Chemical Waste Management, Inc.

4227 Technology Drive
Fremont, California 94538-6337
510/651-2964

April 14, 1995

Mr. Jeffrey Zelikson
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

Two Copies
Via Certified Mail
P 244 216 545

Mr. Allan Plaza
Unit Chief, Facility Management Branch
(Attention: Mr. Andy Bajwa)
California Department of Toxic Substances Control, Region III
1011 North Grandview Avenue
Glendale, California 91201

Two Copies
Via Certified Mail
P 244 216 546

Subject: Chemical Waste Management, Inc. - Azusa, Facility (CAD 008302903)
RCRA Facility Investigation, Combined Report of First Quarter 1995
Groundwater Monitoring & RFI Events

Gentlemen:

In accordance with the recommendations presented in the Oil & Solvent Process Company RCRA Facility Investigation (RFI) Phase III Report[1], and the RCRA Part B Permit Attachment D, Section E.3.d, Chemical Waste Management, Inc., is submitting the results of the First Quarter 1995 Groundwater Monitoring Event at the Chemical Waste Management, Inