND	3.0	1.0	01/17/92
cis-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92
1,2,3-Trichloropropane	ND	10	1.0	01/17/92
trans-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92

Notes and Definitions for this Report:

ETAL REPORT
Results by Sample

Work Order # 92-01-040
Continued From Above

AMPLE ID OW-02-03

FRACTION 03A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

ANALYST CL
FILE ID >1V948; >1V957
UNITS ug/L
BATCH ID VOA1-92-010
COMMENTS

Received: 01/16/92 Results by Sample

MPLE ID CW-02-04 FRACTION 04A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
N-Nitrosodimethylamine	ND	10	1.0	01/18/92
2-Picoline	ND	50	1.0	01/18/92
Methyl_methanesulfonate	ND	50	1.0	01/18/92
Ethyl methanesulfonate	ND	50	1.0	01/18/92
Phenol	ND	10	1.0	01/18/92
Aniline	ND	10	1.0	01/18/92
bis(2-chloroethyl) ether	ND	5.0	1.0	01/18/92
2-Chlorophenol	ND	10	1.0	01/18/92
1,3-Dichlorobenzene	ND	5.0	1.0	01/18/92
1,4-Dichlorobenzene	ND	5.0	1.0	01/18/92
Benzyl alcohol	ND	10	1.0	01/18/92
1,2-Dichlorobenzene	ND	5.0	1.0	01/18/92
2-Methylphenol	ND	10	1.0	01/18/92
bis(2chloroisopropyl)ether	ND	5.0	1.0	01/18/92
Acetophenone	ND	50	1.0	01/18/92
4-Methylphenol	ND	10	1.0	01/18/92
N-Nitroso-di-n-propylamine	ND	5.0	1.0	01/18/92
Hexachloroethane	ND	5.0	1.0	01/18/92
Nitrobenzene	ND	5.0	1.0	01/18/92
N-Nitrosopiperidine	ND	50	1.0	01/18/92
Isophorone	ND	5.0	1.0	01/18/92
2-Nitrophenol	ND	10	1.0	01/18/92
2,4-Dimethylphenol	ND	10	1.0	01/18/92
Benzoic acid	ND	50	1.0	01/18/92
bis(2-Chloroethoxy)methane	ND	10	1.0	01/18/92
a,a-Dimethylphenethylamine	ND	50	1.0	01/18/92
2,4-Dichlorophenol	ND	10	1.0	01/18/92
1,2,4-Trichlorobenzene	ND	5.0	1.0	01/18/92
Naphthalene	ND	5.0	1.0	01/18/92
2,6-Dichlorophenol	ND	50	1.0	01/18/92
4-Chloroaniline	ND	20	1.0	01/18/92
Hexachlorobutadiene	ND	5.0	1.0	01/18/92
N-Nitroso-di-n-butylamine	ND	50	1.0	01/18/92
4-Chloro-3-methylphenol	ND	10	1.0	01/18/92
2-Methylnaphthalene	ND	5.0	1.0	01/18/92
1,2,4,5-Tetrachlorobenzene	ND	50	1.0	01/18/92
Hexachlorocyclopentadiene	ND	5.0	1.0	01/18/92
2,4,6-Trichlorophenol	ND	10	1.0	01/18/92
2,4,5-Trichlorophenol	ND	10	1.0	01/18/92
2-Chloronaphthalene	ND	5.0	1.0	01/18/92
1-Chloronaphthalene	ND	50	1.0	01/18/92
2-Nitroaniline	ND	50	1.0	01/18/92
Dimethyl phthalate	ND	5.0	1.0	01/18/92
Acenaphthylene	ND	5.0	1.0	01/18/92
2,6-Dinitrotoluene	ND	5.0	1.0	01/18/92
3-Nitroaniline	ND	50	1.0	01/18/92
Acenaphthene	ND	5.0	1.0	01/18/92
2,4-Dinitrophenol	ND	50	1.0	01/18/92
4-Nitrophenol	ND	50	1.0	01/18/92
Dibenzofuran	ND	5.0	1.0	01/18/92

AMPLE ID OW-02-04 FRACTION 04A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

Pentachlorobenzene	ND	50	1.0	01/18/92
2,4-Dinitrotoluene	ND	5.0	1.0	01/18/92
1-Naphthylamine	ND	50	1.0	01/18/92
2-Naphthylamine	ND	50	1.0	01/18/92
2,3,4,6-Tetrachlorophenol	ND	50	1.0	01/18/92
Diethylphthalate	ND	5.0	1.0	01/18/92
4-Chlorophenyl-phenylether	ND	5.0	1.0	01/18/92
Fluorene	ND	5.0	1.0	01/18/92
4-Nitroaniline	ND	50	1.0	01/18/92
4,6-Dinitro-2-methylphenol	ND	50	1.0	01/18/92
Diphenylamine	ND	50	1.0	01/18/92
N-Nitrosodiphenylamine	ND	10	1.0	01/18/92
Azobenzene	ND	5.0	1.0	01/18/92
4-Bromophenyl-phenylether	ND	5.0	1.0	01/18/92
Phenacetin	ND	50	1.0	01/18/92
Hexachlorobenzene	ND	5.0	1.0	01/18/92
4-Aminobiphenyl	ND	50	1.0	01/18/92
Pentachlorophenol	ND	30	1.0	01/18/92
Pronamide	ND	50	1.0	01/18/92
Phenanthrene	ND	5.0	1.0	01/18/92
Anthracene	ND	5.0	1.0	01/18/92
Di-n-butylphthalate	ND	5.0	1.0	01/18/92
Fluoranthene	ND	5.0	1.0	01/18/92
Benzidine	ND	50	1.0	01/18/92
Pyrene	ND	5.0	1.0	01/18/92
p-Dimethylaminoazobenzene	ND	50	1.0	01/18/92
Butylbenzylphthalate	ND	5.0	1.0	01/18/92
3,3'-Dichlorobenzidine	ND	20	1.0	01/18/92
Benzo(a)anthracene	ND	5.0	1.0	01/18/92
Chrysene	ND	5.0	1.0	01/18/92
bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	01/18/92
Di-n-octyl phthalate	ND	5.0	1.0	01/18/92
7,12-Dimethylbenz(a)anthrace	ND	50	1.0	01/18/92
Benzo(b)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(k)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(a)pyrene	ND	5.0	1.0	01/18/92
3-Methylcholanthrene	ND	50	1.0	01/18/92
Dibenz(a,j)acridine	ND	50	1.0	01/18/92
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0	01/18/92
Dibenzo(a,h)anthracene	ND	5.0	1.0	01/18/92
Benzo(g,h,i)perylene	ND	5.0	1.0	01/18/92

Notes and Definitions for this Report:

EXTRACTED 01/17/92
ANALYST TT
FILE ID >AE749
UNITS ug/L
BATCH_ID 625-76
COMMENTS

.eceived: 01/16/92

Results by Sample

AMPLE ID OW-100-05 FRACTION 05A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	ND	20	1.0	01/17/92
Chloromethane	ND	10	1.0	01/17/92
Vinyl Chloride	ND	10	1.0	01/17/92
Bromomethane	ND	10	1.0	01/17/92
Chloroethane	ND	10	1.0	01/17/92
Trichlorofluoromethane	18	10	1.0	01/17/92
Ethanol	ND	20	1.0	01/17/92
1,1-Dichloroethene	ND	3.0	1.0	01/17/92
Acrolein	ND	10	1.0	01/17/92
Acetone	ND	20	1.0	01/17/92
Iodomethane	ND	10	1.0	01/17/92
Carbon Disulfide	ND	5.0	1.0	01/17/92
Methylene chloride	25	5.0	1.0	01/17/92
Trans-1,2-Dichloroethene	8.0	3.0	1.0	01/17/92
Acrylonitrile	ND	10	1.0	01/17/92
1,1-Dichloroethane	ND	3.0	1.0	01/17/92
2-Butanone	ND	20	1.0	01/17/92
cis-1,2-Dichloroethene	24	3.0	1.0	01/17/92
Chloroform	13	3.0	1.0	01/17/92
1,2-Dichloroethane	ND	3.0	1.0	01/17/92
Vinyl Acetate	ND	20	1.0	01/17/92
1,1,1-Trichloroethane	ND	3.0	1.0	01/17/92
Carbon Tetrachloride	ND	3.0	1.0	01/17/92
Benzene	ND	3.0	1.0	01/17/92
Trichloroethene	2700	3.0	100	01/17/92
1,2-Dichloropropane	ND	5.0	1.0	01/17/92
Bromodichloromethane	ND	3.0	1.0	01/17/92
Dibromomethane	ND	10	1.0	01/17/92
2-Chloroethyl vinyl ether	ND	10	1.0	01/17/92
cis-1,3-Dichloropropene	ND	3.0	1.0	01/17/92
trans-1,3-Dichloropropene	ND	5.0	1.0	01/17/92
Ethyl methacrylate	ND	10	1.0	01/17/92
1,1,2-Trichloroethane	ND	5.0	1.0	01/17/92
Dibromochloromethane	ND	3.0	1.0	01/17/92
Bromoform	ND	5.0	1.0	01/17/92
4-Methyl-2-Pentanone	ND	20	1.0	01/17/92
Toluene	ND	3.0	1.0	01/17/92
2-Hexanone	ND	20	1.0	01/17/92
1,1,2,2-Tetrachloroethane	ND	3.0	1.0	01/17/92
Tetrachloroethene	390	3.0	100	01/17/92
Chlorobenzene	ND	3.0	1.0	01/17/92
Ethylbenzene	ND	3.0	1.0	01/17/92
Xylene(total)	ND	3.0	1.0	01/17/92
Styrene	ND	3.0	1.0	01/17/92
cis-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92
1,2,3-Trichloropropane	ND	10	1.0	01/17/92
trans-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92

Notes and Definitions for this Report:

AMPLE ID OW-100-05 FRACTION 05A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

ANALYST CL
FILE ID >1V949; >1V958
UNITS ug/L
BATCH ID VOA1-92-010
COMMENTS

Received: 01/16/92 Results by Sample

AMPLE ID OW-100-06 FRACTION 06A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
N-Nitrosodimethylamine	ND	10	1.0	01/18/92
2-Picoline	ND	50	1.0	01/18/92
Methyl_methanesulfonate	ND	50	1.0	01/18/92
Ethyl methanesulfonate	ND	50	1.0	01/18/92
Phenol	ND	10	1.0	01/18/92
Aniline	ND	10	1.0	01/18/92
bis(2-chloroethyl) ether	ND	5.0	1.0	01/18/92
2-Chlorophenol	ND	10	1.0	01/18/92
1,3-Dichlorobenzene	ND	5.0	1.0	01/18/92
1,4-Dichlorobenzene	ND	5.0	1.0	01/18/92
Benzyl alcohol	ND	10	1.0	01/18/92
1,2-Dichlorobenzene	ND	5.0	1.0	01/18/92
2-Methylphenol	ND	10	1.0	01/18/92
bis(2chloroisopropyl)ether	ND	5.0	1.0	01/18/92
Acetophenone	ND	50	1.0	01/18/92
4-Methylphenol	ND	10	1.0	01/18/92
N-Nitroso-di-n-propylamine	ND	5.0	1.0	01/18/92
Hexachloroethane	ND	5.0	1.0	01/18/92
Nitrobenzene	ND	5.0	1.0	01/18/92
N-Nitrosopiperidine	ND	50	1.0	01/18/92
Isophorone	ND	5.0	1.0	01/18/92
2-Nitrophenol	ND	10	1.0	01/18/92
2,4-Dimethylphenol	ND	10	1.0	01/18/92
Benzoic acid	ND	50	1.0	01/18/92
bis(2-Chloroethoxy)methane	ND	10	1.0	01/18/92
a,a-Dimethylphenethylamine	ND	50	1.0	01/18/92
2,4-Dichlorophenol	ND	10	1.0	01/18/92
1,2,4-Trichlorobenzene	ND	5.0	1.0	01/18/92
Naphthalene	ND	5.0	1.0	01/18/92
2,6-Dichlorophenol	ND	50	1.0	01/18/92
4-Chloroaniline	ND	20	1.0	01/18/92
Hexachlorobutadiene	ND	5.0	1.0	01/18/92
N-Nitroso-di-n-butylamine	ND	50	1.0	01/18/92
4-Chloro-3-methylphenol	ND	10	1.0	01/18/92
2-Methylnaphthalene	ND	5.0	1.0	01/18/92
1,2,4,5-Tetrachlorobenzene	ND	50	1.0	01/18/92
Hexachlorocyclopentadiene	ND	5.0	1.0	01/18/92
2,4,6-Trichlorophenol	ND	10	1.0	01/18/92
2,4,5-Trichlorophenol	ND	10	1.0	01/18/92
2-Chloronaphthalene	ND	5.0	1.0	01/18/92
1-Chloronaphthalene	ND	50	1.0	01/18/92
2-Nitroaniline	ND	50	1.0	01/18/92
Dimethyl phthalate	ND	5.0	1.0	01/18/92
Acenaphthylene	ND	5.0	1.0	01/18/92
2,6-Dinitrotoluene	ND	5.0	1.0	01/18/92
3-Nitroaniline	ND	50	1.0	01/18/92
Acenaphthene	ND	5.0	1.0	01/18/92
2,4-Dinitrophenol	ND	50	1.0	01/18/92
4-Nitrophenol	ND	50	1.0	01/18/92
Dibenzofuran	ND	5.0	1.0	01/18/92

AMPLE ID OW-100-06 FRACTION 06A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

Pentachlorobenzene	ND	50	1.0	01/18/92
2,4-Dinitrotoluene	ND	5.0	1.0	01/18/92
1-Naphthylamine	ND	50	1.0	01/18/92
2-Naphthylamine	ND	50	1.0	01/18/92
2,3,4,6-Tetrachlorophenol	ND	50	1.0	01/18/92
Diethylphthalate	ND	5.0	1.0	01/18/92
4-Chlorophenyl-phenylether	ND	5.0	1.0	01/18/92
Fluorene	ND	5.0	1.0	01/18/92
4-Nitroaniline	ND	50	1.0	01/18/92
4,6-Dinitro-2-methylphenol	ND	50	1.0	01/18/92
Diphenylamine	ND	50	1.0	01/18/92
N-Nitrosodiphenylamine	ND	10	1.0	01/18/92
Azobenzene	ND	5.0	1.0	01/18/92
4-Bromophenyl-phenylether	ND	5.0	1.0	01/18/92
Phenacetin	ND	50	1.0	01/18/92
Hexachlorobenzene	ND	5.0	1.0	01/18/92
4-Aminobiphenyl	ND	50	1.0	01/18/92
Pentachlorophenol	ND	30	1.0	01/18/92
Pronamide	ND	50	1.0	01/18/92
Phenanthrene	ND	5.0	1.0	01/18/92
Anthracene	ND	5.0	1.0	01/18/92
Di-n-butylphthalate	ND	5.0	1.0	01/18/92
Fluoranthene	ND	5.0	1.0	01/18/92
Benzidine	ND	50	1.0	01/18/92
Pyrene	ND	5.0	1.0	01/18/92
p-Dimethylaminoazobenzene	ND	50	1.0	01/18/92
Butylbenzylphthalate	ND	5.0	1.0	01/18/92
3,3'-Dichlorobenzidine	ND	20	1.0	01/18/92
Benzo(a)anthracene	ND	5.0	1.0	01/18/92
Chrysene	ND	5.0	1.0	01/18/92
bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	01/18/92
Di-n-octyl phthalate	ND	5.0	1.0	01/18/92
7,12-Dimethylbenz(a)anthrace	ND	50	1.0	01/18/92
Benzo(b)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(k)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(a)pyrene	ND	5.0	1.0	01/18/92
3-Methylcholanthrene	ND	50	1.0	01/18/92
Dibenz(a,j)acridine	ND	50	1.0	01/18/92
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0	01/18/92
Dibenzo(a,h)anthracene	ND	5.0	1.0	01/18/92
Benzo(g,h,i)perylene	ND	5.0	1.0	01/18/92

Notes and Definitions for this Report:

EXTRACTED 01/17/92
ANALYST TT
FILE ID >AE750
UNITS ug/L
BATCH_ID 625-76
COMMENTS

Received: 01/16/92 Results by Sample

AMPLE ID OW-03-07 FRACTION 07A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	ND	20	1.0	01/17/92
Chloromethane	ND	10	1.0	01/17/92
Vinyl Chloride	ND	10	1.0	01/17/92
Bromomethane	ND	10	1.0	01/17/92
Chloroethane	ND	10	1.0	01/17/92
Trichlorofluoromethane	ND	10	1.0	01/17/92
Ethanol	ND	20	1.0	01/17/92
1,1-Dichloroethene	8.0	3.0	1.0	01/17/92
Acrolein	ND	10	1.0	01/17/92
Acetone	ND	20	1.0	01/17/92
Iodomethane	ND	10	1.0	01/17/92
Carbon Disulfide	ND	5.0	1.0	01/17/92
Methylene chloride	7.0	5.0	1.0	01/17/92
Trans-1,2-Dichloroethene	ND	3.0	1.0	01/17/92
Acrylonitrile	ND	10	1.0	01/17/92
1,1-Dichloroethane	ND	3.0	1.0	01/17/92
2-Butanone	ND	20	1.0	01/17/92
cis-1,2-Dichloroethene	59	3.0	1.0	01/17/92
Chloroform	8.0	3.0	1.0	01/17/92
1,2-Dichloroethane	ND	3.0	1.0	01/17/92
Vinyl Acetate	ND	20	1.0	01/17/92
1,1,1-Trichloroethane	ND	3.0	1.0	01/17/92
Carbon Tetrachloride	ND	3.0	1.0	01/17/92
Benzene	ND	3.0	1.0	01/17/92
Trichloroethene	3200	3.0	1.0	01/17/92
1,2-Dichloropropane	ND	5.0	1.0	01/17/92
Bromodichloromethane	ND	3.0	1.0	01/17/92
Dibromomethane	ND	10	1.0	01/17/92
2-Chloroethyl vinyl ether	ND	10	1.0	01/17/92
cis-1,3-Dichloropropene	ND	3.0	1.0	01/17/92
trans-1,3-Dichloropropene	ND	5.0	1.0	01/17/92
Ethyl methacrylate	ND	10	1.0	01/17/92
1,1,2-Trichloroethane	ND	5.0	1.0	01/17/92
Dibromochloromethane	ND	3.0	1.0	01/17/92
Bromoform	ND	5.0	1.0	01/17/92
4-Methyl-2-Pentanone	ND	20	1.0	01/17/92
Toluene	ND	3.0	1.0	01/17/92
2-Hexanone	ND	20	1.0	01/17/92
1,1,2,2-Tetrachloroethane	ND	3.0	1.0	01/17/92
Tetrachloroethene	430	3.0	1.0	01/17/92
Chlorobenzene	ND	3.0	1.0	01/17/92
Ethylbenzene	ND	3.0	1.0	01/17/92
Xylene(total)	ND	3.0	1.0	01/17/92
Styrene	ND	3.0	1.0	01/17/92
cis-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92
1,2,3-Trichloropropane	ND	10	1.0	01/17/92
trans-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92

Notes and Definitions for this Report:

MPLE ID OW-03-07 FRACTION 07A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

ANALYST CL
FILE ID >1V950; >1V959
UNITS ug/L
BATCH_ID VOA1-92-010
COMMENTS

Received: 01/16/92

Results by Sample

AMPLE ID OW-03-08 FRACTION 08A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
N-Nitrosodimethylamine	ND	10	1.0	01/18/92
2-Picoline	ND	50	1.0	01/18/92
Methyl_methanesulfonate	ND	50	1.0	01/18/92
Ethyl methanesulfonate	ND	50	1.0	01/18/92
Phenol	ND	10	1.0	01/18/92
Aniline	ND	10	1.0	01/18/92
bis(2-chloroethyl) ether	ND	5.0	1.0	01/18/92
2-Chlorophenol	ND	10	1.0	01/18/92
1,3-Dichlorobenzene	ND	5.0	1.0	01/18/92
1,4-Dichlorobenzene	ND	5.0	1.0	01/18/92
Benzyl alcohol	ND	10	1.0	01/18/92
1,2-Dichlorobenzene	ND	5.0	1.0	01/18/92
2-Methylphenol	ND	10	1.0	01/18/92
bis(2chloroisopropyl)ether	ND	5.0	1.0	01/18/92
Acetophenone	ND	50	1.0	01/18/92
4-Methylphenol	ND	10	1.0	01/18/92
N-Nitroso-di-n-propylamine	ND	5.0	1.0	01/18/92
Hexachloroethane	ND	5.0	1.0	01/18/92
Nitrobenzene	ND	5.0	1.0	01/18/92
N-Nitrosopiperidine	ND	50	1.0	01/18/92
Isophorone	ND	5.0	1.0	01/18/92
2-Nitrophenol	ND	10	1.0	01/18/92
2,4-Dimethylphenol	ND	10	1.0	01/18/92
Benzoic acid	ND	50	1.0	01/18/92
bis(2-Chloroethoxy)methane	ND	10	1.0	01/18/92
a,a-Dimethylphenethylamine	ND	50	1.0	01/18/92
2,4-Dichlorophenol	ND	10	1.0	01/18/92
1,2,4-Trichlorobenzene	ND	5.0	1.0	01/18/92
Naphthalene	ND	5.0	1.0	01/18/92
2,6-Dichlorophenol	ND	50	1.0	01/18/92
4-Chloroaniline	ND	20	1.0	01/18/92
Hexachlorobutadiene	ND	5.0	1.0	01/18/92
N-Nitroso-di-n-butylamine	ND	50	1.0	01/18/92
4-Chloro-3-methylphenol	ND	10	1.0	01/18/92
2-Methylnaphthalene	ND	5.0	1.0	01/18/92
1,2,4,5-Tetrachlorobenzene	ND	50	1.0	01/18/92
Hexachlorocyclopentadiene	ND	5.0	1.0	01/18/92
2,4,6-Trichlorophenol	ND	10	1.0	01/18/92
2,4,5-Trichlorophenol	ND	10	1.0	01/18/92
2-Chloronaphthalene	ND	5.0	1.0	01/18/92
1-Chloronaphthalene	ND	50	1.0	01/18/92
2-Nitroaniline	ND	50	1.0	01/18/92
Dimethyl phthalate	ND	5.0	1.0	01/18/92
Acenaphthylene	ND	5.0	1.0	01/18/92
2,6-Dinitrotoluene	ND	5.0	1.0	01/18/92
3-Nitroaniline	ND	50	1.0	01/18/92
Acenaphthene	ND	5.0	1.0	01/18/92
2,4-Dinitrophenol	ND	50	1.0	01/18/92
4-Nitrophenol	ND	50	1.0	01/18/92
Dibenzofuran	ND	5.0	1.0	01/18/92

SAMPLE ID OW-03-08 FRACTION 08A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

Pentachlorobenzene	ND	50	1.0	01/18/92
2,4-Dinitrotoluene	ND	5.0	1.0	01/18/92
1-Naphthylamine	ND	50	1.0	01/18/92
2-Naphthylamine	ND	50	1.0	01/18/92
2,3,4,6-Tetrachlorophenol	ND	50	1.0	01/18/92
Diethylphthalate	ND	5.0	1.0	01/18/92
4-Chlorophenyl-phenylether	ND	5.0	1.0	01/18/92
Fluorene	ND	5.0	1.0	01/18/92
4-Nitroaniline	ND	50	1.0	01/18/92
4,6-Dinitro-2-methylphenol	ND	50	1.0	01/18/92
Diphenylamine	ND	50	1.0	01/18/92
N-Nitrosodiphenylamine	ND	10	1.0	01/18/92
Azobenzene	ND	5.0	1.0	01/18/92
4-Bromophenyl-phenylether	ND	5.0	1.0	01/18/92
Phenacetin	ND	50	1.0	01/18/92
Hexachlorobenzene	ND	5.0	1.0	01/18/92
4-Aminobiphenyl	ND	50	1.0	01/18/92
Pentachlorophenol	ND	30	1.0	01/18/92
Pronamide	ND	50	1.0	01/18/92
Phenanthrene	ND	5.0	1.0	01/18/92
Anthracene	ND	5.0	1.0	01/18/92
Di-n-butylphthalate	ND	5.0	1.0	01/18/92
Fluoranthene	ND	5.0	1.0	01/18/92
Benzidine	ND	50	1.0	01/18/92
Pyrene	ND	5.0	1.0	01/18/92
p-Dimethylaminoazobenzene	ND	50	1.0	01/18/92
Butylbenzylphthalate	ND	5.0	1.0	01/18/92
3,3'-Dichlorobenzidine	ND	20	1.0	01/18/92
Benzo(a)anthracene	ND	5.0	1.0	01/18/92
Chrysene	ND	5.0	1.0	01/18/92
bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	01/18/92
Di-n-octyl phthalate	ND	5.0	1.0	01/18/92
7,12-Dimethylbenz(a)anthrace	ND	50	1.0	01/18/92
Benzo(b)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(k)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(a)pyrene	ND	5.0	1.0	01/18/92
3-Methylcholanthrene	ND	50	1.0	01/18/92
Dibenz(a,j)acridine	ND	50	1.0	01/18/92
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0	01/18/92
Dibenzo(a,h)anthracene	ND	5.0	1.0	01/18/92
Benzo(g,h,i)perylene	ND	5.0	1.0	01/18/92

Notes and Definitions for this Report:

EXTRACTED 01/17/92
ANALYST TT
FILE ID >AE751
UNITS ug/L
BATCH_ID 625-76
COMMENTS

Received: 01/16/92 Results by Sample

MPLE ID OW-04-09 FRACTION 09A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	ND	20	1.0	01/17/92
Chloromethane	ND	10	1.0	01/17/92
Vinyl Chloride	ND	10	1.0	01/17/92
Bromomethane	ND	10	1.0	01/17/92
Chloroethane	ND	10	1.0	01/17/92
Trichlorofluoromethane	ND	10	1.0	01/17/92
Ethanol	ND	20	1.0	01/17/92
1,1-Dichloroethene	33	3.0	1.0	01/17/92
Acrolein	ND	10	1.0	01/17/92
Acetone	ND	20	1.0	01/17/92
Iodomethane	ND	10	1.0	01/17/92
Carbon Disulfide	ND	5.0	1.0	01/17/92
Methylene chloride	5.0	5.0	1.0	01/17/92
Trans-1,2-Dichloroethene	ND	3.0	1.0	01/17/92
Acrylonitrile	ND	10	1.0	01/17/92
1,1-Dichloroethane	ND	3.0	1.0	01/17/92
2-Butanone	ND	20	1.0	01/17/92
cis-1,2-Dichloroethene	190	3.0	1.0	01/17/92
Chloroform	19	3.0	1.0	01/17/92
1,2-Dichloroethane	ND	3.0	1.0	01/17/92
Vinyl Acetate	ND	20	1.0	01/17/92
1,1,1-Trichloroethane	ND	3.0	1.0	01/17/92
Carbon Tetrachloride	ND	3.0	1.0	01/17/92
Benzene	7.0	3.0	1.0	01/17/92
Trichloroethene	5500	3.0	100	01/17/92
1,2-Dichloropropane	ND	5.0	1.0	01/17/92
Bromodichloromethane	ND	3.0	1.0	01/17/92
Dibromomethane	ND	10	1.0	01/17/92
2-Chloroethyl vinyl ether	ND	10	1.0	01/17/92
cis-1,3-Dichloropropene	ND	3.0	1.0	01/17/92
trans-1,3-Dichloropropene	ND	5.0	1.0	01/17/92
Ethyl methacrylate	ND	10	1.0	01/17/92
1,1,2-Trichloroethane	ND	5.0	1.0	01/17/92
Dibromochloromethane	ND	3.0	1.0	01/17/92
Bromoform	ND	5.0	1.0	01/17/92
4-Methyl-2-Pentanone	ND	20	1.0	01/17/92
Toluene	ND	3.0	1.0	01/17/92
2-Hexanone	ND	20	1.0	01/17/92
1,1,2,2-Tetrachloroethane	ND	3.0	1.0	01/17/92
Tetrachloroethene	1300	3.0	100	01/17/92
Chlorobenzene	ND	3.0	1.0	01/17/92
Ethylbenzene	ND	3.0	1.0	01/17/92
Xylene(total)	ND	3.0	1.0	01/17/92
Styrene	ND	3.0	1.0	01/17/92
cis-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92
1,2,3-Trichloropropane	ND	10	1.0	01/17/92
trans-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92

Notes and Definitions for this Report:

MPLE ID OW-04-09 FRACTION 09A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

ANALYST CL
FILE ID >2B918; >1V951
UNITS ug/L
BATCH_ID *
COMMENTS * = VOA2-92-006; VOA1-92-010

Received: 01/16/92 Results by Sample

AMPLE ID OW-04-10 FRACTION 10A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
N-Nitrosodimethylamine	ND	10	1.0	01/18/92
2-Picoline	ND	50	1.0	01/18/92
Methyl_methanesulfonate	ND	50	1.0	01/18/92
Ethyl methanesulfonate	ND	50	1.0	01/18/92
Phenol	ND	10	1.0	01/18/92
Aniline	ND	10	1.0	01/18/92
bis(2-chloroethyl) ether	ND	5.0	1.0	01/18/92
2-Chlorophenol	ND	10	1.0	01/18/92
1,3-Dichlorobenzene	ND	5.0	1.0	01/18/92
1,4-Dichlorobenzene	ND	5.0	1.0	01/18/92
Benzyl alcohol	ND	10	1.0	01/18/92
1,2-Dichlorobenzene	ND	5.0	1.0	01/18/92
2-Methylphenol	ND	10	1.0	01/18/92
bis(2chloroisopropyl)ether	ND	5.0	1.0	01/18/92
Acetophenone	ND	50	1.0	01/18/92
4-Methylphenol	ND	10	1.0	01/18/92
N-Nitroso-di-n-propylamine	ND	5.0	1.0	01/18/92
Hexachloroethane	ND	5.0	1.0	01/18/92
Nitrobenzene	ND	5.0	1.0	01/18/92
N-Nitrosopiperidine	ND	50	1.0	01/18/92
Isophorone	ND	5.0	1.0	01/18/92
2-Nitrophenol	ND	10	1.0	01/18/92
2,4-Dimethylphenol	ND	10	1.0	01/18/92
Benzoic acid	ND	50	1.0	01/18/92
bis(2-Chloroethoxy)methane	ND	10	1.0	01/18/92
a,a-Dimethylphenethylamine	ND	50	1.0	01/18/92
2,4-Dichlorophenol	ND	10	1.0	01/18/92
1,2,4-Trichlorobenzene	ND	5.0	1.0	01/18/92
Naphthalene	ND	5.0	1.0	01/18/92
2,6-Dichlorophenol	ND	50	1.0	01/18/92
4-Chloroaniline	ND	20	1.0	01/18/92
Hexachlorobutadiene	ND	5.0	1.0	01/18/92
N-Nitroso-di-n-butylamine	ND	50	1.0	01/18/92
4-Chloro-3-methylphenol	ND	10	1.0	01/18/92
2-Methylnaphthalene	ND	5.0	1.0	01/18/92
1,2,4,5-Tetrachlorobenzene	ND	50	1.0	01/18/92
Hexachlorocyclopentadiene	ND	5.0	1.0	01/18/92
2,4,6-Trichlorophenol	ND	10	1.0	01/18/92
2,4,5-Trichlorophenol	ND	10	1.0	01/18/92
2-Chloronaphthalene	ND	5.0	1.0	01/18/92
1-Chloronaphthalene	ND	50	1.0	01/18/92
2-Nitroaniline	ND	50	1.0	01/18/92
Dimethyl phthalate	ND	5.0	1.0	01/18/92
Acenaphthylene	ND	5.0	1.0	01/18/92
2,6-Dinitrotoluene	ND	5.0	1.0	01/18/92
3-Nitroaniline	ND	50	1.0	01/18/92
Acenaphthene	ND	5.0	1.0	01/18/92
2,4-Dinitrophenol	ND	50	1.0	01/18/92
4-Nitrophenol	ND	50	1.0	01/18/92
Dibenzofuran	ND	5.0	1.0	01/18/92

AMPLE ID OW-04-10 FRACTION 10A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

Pentachlorobenzene	ND	50	1.0	01/18/92
2,4-Dinitrotoluene	ND	5.0	1.0	01/18/92
1-Naphthylamine	ND	50	1.0	01/18/92
2-Naphthylamine	ND	50	1.0	01/18/92
2,3,4,6-Tetrachlorophenol	ND	50	1.0	01/18/92
Diethylphthalate	ND	5.0	1.0	01/18/92
4-Chlorophenyl-phenylether	ND	5.0	1.0	01/18/92
Fluorene	ND	5.0	1.0	01/18/92
4-Nitroaniline	ND	50	1.0	01/18/92
4,6-Dinitro-2-methylphenol	ND	50	1.0	01/18/92
Diphenylamine	ND	50	1.0	01/18/92
N-Nitrosodiphenylamine	ND	10	1.0	01/18/92
Azobenzene	ND	5.0	1.0	01/18/92
4-Bromophenyl-phenylether	ND	5.0	1.0	01/18/92
Phenacetin	ND	50	1.0	01/18/92
Hexachlorobenzene	ND	5.0	1.0	01/18/92
4-Aminobiphenyl	ND	50	1.0	01/18/92
Pentachlorophenol	ND	30	1.0	01/18/92
Pronamide	ND	50	1.0	01/18/92
Phenanthrene	ND	5.0	1.0	01/18/92
Anthracene	ND	5.0	1.0	01/18/92
Di-n-butylphthalate	ND	5.0	1.0	01/18/92
Fluoranthene	ND	5.0	1.0	01/18/92
Benzidine	ND	50	1.0	01/18/92
Pyrene	ND	5.0	1.0	01/18/92
p-Dimethylaminoazobenzene	ND	50	1.0	01/18/92
Butylbenzylphthalate	ND	5.0	1.0	01/18/92
3,3'-Dichlorobenzidine	ND	20	1.0	01/18/92
Benzo(a)anthracene	ND	5.0	1.0	01/18/92
Chrysene	ND	5.0	1.0	01/18/92
bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	01/18/92
Di-n-octyl phthalate	ND	5.0	1.0	01/18/92
7,12-Dimethylbenz(a)anthrace	ND	50	1.0	01/18/92
Benzo(b)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(k)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(a)pyrene	ND	5.0	1.0	01/18/92
3-Methylcholanthrene	ND	50	1.0	01/18/92
Dibenz(a,j)acridine	ND	50	1.0	01/18/92
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0	01/18/92
Dibenzo(a,h)anthracene	ND	5.0	1.0	01/18/92
Benzo(g,h,i)perylene	ND	5.0	1.0	01/18/92

Notes and Definitions for this Report:

EXTRACTED 01/17/92
ANALYST TT
FILE ID >AE752
UNITS ug/L
BATCH_ID 625-76
COMMENTS

Received: 01/16/92

Results by Sample

SAMPLE ID OW-05-11 FRACTION 11A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	ND	20	1.0	01/17/92
Chloromethane	ND	10	1.0	01/17/92
Vinyl Chloride	ND	10	1.0	01/17/92
Bromomethane	ND	10	1.0	01/17/92
Chloroethane	ND	10	1.0	01/17/92
Trichlorofluoromethane	14	10	1.0	01/17/92
Ethanol	ND	20	1.0	01/17/92
1,1-Dichloroethene	150	3.0	1.0	01/17/92
Acrolein	ND	10	1.0	01/17/92
Acetone	ND	20	1.0	01/17/92
Iodomethane	ND	10	1.0	01/17/92
Carbon Disulfide	ND	5.0	1.0	01/17/92
Methylene chloride	6.0	5.0	1.0	01/17/92
Trans-1,2-Dichloroethene	ND	3.0	1.0	01/17/92
Acrylonitrile	ND	10	1.0	01/17/92
1,1-Dichloroethane	10	3.0	1.0	01/17/92
2-Butanone	ND	20	1.0	01/17/92
cis-1,2-Dichloroethene	560	3.0	1.0	01/17/92
Chloroform	34	3.0	1.0	01/17/92
1,2-Dichloroethane	ND	3.0	1.0	01/17/92
Vinyl Acetate	ND	20	1.0	01/17/92
1,1,1-Trichloroethane	ND	3.0	1.0	01/17/92
Carbon Tetrachloride	ND	3.0	1.0	01/17/92
Benzene	22	3.0	1.0	01/17/92
Trichloroethene	14000	3.0	100	01/17/92
1,2-Dichloropropane	ND	5.0	1.0	01/17/92
Bromodichloromethane	ND	3.0	1.0	01/17/92
Dibromomethane	ND	10	1.0	01/17/92
2-Chloroethyl vinyl ether	ND	10	1.0	01/17/92
cis-1,3-Dichloropropene	ND	3.0	1.0	01/17/92
trans-1,3-Dichloropropene	ND	5.0	1.0	01/17/92
Ethyl methacrylate	ND	10	1.0	01/17/92
1,1,2-Trichloroethane	ND	5.0	1.0	01/17/92
Dibromochloromethane	ND	3.0	1.0	01/17/92
Bromoform	ND	5.0	1.0	01/17/92
4-Methyl-2-Pentanone	ND	20	1.0	01/17/92
Toluene	ND	3.0	1.0	01/17/92
2-Hexanone	ND	20	1.0	01/17/92
1,1,2,2-Tetrachloroethane	ND	3.0	1.0	01/17/92
Tetrachloroethene	5000	3.0	100	01/17/92
Chlorobenzene	ND	3.0	1.0	01/17/92
Ethylbenzene	ND	3.0	1.0	01/17/92
Xylene(total)	ND	3.0	1.0	01/17/92
Styrene	ND	3.0	1.0	01/17/92
cis-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92
1,2,3-Trichloropropane	ND	10	1.0	01/17/92
trans-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92

Notes and Definitions for this Report:

SAMPLE ID OW-05-11 FRACTION 11A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

ANALYST CL
FILE ID >1V952; >2B919
UNITS ug/L
BATCH_ID *
COMMENTS * = VOA1-92-010; VOA2-92-006

Received: 01/16/92 Results by Sample

SAMPLE ID OW-05-12 FRACTION 12A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
N-Nitrosodimethylamine	ND	10	1.0	01/18/92
2-Picoline	ND	50	1.0	01/18/92
Methyl_methanesulfonate	ND	50	1.0	01/18/92
Ethyl methanesulfonate	ND	50	1.0	01/18/92
Phenol	ND	10	1.0	01/18/92
Aniline	ND	10	1.0	01/18/92
bis(2-chloroethyl) ether	ND	5.0	1.0	01/18/92
2-Chlorophenol	ND	10	1.0	01/18/92
1,3-Dichlorobenzene	ND	5.0	1.0	01/18/92
1,4-Dichlorobenzene	ND	5.0	1.0	01/18/92
Benzyl alcohol	ND	10	1.0	01/18/92
1,2-Dichlorobenzene	ND	5.0	1.0	01/18/92
2-Methylphenol	ND	10	1.0	01/18/92
bis(2chloroisopropyl)ether	ND	5.0	1.0	01/18/92
Acetophenone	ND	50	1.0	01/18/92
4-Methylphenol	ND	10	1.0	01/18/92
N-Nitroso-di-n-propylamine	ND	5.0	1.0	01/18/92
Hexachloroethane	ND	5.0	1.0	01/18/92
Nitrobenzene	ND	5.0	1.0	01/18/92
N-Nitrosopiperidine	ND	50	1.0	01/18/92
Isophorone	ND	5.0	1.0	01/18/92
2-Nitrophenol	ND	10	1.0	01/18/92
2,4-Dimethylphenol	ND	10	1.0	01/18/92
Benzoic acid	ND	50	1.0	01/18/92
bis(2-Chloroethoxy)methane	ND	10	1.0	01/18/92
a,a-Dimethylphenethylamine	ND	50	1.0	01/18/92
2,4-Dichlorophenol	ND	10	1.0	01/18/92
1,2,4-Trichlorobenzene	ND	5.0	1.0	01/18/92
Naphthalene	ND	5.0	1.0	01/18/92
2,6-Dichlorophenol	ND	50	1.0	01/18/92
4-Chloroaniline	ND	20	1.0	01/18/92
Hexachlorobutadiene	ND	5.0	1.0	01/18/92
N-Nitroso-di-n-butylamine	ND	50	1.0	01/18/92
4-Chloro-3-methylphenol	ND	10	1.0	01/18/92
2-Methylnaphthalene	ND	5.0	1.0	01/18/92
1,2,4,5-Tetrachlorobenzene	ND	50	1.0	01/18/92
Hexachlorocyclopentadiene	ND	5.0	1.0	01/18/92
2,4,6-Trichlorophenol	ND	10	1.0	01/18/92
2,4,5-Trichlorophenol	ND	10	1.0	01/18/92
2-Chloronaphthalene	ND	5.0	1.0	01/18/92
1-Chloronaphthalene	ND	50	1.0	01/18/92
2-Nitroaniline	ND	50	1.0	01/18/92
Dimethyl phthalate	ND	5.0	1.0	01/18/92
Acenaphthylene	ND	5.0	1.0	01/18/92
2,6-Dinitrotoluene	ND	5.0	1.0	01/18/92
3-Nitroaniline	ND	50	1.0	01/18/92
Acenaphthene	ND	5.0	1.0	01/18/92
2,4-Dinitrophenol	ND	50	1.0	01/18/92
4-Nitrophenol	ND	50	1.0	01/18/92
Dibenzofuran	ND	5.0	1.0	01/18/92

MPLE ID OW-05-12 FRACTION 12A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

Pentachlorobenzene	ND	50	1.0	01/18/92
2,4-Dinitrotoluene	ND	5.0	1.0	01/18/92
1-Naphthylamine	ND	50	1.0	01/18/92
2-Naphthylamine	ND	50	1.0	01/18/92
2,3,4,6-Tetrachlorophenol	ND	50	1.0	01/18/92
Diethylphthalate	ND	5.0	1.0	01/18/92
4-Chlorophenyl-phenylether	ND	5.0	1.0	01/18/92
Fluorene	ND	5.0	1.0	01/18/92
4-Nitroaniline	ND	50	1.0	01/18/92
4,6-Dinitro-2-methylphenol	ND	50	1.0	01/18/92
Diphenylamine	ND	50	1.0	01/18/92
N-Nitrosodiphenylamine	ND	10	1.0	01/18/92
Azobenzene	ND	5.0	1.0	01/18/92
4-Bromophenyl-phenylether	ND	5.0	1.0	01/18/92
Phenacetin	ND	50	1.0	01/18/92
Hexachlorobenzene	ND	5.0	1.0	01/18/92
4-Aminobiphenyl	ND	50	1.0	01/18/92
Pentachlorophenol	ND	30	1.0	01/18/92
Pronamide	ND	50	1.0	01/18/92
Phenanthrene	ND	5.0	1.0	01/18/92
Anthracene	ND	5.0	1.0	01/18/92
Di-n-butylphthalate	ND	5.0	1.0	01/18/92
Fluoranthene	ND	5.0	1.0	01/18/92
Benzidine	ND	50	1.0	01/18/92
Pyrene	ND	5.0	1.0	01/18/92
p-Dimethylaminoazobenzene	ND	50	1.0	01/18/92
Butylbenzylphthalate	ND	5.0	1.0	01/18/92
3,3'-Dichlorobenzidine	ND	20	1.0	01/18/92
Benzo(a)anthracene	ND	5.0	1.0	01/18/92
Chrysene	ND	5.0	1.0	01/18/92
bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	01/18/92
Di-n-octyl phthalate	ND	5.0	1.0	01/18/92
7,12-Dimethylbenz(a)anthrace	ND	50	1.0	01/18/92
Benzo(b)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(k)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(a)pyrene	ND	5.0	1.0	01/18/92
3-Methylcholanthrene	ND	50	1.0	01/18/92
Dibenz(a,j)acridine	ND	50	1.0	01/18/92
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0	01/18/92
Dibenzo(a,h)anthracene	ND	5.0	1.0	01/18/92
Benzo(g,h,i)perylene	ND	5.0	1.0	01/18/92

Notes and Definitions for this Report:

EXTRACTED 01/17/92
ANALYST TT
FILE ID >AE756
UNITS ug/L
BATCH_ID 625-76
COMMENTS

Received: 01/16/92 Results by Sample

MPLE ID OW-06-13 FRACTION 13A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	ND	20	1.0	01/17/92
Chloromethane	ND	10	1.0	01/17/92
Vinyl Chloride	ND	10	1.0	01/17/92
Bromomethane	ND	10	1.0	01/17/92
Chloroethane	ND	10	1.0	01/17/92
Trichlorofluoromethane	ND	10	1.0	01/17/92
Ethanol	ND	20	1.0	01/17/92
1,1-Dichloroethene	130	3.0	1.0	01/17/92
Acrolein	ND	10	1.0	01/17/92
Acetone	ND	20	1.0	01/17/92
Iodomethane	ND	10	1.0	01/17/92
Carbon Disulfide	ND	5.0	1.0	01/17/92
Methylene chloride	ND	5.0	1.0	01/17/92
Trans-1,2-Dichloroethene	ND	3.0	1.0	01/17/92
Acrylonitrile	ND	10	1.0	01/17/92
1,1-Dichloroethane	11	3.0	1.0	01/17/92
2-Butanone	ND	20	1.0	01/17/92
cis-1,2-Dichloroethene	300	3.0	1.0	01/17/92
Chloroform	69	3.0	1.0	01/17/92
1,2-Dichloroethane	ND	3.0	1.0	01/17/92
Vinyl Acetate	ND	20	1.0	01/17/92
1,1,1-Trichloroethane	ND	3.0	1.0	01/17/92
Carbon Tetrachloride	ND	3.0	1.0	01/17/92
Benzene	28	3.0	1.0	01/17/92
Trichloroethene	21000	3.0	100	01/17/92
1,2-Dichloropropane	ND	5.0	1.0	01/17/92
Bromodichloromethane	ND	3.0	1.0	01/17/92
Dibromomethane	ND	10	1.0	01/17/92
2-Chloroethyl vinyl ether	ND	10	1.0	01/17/92
cis-1,3-Dichloropropene	ND	3.0	1.0	01/17/92
trans-1,3-Dichloropropene	ND	5.0	1.0	01/17/92
Ethyl methacrylate	ND	10	1.0	01/17/92
1,1,2-Trichloroethane	ND	5.0	1.0	01/17/92
Dibromochloromethane	ND	3.0	1.0	01/17/92
Bromoform	ND	5.0	1.0	01/17/92
4-Methyl-2-Pentanone	ND	20	1.0	01/17/92
Toluene	ND	3.0	1.0	01/17/92
2-Hexanone	ND	20	1.0	01/17/92
1,1,2,2-Tetrachloroethane	ND	3.0	1.0	01/17/92
Tetrachloroethene	9400	3.0	100	01/17/92
Chlorobenzene	ND	3.0	1.0	01/17/92
Ethylbenzene	ND	3.0	1.0	01/17/92
Xylene(total)	ND	3.0	1.0	01/17/92
Styrene	ND	3.0	1.0	01/17/92
cis-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92
1,2,3-Trichloropropane	ND	10	1.0	01/17/92
trans-1,4-Dichloro-2-Butene	ND	10	1.0	01/17/92

Notes and Definitions for this Report:

AMPLE ID OW-06-13 FRACTION 13A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

ANALYST CL
FILE ID >2B920; >1V953
UNITS ug/L
BATCH_ID *
COMMENTS * = VOA2-92-006; VOA1-92-010

Received: 01/16/92 Results by Sample

SAMPLE ID OW-06-14 FRACTION 14A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
N-Nitrosodimethylamine	ND	10	1.0	01/18/92
2-Picoline	ND	50	1.0	01/18/92
Methyl_methanesulfonate	ND	50	1.0	01/18/92
Ethyl methanesulfonate	ND	50	1.0	01/18/92
Phenol	ND	10	1.0	01/18/92
Aniline	ND	10	1.0	01/18/92
bis(2-chloroethyl) ether	ND	5.0	1.0	01/18/92
2-Chlorophenol	ND	10	1.0	01/18/92
1,3-Dichlorobenzene	ND	5.0	1.0	01/18/92
1,4-Dichlorobenzene	ND	5.0	1.0	01/18/92
Benzyl alcohol	ND	10	1.0	01/18/92
1,2-Dichlorobenzene	5.0	5.0	1.0	01/18/92
2-Methylphenol	ND	10	1.0	01/18/92
bis(2chloroisopropyl)ether	ND	5.0	1.0	01/18/92
Acetophenone	ND	50	1.0	01/18/92
4-Methylphenol	ND	10	1.0	01/18/92
N-Nitroso-di-n-propylamine	ND	5.0	1.0	01/18/92
Hexachloroethane	ND	5.0	1.0	01/18/92
Nitrobenzene	ND	5.0	1.0	01/18/92
N-Nitrosopiperidine	ND	50	1.0	01/18/92
Isophorone	ND	5.0	1.0	01/18/92
2-Nitrophenol	ND	10	1.0	01/18/92
2,4-Dimethylphenol	ND	10	1.0	01/18/92
Benzoic acid	ND	50	1.0	01/18/92
bis(2-Chloroethoxy)methane	ND	10	1.0	01/18/92
a,a-Dimethylphenethylamine	ND	50	1.0	01/18/92
2,4-Dichlorophenol	ND	10	1.0	01/18/92
1,2,4-Trichlorobenzene	ND	5.0	1.0	01/18/92
Naphthalene	ND	5.0	1.0	01/18/92
2,6-Dichlorophenol	ND	50	1.0	01/18/92
4-Chloroaniline	ND	20	1.0	01/18/92
Hexachlorobutadiene	ND	5.0	1.0	01/18/92
N-Nitroso-di-n-butylamine	ND	50	1.0	01/18/92
4-Chloro-3-methylphenol	ND	10	1.0	01/18/92
2-Methylnaphthalene	ND	5.0	1.0	01/18/92
1,2,4,5-Tetrachlorobenzene	ND	50	1.0	01/18/92
Hexachlorocyclopentadiene	ND	5.0	1.0	01/18/92
2,4,6-Trichlorophenol	ND	10	1.0	01/18/92
2,4,5-Trichlorophenol	ND	10	1.0	01/18/92
2-Chloronaphthalene	ND	5.0	1.0	01/18/92
1-Chloronaphthalene	ND	50	1.0	01/18/92
2-Nitroaniline	ND	50	1.0	01/18/92
Dimethyl phthalate	ND	5.0	1.0	01/18/92
Acenaphthylene	ND	5.0	1.0	01/18/92
2,6-Dinitrotoluene	ND	5.0	1.0	01/18/92
3-Nitroaniline	ND	50	1.0	01/18/92
Acenaphthene	ND	5.0	1.0	01/18/92
2,4-Dinitrophenol	ND	50	1.0	01/18/92
4-Nitrophenol	ND	50	1.0	01/18/92
Dibenzofuran	ND	5.0	1.0	01/18/92

MPLE ID OW-06-14 FRACTION 14A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

Pentachlorobenzene	ND	50	1.0	01/18/92
2,4-Dinitrotoluene	ND	5.0	1.0	01/18/92
1-Naphthylamine	ND	50	1.0	01/18/92
2-Naphthylamine	ND	50	1.0	01/18/92
2,3,4,6-Tetrachlorophenol	ND	50	1.0	01/18/92
Diethylphthalate	ND	5.0	1.0	01/18/92
4-Chlorophenyl-phenylether	ND	5.0	1.0	01/18/92
Fluorene	ND	5.0	1.0	01/18/92
4-Nitroaniline	ND	50	1.0	01/18/92
4,6-Dinitro-2-methylphenol	ND	50	1.0	01/18/92
Diphenylamine	ND	50	1.0	01/18/92
N-Nitrosodiphenylamine	ND	10	1.0	01/18/92
Azobenzene	ND	5.0	1.0	01/18/92
4-Bromophenyl-phenylether	ND	5.0	1.0	01/18/92
Phenacetin	ND	50	1.0	01/18/92
Hexachlorobenzene	ND	5.0	1.0	01/18/92
4-Aminobiphenyl	ND	50	1.0	01/18/92
Pentachlorophenol	ND	30	1.0	01/18/92
Pronamide	ND	50	1.0	01/18/92
Phenanthrene	ND	5.0	1.0	01/18/92
Anthracene	ND	5.0	1.0	01/18/92
Di-n-butylphthalate	ND	5.0	1.0	01/18/92
Fluoranthene	ND	5.0	1.0	01/18/92
Benzidine	ND	50	1.0	01/18/92
Pyrene	ND	5.0	1.0	01/18/92
p-Dimethylaminoazobenzene	ND	50	1.0	01/18/92
Butylbenzylphthalate	ND	5.0	1.0	01/18/92
3,3'-Dichlorobenzidine	ND	20	1.0	01/18/92
Benzo(a)anthracene	ND	5.0	1.0	01/18/92
Chrysene	ND	5.0	1.0	01/18/92
bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	01/18/92
Di-n-octyl phthalate	ND	5.0	1.0	01/18/92
7,12-Dimethylbenz(a)anthrace	ND	50	1.0	01/18/92
Benzo(b)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(k)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(a)pyrene	ND	5.0	1.0	01/18/92
3-Methylcholanthrene	ND	50	1.0	01/18/92
Dibenz(a,j)acridine	ND	50	1.0	01/18/92
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0	01/18/92
Dibenzo(a,h)anthracene	ND	5.0	1.0	01/18/92
Benzo(g,h,i)perylene	ND	5.0	1.0	01/18/92

Notes and Definitions for this Report:

EXTRACTED 01/17/92
ANALYST TT
FILE ID >AE753
UNITS ug/L
BATCH_ID 625-76
COMMENTS

eceived: 01/16/92

Results by Sample

AMPLE ID OW-00-15 FRACTION 15A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	ND	20	100	01/17/92
Chloromethane	ND	10	100	01/17/92
Vinyl Chloride	ND	10	100	01/17/92
Bromomethane	ND	10	100	01/17/92
Chloroethane	ND	10	100	01/17/92
Trichlorofluoromethane	ND	10	100	01/17/92
Ethanol	ND	20	100	01/17/92
1,1-Dichloroethene	ND	3.0	100	01/17/92
Acrolein	ND	10	100	01/17/92
Acetone	ND	20	100	01/17/92
Iodomethane	ND	10	100	01/17/92
Carbon Disulfide	ND	5.0	100	01/17/92
Methylene chloride	ND	5.0	100	01/17/92
Trans-1,2-Dichloroethene	ND	3.0	100	01/17/92
Acrylonitrile	ND	10	100	01/17/92
1,1-Dichloroethane	ND	3.0	100	01/17/92
2-Butanone	ND	20	100	01/17/92
cis-1,2-Dichloroethene	ND	3.0	100	01/17/92
Chloroform	ND	3.0	100	01/17/92
1,2-Dichloroethane	ND	3.0	100	01/17/92
Vinyl Acetate	ND	20	100	01/17/92
1,1,1-Trichloroethane	ND	3.0	100	01/17/92
Carbon Tetrachloride	ND	3.0	100	01/17/92
Benzene	ND	3.0	100	01/17/92
Trichloroethene	ND	3.0	100	01/17/92
1,2-Dichloropropane	ND	5.0	100	01/17/92
Bromodichloromethane	ND	3.0	100	01/17/92
Dibromomethane	ND	10	100	01/17/92
2-Chloroethyl vinyl ether	ND	10	100	01/17/92
cis-1,3-Dichloropropene	ND	3.0	100	01/17/92
trans-1,3-Dichloropropene	ND	5.0	100	01/17/92
Ethyl methacrylate	ND	10	100	01/17/92
1,1,2-Trichloroethane	ND	5.0	100	01/17/92
Dibromochloromethane	ND	3.0	100	01/17/92
Bromoform	ND	5.0	100	01/17/92
4-Methyl-2-Pentanone	ND	20	100	01/17/92
Toluene	ND	3.0	100	01/17/92
2-Hexanone	ND	20	100	01/17/92
1,1,2,2-Tetrachloroethane	ND	3.0	100	01/17/92
Tetrachloroethene	ND	3.0	100	01/17/92
Chlorobenzene	ND	3.0	100	01/17/92
Ethylbenzene	ND	3.0	100	01/17/92
Xylene(total)	ND	3.0	100	01/17/92
Styrene	ND	3.0	100	01/17/92
cis-1,4-Dichloro-2-Butene	ND	10	100	01/17/92
1,2,3-Trichloropropane	ND	10	100	01/17/92
trans-1,4-Dichloro-2-Butene	ND	10	100	01/17/92

Notes and Definitions for this Report:

AMPLE ID OW-00-15 FRACTION 15A TEST CODE 624 NAME Volatiles in water
Date & Time Collected 01/16/92 Category

ANALYST CL
FILE ID >2B921
UNITS ug/L
BATCH ID VOA-92-006
COMMENTS

Received: 01/16/92 Results by Sample

MPLE ID OW-00-16 FRACTION 16A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
N-Nitrosodimethylamine	ND	10	1.0	01/18/92
2-Picoline	ND	50	1.0	01/18/92
Methyl methanesulfonate	ND	50	1.0	01/18/92
Ethyl methanesulfonate	ND	50	1.0	01/18/92
Phenol	ND	10	1.0	01/18/92
Aniline	ND	10	1.0	01/18/92
bis(2-chloroethyl) ether	ND	5.0	1.0	01/18/92
2-Chlorophenol	ND	10	1.0	01/18/92
1,3-Dichlorobenzene	ND	5.0	1.0	01/18/92
1,4-Dichlorobenzene	ND	5.0	1.0	01/18/92
Benzyl alcohol	ND	10	1.0	01/18/92
1,2-Dichlorobenzene	ND	5.0	1.0	01/18/92
2-Methylphenol	ND	10	1.0	01/18/92
bis(2chloroisopropyl)ether	ND	5.0	1.0	01/18/92
Acetophenone	ND	50	1.0	01/18/92
4-Methylphenol	ND	10	1.0	01/18/92
N-Nitroso-di-n-propylamine	ND	5.0	1.0	01/18/92
Hexachloroethane	ND	5.0	1.0	01/18/92
Nitrobenzene	ND	5.0	1.0	01/18/92
N-Nitrosopiperidine	ND	50	1.0	01/18/92
Isophorone	ND	5.0	1.0	01/18/92
2-Nitrophenol	ND	10	1.0	01/18/92
2,4-Dimethylphenol	ND	10	1.0	01/18/92
Benzoic acid	ND	50	1.0	01/18/92
bis(2-Chloroethoxy)methane	ND	10	1.0	01/18/92
a,a-Dimethylphenethylamine	ND	50	1.0	01/18/92
2,4-Dichlorophenol	ND	10	1.0	01/18/92
1,2,4-Trichlorobenzene	ND	5.0	1.0	01/18/92
Naphthalene	ND	5.0	1.0	01/18/92
2,6-Dichlorophenol	ND	50	1.0	01/18/92
4-Chloroaniline	ND	20	1.0	01/18/92
Hexachlorobutadiene	ND	5.0	1.0	01/18/92
N-Nitroso-di-n-butylamine	ND	50	1.0	01/18/92
4-Chloro-3-methylphenol	ND	10	1.0	01/18/92
2-Methylnaphthalene	ND	5.0	1.0	01/18/92
1,2,4,5-Tetrachlorobenzene	ND	50	1.0	01/18/92
Hexachlorocyclopentadiene	ND	5.0	1.0	01/18/92
2,4,6-Trichlorophenol	ND	10	1.0	01/18/92
2,4,5-Trichlorophenol	ND	10	1.0	01/18/92
2-Chloronaphthalene	ND	5.0	1.0	01/18/92
1-Chloronaphthalene	ND	50	1.0	01/18/92
2-Nitroaniline	ND	50	1.0	01/18/92
Dimethyl phthalate	ND	5.0	1.0	01/18/92
Acenaphthylene	ND	5.0	1.0	01/18/92
2,6-Dinitrotoluene	ND	5.0	1.0	01/18/92
3-Nitroaniline	ND	50	1.0	01/18/92
Acenaphthene	ND	5.0	1.0	01/18/92
2,4-Dinitrophenol	ND	50	1.0	01/18/92
4-Nitrophenol	ND	50	1.0	01/18/92
Dibenzofuran	ND	5.0	1.0	01/18/92

SAMPLE ID OW-00-16 FRACTION 16A TEST CODE 625 NAME Semi-Volatiles in water
Date & Time Collected 01/16/92 Category

Pentachlorobenzene	ND	50	1.0	01/18/92
2,4-Dinitrotoluene	ND	5.0	1.0	01/18/92
1-Naphthylamine	ND	50	1.0	01/18/92
2-Naphthylamine	ND	50	1.0	01/18/92
2,3,4,6-Tetrachlorophenol	ND	50	1.0	01/18/92
Diethylphthalate	ND	5.0	1.0	01/18/92
4-Chlorophenyl-phenylether	ND	5.0	1.0	01/18/92
Fluorene	ND	5.0	1.0	01/18/92
4-Nitroaniline	ND	50	1.0	01/18/92
4,6-Dinitro-2-methylphenol	ND	50	1.0	01/18/92
Diphenylamine	ND	50	1.0	01/18/92
N-Nitrosodiphenylamine	ND	10	1.0	01/18/92
Azobenzene	ND	5.0	1.0	01/18/92
4-Bromophenyl-phenylether	ND	5.0	1.0	01/18/92
Phenacetin	ND	50	1.0	01/18/92
Hexachlorobenzene	ND	5.0	1.0	01/18/92
4-Aminobiphenyl	ND	50	1.0	01/18/92
Pentachlorophenol	ND	30	1.0	01/18/92
Pronamide	ND	50	1.0	01/18/92
Phenanthrene	ND	5.0	1.0	01/18/92
Anthracene	ND	5.0	1.0	01/18/92
Di-n-butylphthalate	ND	5.0	1.0	01/18/92
Fluoranthene	ND	5.0	1.0	01/18/92
Benzidine	ND	50	1.0	01/18/92
Pyrene	ND	5.0	1.0	01/18/92
p-Dimethylaminoazobenzene	ND	50	1.0	01/18/92
Butylbenzylphthalate	ND	5.0	1.0	01/18/92
3,3'-Dichlorobenzidine	ND	20	1.0	01/18/92
Benzo(a)anthracene	ND	5.0	1.0	01/18/92
Chrysene	ND	5.0	1.0	01/18/92
bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	01/18/92
Di-n-octyl phthalate	ND	5.0	1.0	01/18/92
7,12-Dimethylbenz(a)anthrace	ND	50	1.0	01/18/92
Benzo(b)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(k)fluoranthene	ND	5.0	1.0	01/18/92
Benzo(a)pyrene	ND	5.0	1.0	01/18/92
3-Methylcholanthrene	ND	50	1.0	01/18/92
Dibenz(a,j)acridine	ND	50	1.0	01/18/92
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0	01/18/92
Dibenzo(a,h)anthracene	ND	5.0	1.0	01/18/92
Benzo(g,h,i)perylene	ND	5.0	1.0	01/18/92

Notes and Definitions for this Report:

EXTRACTED 01/17/92
ANALYST TT
FILE ID >AE754
UNITS ug/L
BATCH_ID 625-76
COMMENTS

QC SUMMARY DATA SHEETS

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET
EPA METHOD 8240

ab Sample No.: 011792BLANK

Client Sample No.: 011792BLANK

Batch Number: VOA1-92-010

Client: ETAL

ata File: >1V946

Matrix: WATER

ample wt/vol: 5.0 mL

Date Received: 00/00/00

Analyst: CORA

Date Analyzed: 01/17/92

ilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
124-48-1	Dibromochloromethane	3.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-pentanone	20.	U
108-88-3	Toluene	3.	U
591-78-6	2-Hexanone	20.	U
79-34-5	1,1,2,2-Tetrachloroethane	3.	U
127-18-4	Tetrachloroethene	3.	U
108-90-7	Chlorobenzene	3.	U
100-41-4	Ethylbenzene	3.	U
95-47-6	Xylene (total)	3.	U
100-42-5	Styrene	3.	U
1476-11-5	cis-1,4-Dichloro-2-Butene	10.	U
96-18-4	1,2,3-Trichloropropane	10.	U
110-57-6	trans-1,4-Dichloro-2-Butene	10.	U

U = Compound undetected at the listed practical quantitation limit.
@ = Compound was found in sample. B = Compound was found in blank.

LABORATORY CONTROL WATER SAMPLE SPIKE/SPIKE DUPLICATE RECOVERY

ab Name:=== ETAL ===

Lab Sample No.: 011792BLANK

Date Analyzed: 01/17/92

Batch Number: VOA1-92-010

nalyst: CORA

NCR Number:

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.00	0.00	43.00	86	61-145
Trichloroethene	50.00	0.00	46.00	92	71-120
Benzene	50.00	0.00	47.00	94	76-127
Toluene	50.00	0.00	49.00	97	76-125
Chlorobenzene	50.00	0.00	45.00	90	75-130

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.00	39.00	78	9	14	61-145
Trichloroethene	50.00	49.00	98	6	14	71-120
Benzene	50.00	47.00	94	0	11	76-127
Toluene	50.00	53.00	106	8	13	76-125
Chlorobenzene	50.00	47.00	93	3	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

2A
WATER VOLATILE SURROGATE RECOVERY

ab Name:=== ETAL ===

Date Analyzed: 1/17/92 Batch Number: VOA1-92-010

.nalyst: CORA NCR Number:

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	011792BLAN	109	105	97		0
02	LCS	100	103	95		0
03	01-040-01A	90	113	37 *		1
04	01-040-03A	102	99	82		0
05	01-040-05A	108	105	91		0
06	01-040-07A	103	103	92		0
07	01-040-09A	100	102	90		0
08	01-040-11A	108	111	97		0
09	01-040-13A	107	109	94		0
10	LCSD	105	110	107		0
11	01-040-01A	102	101	100	1:100	0
12	01-040-03A	107	105	104	1:100	0
13	01-040-05A	109	104	106	1:100	0
14	01-040-07A	104	103	100	1:100	0
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		QC LIMITS
S1 (TOL)	= Toluene-d8	(88-110)
S2 (BFB)	= Bromofluorobenzene	(86-115)
S3 (DCE)	= 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

FORM II VOA-1 1/87 Rev.

BPACC01235

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET
EPA METHOD 8240

ab Sample No.: 011892BLANK
Client Sample No.: 011892BLANK

Batch Number: VOA1-92-011
Client: ETAL

ata File: >1V964
Matrix: WATER

ample wt/vol: 5.0 mL
Date Received: 00/00/00

Analyst: THIZAR
Date Analyzed: 01/18/92

ilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
75-71-8	Dichlorodifluoromethane	20.	U
74-87-3	Chloromethane	10.	U
75-01-4	Vinyl Chloride	10.	U
74-83-9	Bromomethane	10.	U
75-00-3	Chloroethane	10.	U
75-69-4	Trichlorofluoromethane	10.	U
64-17-5	Ethanol	20.	U
75-35-4	1,1-Dichloroethene	3.	U
107-02-8	Acrolein	10.	U
67-64-1	Acetone	20.	U
74-88-4	Iodomethane	10.	U
75-15-0	Carbon Disulfide	5.	U
75-09-2	Methylene Chloride	7.	@
156-60-5	trans-1,2-Dichloroethene	3.	U
107-13-1	Acrylonitrile	10.	U
75-34-3	1,1-Dichloroethane	3.	U
78-93-3	2-Butanone	20.	U
156-59-2	cis-1,2-Dichloroethene	3.	U
67-66-3	Chloroform	3.	U
107-06-2	1,2-Dichloroethane	3.	U
108-05-4	Vinyl Acetate	20.	U
71-55-6	1,1,1-Trichloroethane	3.	U
56-23-5	Carbon Tetrachloride	3.	U
71-43-2	Benzene	3.	U
79-01-6	Trichloroethene	3.	U
78-87-5	1,2-Dichloropropane	5.	U
75-27-4	Bromodichloromethane	3.	U
74-95-3	Dibromomethane	10.	U
110-75-8	2-Chloroethylvinyl ether	10.	U
10061-01-5	cis-1,3-Dichloropropene	3.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U
97-63-2	Ethyl Methacrylate	10.	U
79-00-5	1,1,2-Trichloroethane	5.	U

U = Compound undetected at the listed practical quantitation limit.
@ = Compound was found in sample. B = Compound was found in blank.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET
EPA METHOD 8240

Lab Sample No.: 011892BLANK
Client Sample No.: 011892BLANK

Batch Number: VOA1-92-011
Client: ETAL

Data File: >1V964
Matrix: WATER

Sample wt/vol: 5.0 mL
Date Received: 00/00/00

Analyst: THIZAR
Date Analyzed: 01/18/92

Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
124-48-1	Dibromochloromethane	3.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-pentanone	20.	U
108-88-3	Toluene	3.	U
591-78-6	2-Hexanone	20.	U
79-34-5	1,1,2,2-Tetrachloroethane	3.	U
127-18-4	Tetrachloroethene	3.	U
108-90-7	Chlorobenzene	3.	U
100-41-4	Ethylbenzene	3.	U
95-47-6	Xylene (total)	3.	U
100-42-5	Styrene	3.	U
1476-11-5	cis-1,4-Dichloro-2-Butene	10.	U
96-18-4	1,2,3-Trichloropropane	10.	U
110-57-6	trans-1,4-Dichloro-2-Butene	10.	U

U = Compound undetected at the listed practical quantitation limit.
@ = Compound was found in sample. B = Compound was found in blank.

LABORATORY CONTROL WATER SAMPLE SPIKE AND SPIKE DUPLICATE RECOVERY

Lab Name:=== ETAL ===

Lab Sample No.: 011892BLANK

Date Analyzed: 1/18/92

Batch Number: VOA1-92-011

Analyst: CORA

NCR Number:

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.00	0.00	39.00	78	61-145
Trichloroethene	50.00	0.00	52.00	103	71-120
Benzene	50.00	0.00	53.00	105	76-127
Toluene	50.00	0.00	57.00	113	76-125
Chlorobenzene	50.00	0.00	51.00	101	75-130

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.00	40.00	79	1	14	61-145
Trichloroethene	50.00	47.00	94	9	14	71-120
Benzene	50.00	52.00	104	0	11	76-127
Toluene	50.00	56.00	112	0	13	76-125
Chlorobenzene	50.00	50.00	99	2	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

2A
WATER VOLATILE SURROGATE RECOVERY

ab Name:=== ETAL ===

Date Analyzed: 01/18/92 Batch Number: VOA1-92-011

nalyst: THIZAR NCR Number:

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	011892BLAN	104	104	94		0
02	LCS	106	103	92		0
03	LCSD	97	94	96		0
04	01-040-01A	99	100	97	10,000	0
05	01-040-15A	106	103	85	1:50	0
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		QC LIMITS
S1 (TOL)	= Toluene-d8	(88-110)
S2 (BFB)	= Bromofluorobenzene	(86-115)
S3 (DCE)	= 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

FORM II VOA-1 1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET
EPA METHOD 8240

Lab Sample No.: 011892BLANK
Client Sample No.: 011892BLANK

Batch Number: VOA2-92-006
Client: ETAL

Data File: >2B910
Matrix: WATER

Sample wt/vol: 5.0 mL
Date Received: 00/00/00

Analyst: CORA
Date Analyzed: 01/17/92

Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
75-71-8	Dichlorodifluoromethane	20.	U
74-87-3	Chloromethane	10.	U
75-01-4	Vinyl Chloride	10.	U
74-83-9	Bromomethane	10.	U
75-00-3	Chloroethane	10.	U
75-69-4	Trichlorofluoromethane	10.	U
64-17-5	Ethanol	20.	U
75-35-4	1,1-Dichloroethene	3.	U
107-02-8	Acrolein	10.	U
67-64-1	Acetone	20.	U
74-88-4	Iodomethane	10.	U
75-15-0	Carbon Disulfide	5.	U
75-09-2	Methylene Chloride	5.	U
156-60-5	trans-1,2-Dichloroethene	3.	U
107-13-1	Acrylonitrile	10.	U
75-34-3	1,1-Dichloroethane	3.	U
78-93-3	2-Butanone	20.	U
156-59-2	cis-1,2-Dichloroethene	3.	U
67-66-3	Chloroform	3.	U
107-06-2	1,2-Dichloroethane	3.	U
108-05-4	Vinyl Acetate	20.	U
71-55-6	1,1,1-Trichloroethane	3.	U
56-23-5	Carbon Tetrachloride	3.	U
71-43-2	Benzene	3.	U
79-01-6	Trichloroethene	3.	U
78-87-5	1,2-Dichloropropane	5.	U
75-27-4	Bromodichloromethane	3.	U
74-95-3	Dibromomethane	10.	U
110-75-8	2-Chloroethylvinyl ether	10.	U
10061-01-5	cis-1,3-Dichloropropene	3.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U
97-63-2	Ethyl Methacrylate	10.	U
79-00-5	1,1,2-Trichloroethane	5.	U

U = Compound undetected at the listed practical quantitation limit.
@ = Compound was found in sample. B = Compound was found in blank.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET
EPA METHOD 8240

Lab Sample No.: 011892BLANK
Client Sample No.: 011892BLANK

Batch Number: VOA2-92-006
Client: ETAL

Data File: >2B910
Matrix: WATER

Sample wt/vol: 5.0 mL
Date Received: 00/00/00

Analyst: CORA
Date Analyzed: 01/17/92

Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
124-48-1	Dibromochloromethane	3.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-pentanone	20.	U
108-88-3	Toluene	3.	U
591-78-6	2-Hexanone	20.	U
79-34-5	1,1,2,2-Tetrachloroethane	3.	U
127-18-4	Tetrachloroethene	3.	U
108-90-7	Chlorobenzene	3.	U
100-41-4	Ethylbenzene	3.	U
95-47-6	Xylene (total)	3.	U
100-42-5	Styrene	3.	U
1476-11-5	cis-1,4-Dichloro-2-Butene	10.	U
96-18-4	1,2,3-Trichloropropane	10.	U
110-57-6	trans-1,4-Dichloro-2-Butene	10.	U

U = Compound undetected at the listed practical quantitation limit.
@ = Compound was found in sample. B = Compound was found in blank.

LABORATORY CONTROL WATER SAMPLE SPIKE/SPIKE DUPLICATE RECOVERY

Lab Name:=== ETAL ===

Lab Sample No.: 011892BLANK

Date Analyzed: 01/17/92

Batch Number: VOA2-92-006

Analyst: CORA

NCR Number:

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.00	0.00	41.00	82	61-145
Trichloroethene	50.00	0.00	48.00	95	71-120
Benzene	50.00	0.00	47.00	94	76-127
Toluene	50.00	0.00	47.00	94	76-125
Chlorobenzene	50.00	0.00	48.00	96	75-130

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.00	44.00	88	7	14	61-145
Trichloroethene	50.00	46.00	91	4	14	71-120
Benzene	50.00	44.00	87	7	11	76-127
Toluene	50.00	45.00	90	4	13	76-125
Chlorobenzene	50.00	46.00	92	4	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

FORM III VOA-1 1/87 Rev.

2A
WATER VOLATILE SURROGATE RECOVERY

ab Name:=== ETAL ===

Date Analyzed: 1/17/92 Batch Number: VOA2-92-006

nalyst: CORA NCR Number:

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	011892BLAN	96	87	106		0
02	LCS	99	89	103		0
03	LCSD	100	89	108		0
04	01-040-09A	99	89	113	1:100	0
05	01-040-11A	97	86	111	1:100	0
06	01-040-13A	96	87	112	1:100	0
07	01-040-15A	96	89	110	1:100	0
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		QC LIMITS
S1 (TOL)	= Toluene-d8	(88-110)
S2 (BFB)	= Bromofluorobenzene	(86-115)
S3 (DCE)	= 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

FORM II VOA-1 1/87 Rev.

EPA METHOD 8270

Lab Sample No.: 01040-LMB

Client Sample No.: CONTROL SAMPLE

Batch Number: 025-70

Client: SIMON-EEI

Data File: 2AL248

Matrix: WATER

Sample Wt/Vol: 1000 mL

Date Received: 01/10/91

Dilution Factor: 1.0

Date Extracted: 01/17/92

Analyst: TH12HR

Date Analyzed: 01/18/92

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	U
62-75-9	N-Nitrosodimethylamine	10.	U
109-06-8	2-Picoline	50.	U
66-27-3	Methyl_methanesulfonate	50.	U
62-50-0	Ethyl methanesulfonate	50.	U
108-95-2	Phenol	10.	U
62-53-3	Aniline	10.	U
111-44-4	bis(2-Chloroethyl)Ether	5.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	5.	U
106-46-7	1,4-Dichlorobenzene	5.	U
100-51-6	Benzyl_alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	5.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	5.	U
98-86-2	Acetophenone	50.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	5.	U
67-72-1	Hexachloroethane	5.	U
98-95-3	Nitrobenzene	5.	U
100-75-4	N-Nitrosopiperidine	50.	U
78-59-1	Isophorone	5.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic_acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
122-09-8	a,a-Dimethylphenethylamine	50.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	5.	U
91-20-3	Naphthalene	5.	U
87-65-0	2,6-Dichlorophenol	50.	U
106-47-8	4-Chloroaniline	20.	U
87-68-3	Hexachlorobutadiene	5.	U
924-16-3	N-Nitroso-di-n-butylamine	50.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	5.	U
95-94-3	1,2,4,5-Tetrachlorobenzene	50.	U
77-47-4	Hexachlorocyclopentadiene	5.	U
88-06-2	2,4,6-Trichlorophenol	10.	U

U = Compound undetected at the listed practical quantitation limit.
M = Compound was found in sample. B = Compound was found in blank.

BPACC01244

EPA METHOD 8270

Lab Sample No.: 01040-LMB

Client Sample No.: CONTROL SAMPLE

Batch Number: 625-76

Client: SIMON-EEI

Data File: 78E748

Matrix: WATER

Sample wt/vol: 1000 mL

Date Received: 01/16/91

Dilution Factor: 1.0

Date Extracted: 01/17/92

Analyst: THIZHR

Date Analyzed: 01/18/92

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
95-95-4	2,4,5-Trichlorophenol	10.	U
91-58-7	2-Chloronaphthalene	5.	U
90-13-1	1-Chloronaphthalene	50.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	5.	U
208-96-8	Acenaphthylene	5.	U
606-20-2	2,6-Dinitrotoluene	5.	U
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	5.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	5.	U
608-93-5	Pentachlorobenzene	50.	U
121-14-2	2,4-Dinitrotoluene	5.	U
134-32-7	1-Naphthylamine	50.	U
91-59-8	2-Naphthylamine	50.	U
58-90-2	2,3,4,6-Tetrachlorophenol	50.	U
84-66-2	Diethylphthalate	5.	U
7005-72-3	4-Chlorophenyl-phenylether	5.	U
86-73-7	Fluorene	5.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
122-39-4	Diphenylamine	50.	U
86-30-6	N-Nitrosodiphenylamine	10.	U
103-33-3	Azobenzene	5.	U
101-55-3	4-Bromophenyl-phenylether	5.	U
62-44-2	Phenacetin	50.	U
118-74-1	Hexachlorobenzene	5.	U
92-67-1	4-Aminobiphenyl	50.	U
87-86-5	Pentachlorophenol	30.	U
23950-58-5	Pronamide	50.	U
85-01-8	Phenanthrene	5.	U
120-12-7	Anthracene	5.	U
84-74-2	Di-n-butylphthalate	5.	U
206-44-0	Fluoranthene	5.	U
92-87-5	Benzidine	50.	U
129-00-0	Pyrene	5.	U
60-11-7	p-Dimethylaminoazobenzene	50.	U

U = Compound undetected at the listed practical quantitation limit.
Q = Compound was found in sample. B = Compound was found in blank.

BPACC01245

Lab Sample No.: 01040-LMB

Client Sample No.: CONTROL SAMPLE

Batch Number: 025-70

Client: SIMON-EEI

Data File: >AE748

Matrix: WATER

Sample wt/vol: 1000 mL

Date Received: 01/10/91

Dilution Factor: 1.0

Date Extracted: 01/17/92

Analyst: THIZAR

Date Analyzed: 01/18/92

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
85-68-7	Butylbenzylphthalate	5.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	5.	U
218-01-9	Chrysene	5.	U
117-81-7	bis(2-Ethylhexyl)phthalate	5.	U
117-84-0	Di-n-octylphthalate	5.	U
57-97-6	7,12-Dimethylbenz(a)anthrac	50.	U
205-99-2	benzo(b)fluoranthene	5.	U
207-08-9	Benzo(k)fluoranthene	5.	U
50-32-8	Benzo(a)pyrene	5.	U
56-49-5	3-Methylcholanthrene	50.	U
224-42-0	Dibenz(a,j)acridine	50.	U
193-39-5	Indeno(1,2,3-cd)pyrene	5.	U
53-70-3	Dibenzo(a,h)anthracene	5.	U
191-24-2	Benzo(g,h,i)perylene	5.	U

U = Compound undetected at the listed practical quantitation limit.
@ = Compound was found in sample. B = Compound was found in blank.

Lab Name: ETHL

Lab Sample No. 01040-LMB

Date Analyzed: 01/18/92

Batch Number: 625-76

Analyst: THIZAR

NCR Number:

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC LIMITS REC.
Phenol	100.00	0.00	33.00	32	12-110
2-Chlorophenol	100.00	0.00	71.00	71	27-123
1,4-Dichlorobenzene	50.00	0.00	38.00	75	36- 97
N-Nitroso-di-n-prop.(1)	50.00	0.00	50.00	99	41-116
1,2,4-Trichlorobenzene	50.00	0.00	32.00	64	39- 98
4-Chloro-3-methylphenol	100.00	0.00	60.00	59	23- 97
Acenaphthene	50.00	0.00	40.00	80	46-118
4-Nitrophenol	100.00	0.00	25.00	24	10- 80
2,4-Dinitrotoluene	50.00	0.00	40.00	79	24- 96
Pentachlorophenol	100.00	0.00	49.00	49	9-103
Pyrene	50.00	0.00	41.00	82	26-127

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	100.00	29.00	28	13	42	12-110
2-Chlorophenol	100.00	54.00	53	29	40	27-123
1,4-Dichlorobenzene	50.00	29.00	57	27	28	36- 97
N-Nitroso-di-n-prop.(1)	50.00	38.00	76	26	38	41-116
1,2,4-Trichlorobenzene	50.00	30.00	59	8	28	39- 98
4-Chloro-3-methylphenol	100.00	62.00	62	4	42	23- 97
Acenaphthene	50.00	41.00	81	1	31	46-118
4-Nitrophenol	100.00	26.00	26	8	50	10- 80
2,4-Dinitrotoluene	50.00	35.00	69	13	38	24- 96
Pentachlorophenol	100.00	51.00	50	2	50	9-103
Pyrene	50.00	34.00	68	18	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of qc limits

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS:

FORM III SV-1

1/87 Rev.

Lab Name: ETHL

Date Analyzed: 1/18/92 Batch Number: 625-7o

Analyst: THIZAR NCR Number:

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	OTHER	TOT OUT
01	01040-LMB	65	90	76	38	48	82		0
02	01040-LCS	67	94	84	39	52	80		0
03	01040-LCSD	68	81	75	30	40	67		0
04	01040-04A	76	102	80	44	52	78		0
05	01040-06A	61	90	79	45	51	81		0
06	01040-08A	66	90	73	47	56	81		0
07	01040-10A	59	91	67	41	48	78		0
08	01040-14A	62	75	70	42	49	89		0
09	01040-16A	57	79	77	37	45	80		0
10	01040-02A	1 *	93	72	23	6 *	18		2
11	01040-12A	58	80	57	38	45	76		0
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(35-114)
S2 (FBP)	= 2-Fluorobiphenyl	(43-116)
S3 (TPH)	= Terphenyl-d14	(33-141)
S4 (PHL)	= Phenol-d5	(10-110)
S5 (2FP)	= 2-Fluorophenol	(21-110)
S6 (TBP)	= 2,4,6-Tribromophenol	(10-123)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

FORM II SV-1 1/87 Rev.

CHAIN OF CUSTODY AND ANALYSIS REQUEST

01.040 SIMON-EEI

Project Name/No. 512-345
Project Location TORRANCE
Samplers' Name GALVIN F. LEE
Signature [signature]
Laboratory

SIMON - EEI
714-891-7446

ANALYSIS REQUESTED

SAMPLE ID	DATE	TIME	SAMPLE LOCATION, MEDIA, TYPE, DESCRIPTION	624	625	Number of Containers	Remarks
OW-01-01	1-16-92	1250		X		2	SEND ANALYSES TO: LEO CHAIDEZ
OW-01-02		1250			X	1	AT ADDRESS LISTED ABOVE
OW-02-03		1402		X		2	
OW-02-04		1402			X	1	
OW-100-05		1410		X		2	
OW-100-06		1410			X	1	
OW-03-07		1519		X		2	
OW-03-08		1519			X	1	
OW-04-09		1510		X		2.	
OW-04-10		1510			X	1	
OW-05-11		1615		X		2	
OW-05-12		1615			X	1	
OW-06-13		1625		X		2	
OW-06-14		1625			X	1	
OW-00-15	1-16-92	1620		X		2	
				Total Number of Containers:			

Relinquished by:	Date/Time	Received by:	Relinquished by:	Date/Time	Received by:
[signature]	1-16-92 1745				GREG WRANIC
Relinquished by:	Date/Time	Received by:	Relinquished by:	Date/Time	Received for Lab by:
					[signature] GREG WRANIC

Method of Shipment to Laboratory: Agent Person Shipping:

Distribution: Laboratory should sign and return WHITE COPY with analyses. YELLOW, sampler retains.

BPACC01249

CHAIN OF CUSTODY AND ANALYSIS REQUEST

01.040

SIMON-EEI

Project Name/No. 512-345
Project Location TORRANCE
Samplers' Name CALVIN F. LEE
Signature [signature]
Laboratory

SIMON – EEI
714-891-7446

ANALYSIS REQUESTED

SAMPLE ID	DATE	TIME	SAMPLE LOCATION, MEDIA, TYPE, DESCRIPTION	625	Number of Containers	Remarks
W-00-16	1-16-92	1620		X	1	SEND ANALYSES TO: LEO CHAIDEZ
						AT ADDRESS LISTED ABOVE
				Total Number of Containers:		

Relinquished by:	Date/Time	Received by:	Relinquished by:	Date/Time	Received by:
[signature]	1-16-92 1745				GREG WEAVER
Relinquished by:	Date/Time	Received by:	Relinquished by:	Date/Time	Received for Lab by:
					[signature] 1-16-92

Method of Shipment to Laboratory: Agent Person Shipping:

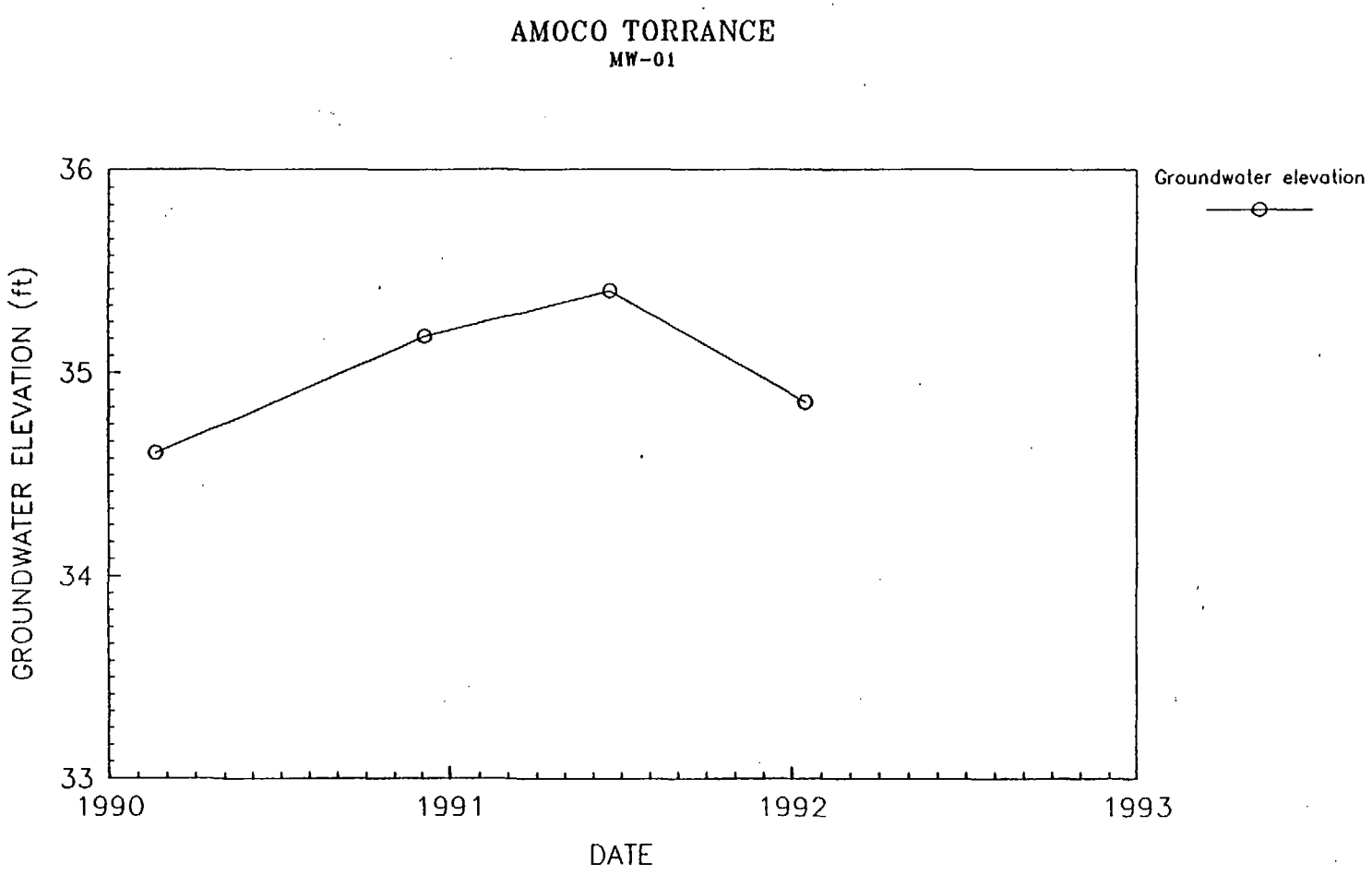
Distribution: Laboratory should sign and return WHITE COPY with analyses. YELLOW, sampler retains.

BPACC01250

DRAFT

APPENDIX B

MONITORING WELL HYDROGRAPHS



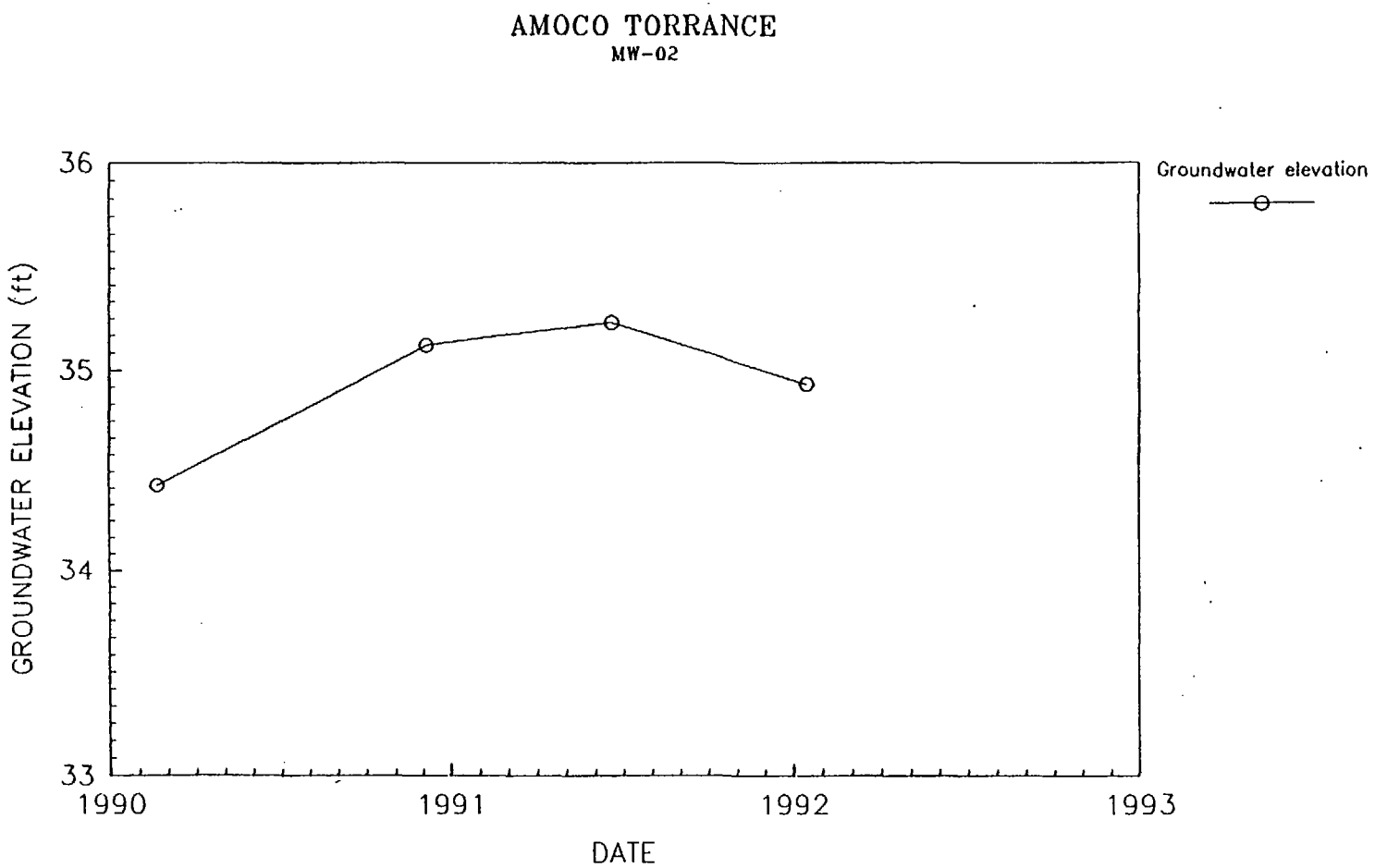
MONITORING WELL HYDROGRAPH
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345

DATE: JANUARY, 1992

FIGURE NO:



MONITORING WELL HYDROGRAPH
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

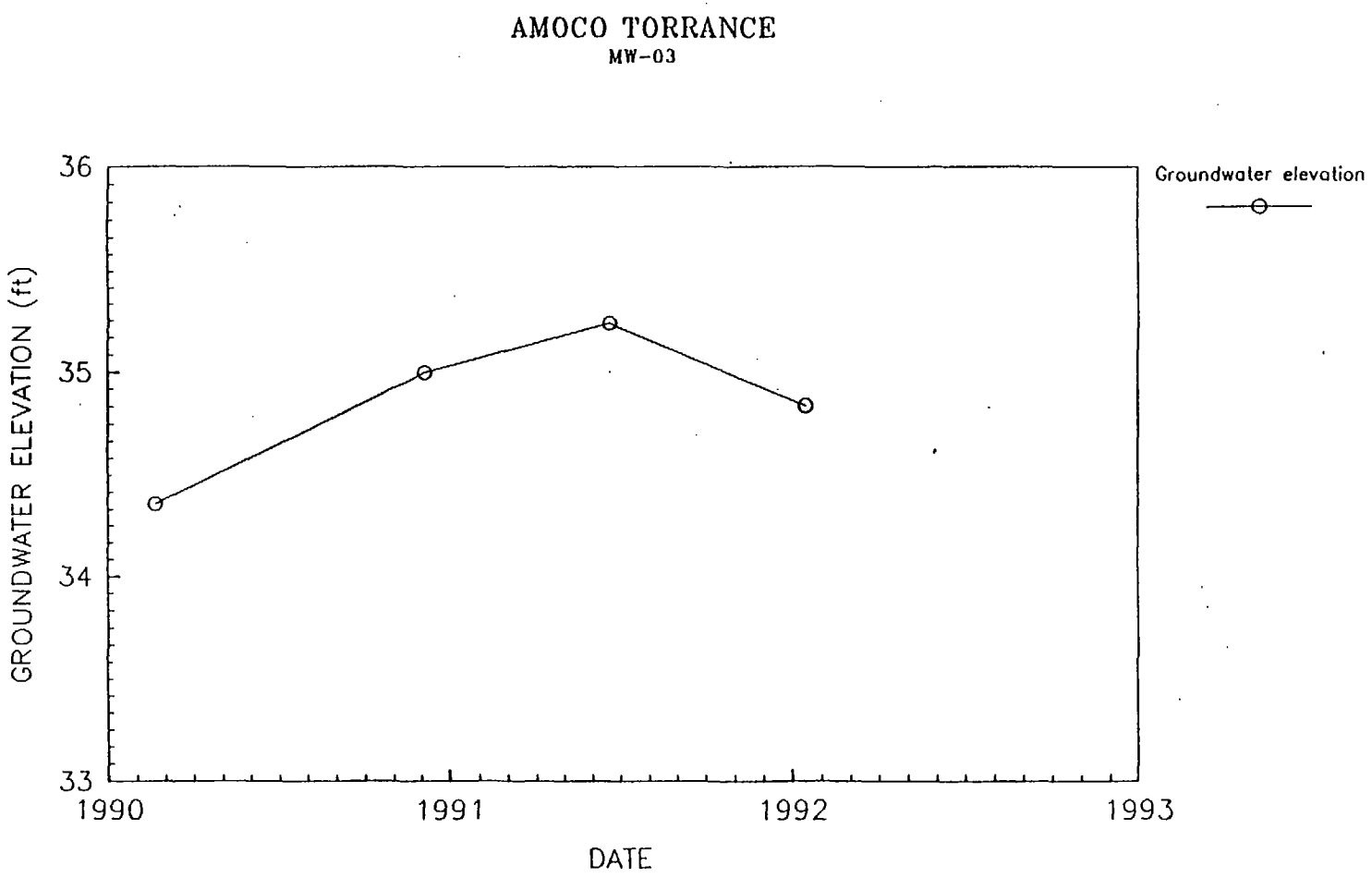
simon-EEI Inc.

PROJECT NO: 512-345

DATE: JANUARY, 1992

FIGURE NO:

BPACC01253



MONITORING WELL HYDROGRAPH
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

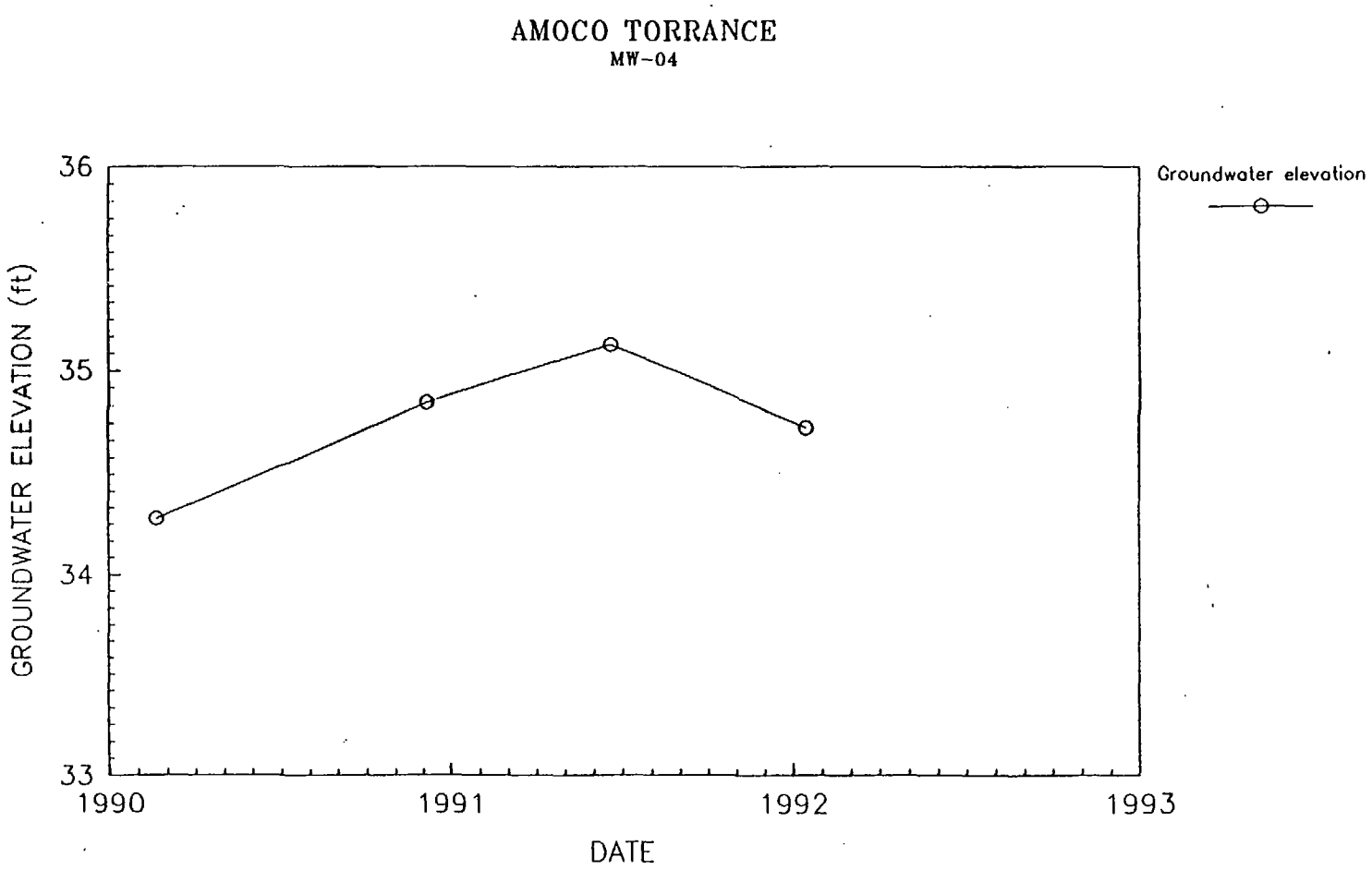
simon-EEI Inc.

PROJECT NO: 512-345

DATE: JANUARY, 1992

FIGURE NO:

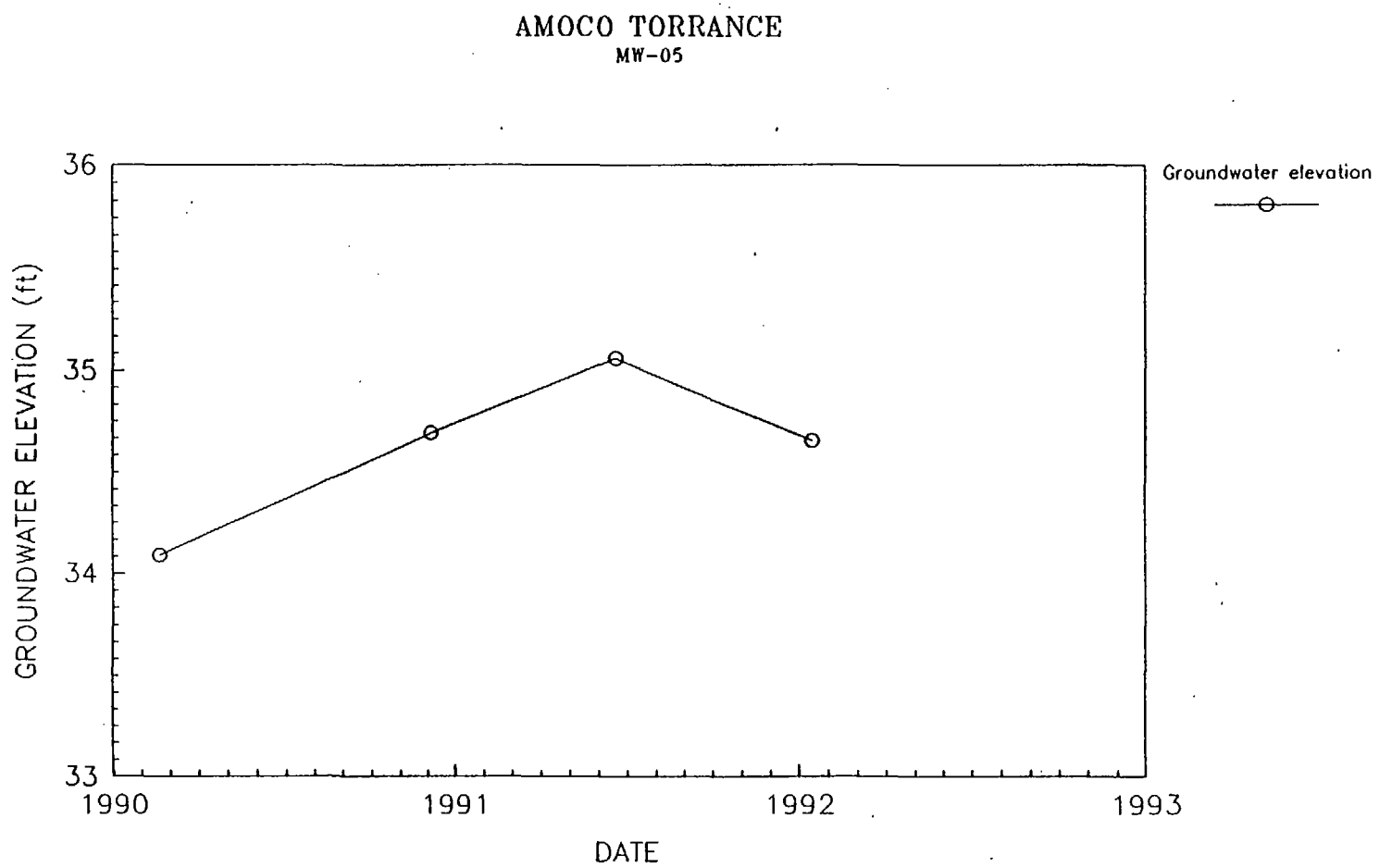
BPACC01254



MONITORING WELL HYDROGRAPH
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

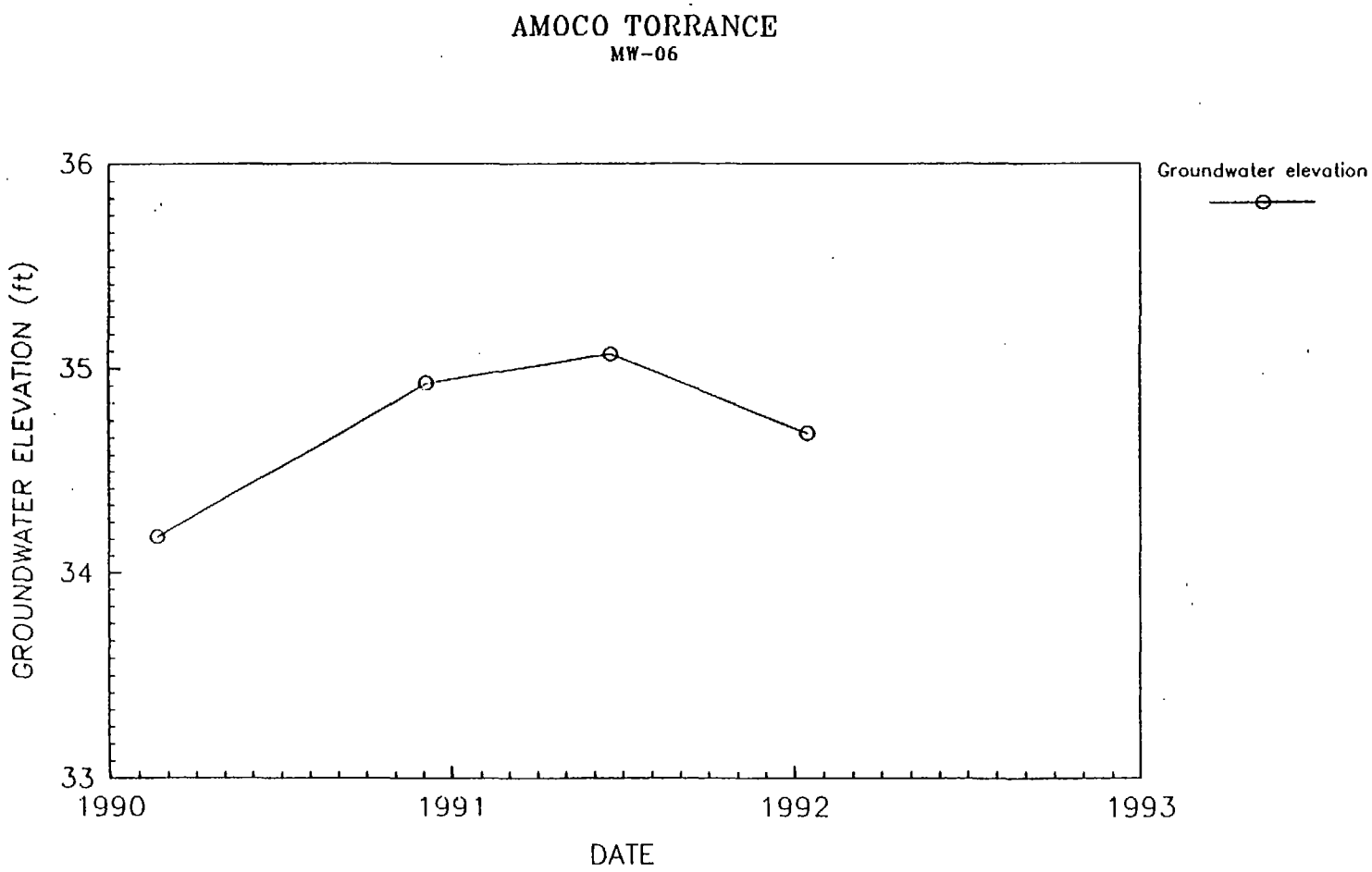


MONITORING WELL HYDROGRAPH
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

BPACC01256



MONITORING WELL HYDROGRAPH
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345

DATE: JANUARY, 1992

FIGURE NO:

BPACC01257

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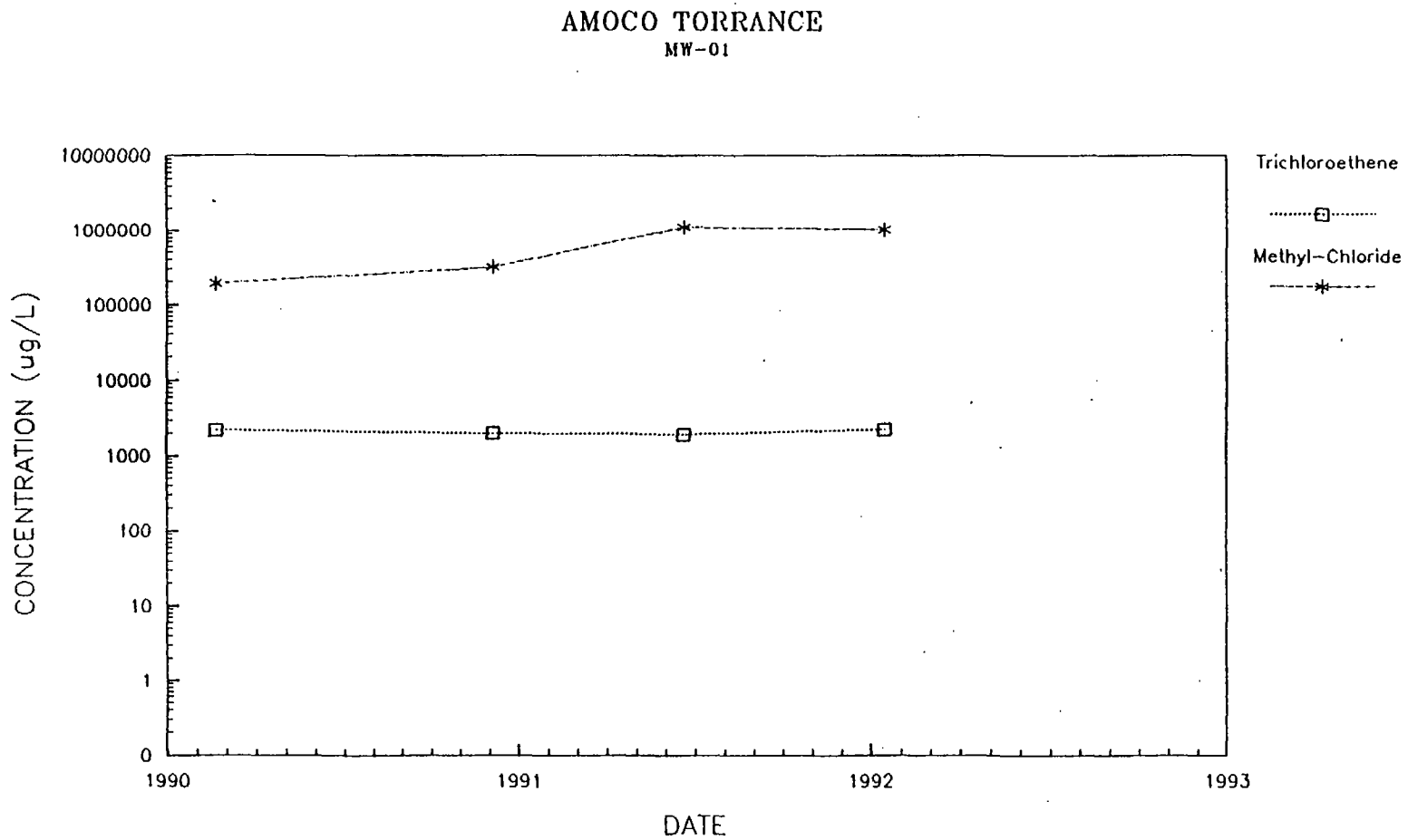
APPENDIX C

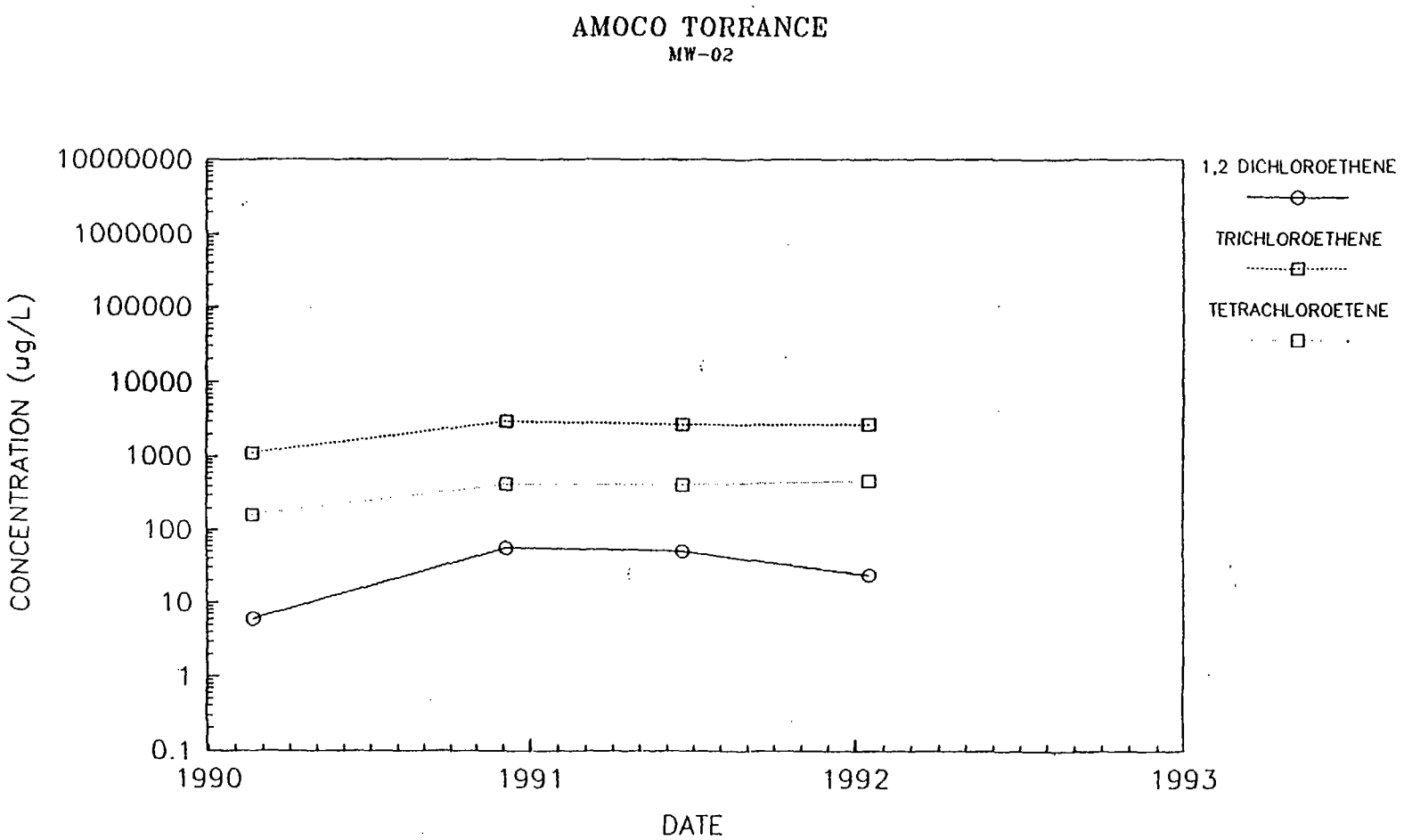
GRAPHS OF SELECTED ORGANIC COMPOUNDS OVER TIME



SELECTED ORGANIC COMPOUNDS VERSUS TIME
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

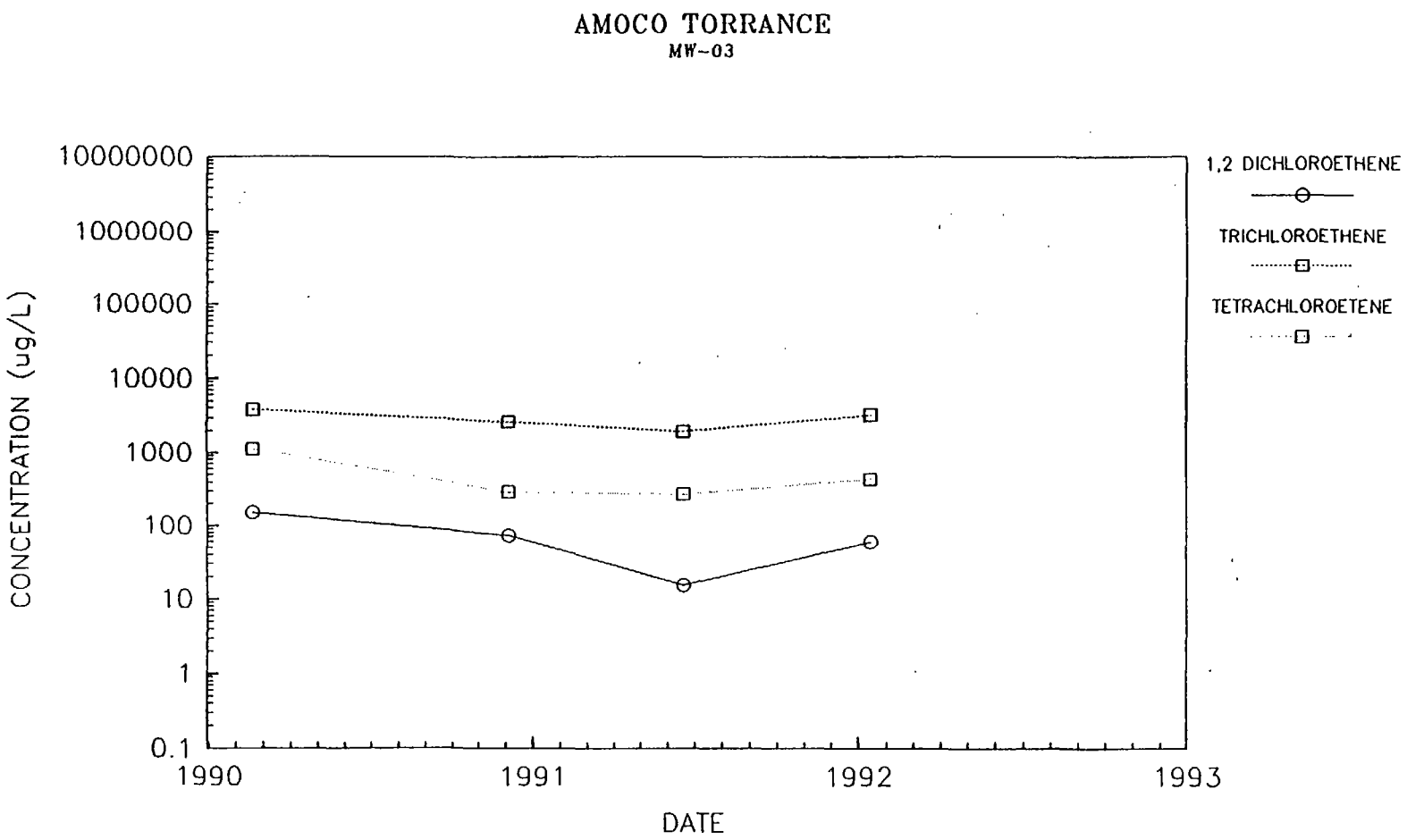


SELECTED ORGANIC COMPOUNDS VERSUS TIME
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

BPACC01260

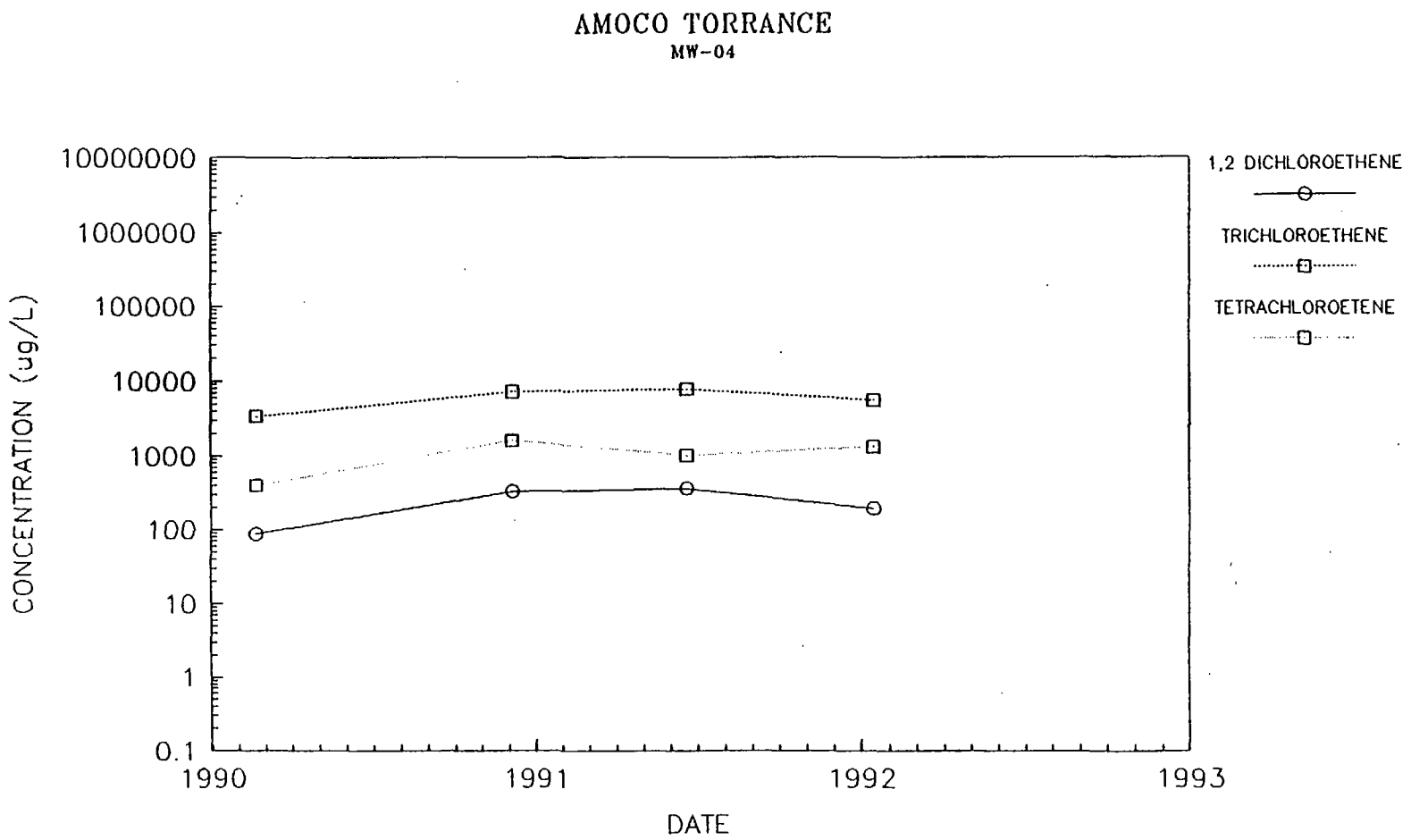


SELECTED ORGANIC COMPOUNDS VERSUS TIME
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

BPACC01261

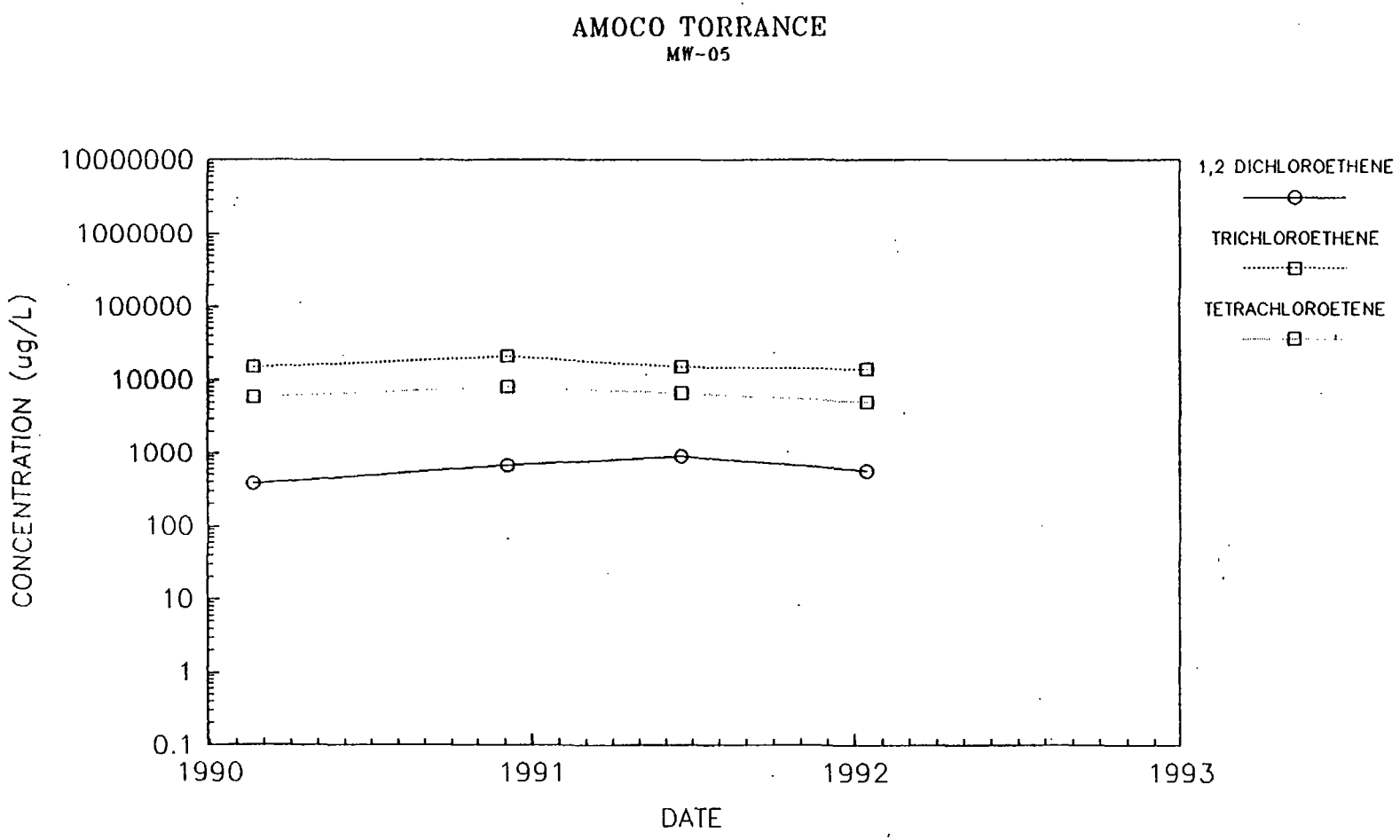


SELECTED ORGANIC COMPOUNDS VERSUS TIME
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

RPACC01262

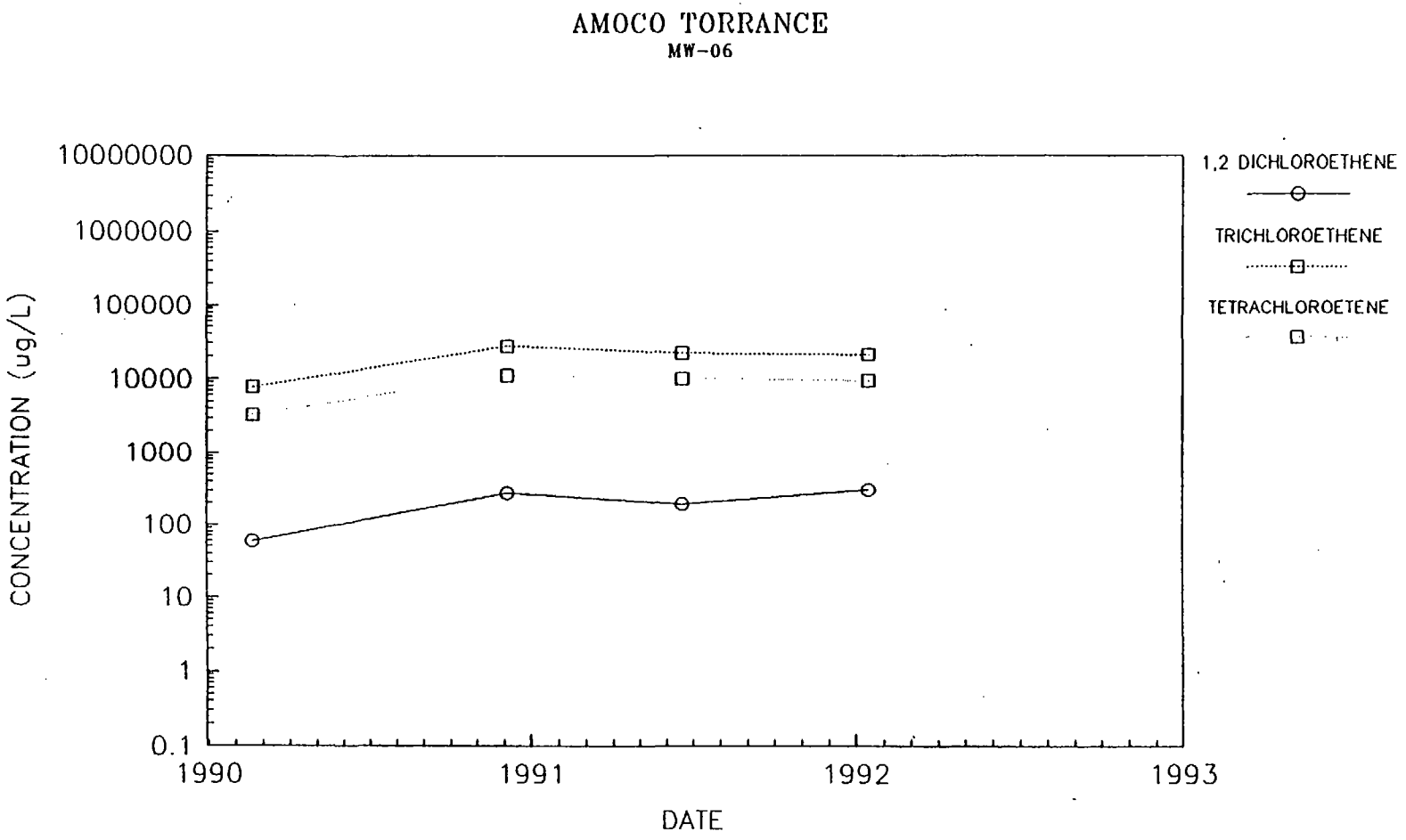


SELECTED ORGANIC COMPOUNDS VERSUS TIME
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

BPACC01263



SELECTED ORGANIC COMPOUNDS VERSUS TIME
1225 WEST 196TH STREET
TORRANCE, CALIFORNIA

simon-EEI Inc.

PROJECT NO: 512-345	FIGURE NO:
DATE: JANUARY, 1992	

DRAFT

APPENDIX D

MONITORING WELL SAMPLING PROTOCOL

DRAFT

APPENDIX D

MONITORING WELL SAMPLING PROTOCOL

Sampling was conducted using disposable polyethylene bailers having controlled flow emptying devices. Samples were collected in clean 40-milliliter glass vials having lids with Teflon lined septa and containing hydrochloric acid as a preservative.

Subsequent to collection, each vial was visually checked to ensure no air was entrapped within the vial. A sample label was then affixed to each vial and contained the following information: date, job number, well number, sample number, collectors initials and requested analysis. A custody seal was placed across each container lid to ensure sample integrity prior to analysis. Sealed and labeled sample containers were placed immediately into an ice chest containing blue ice for transport to the analytical laboratory at the end of the field day. Chain-of-custody forms were completed in the field and accompanied the samples to the analytical laboratory.

BPACC01266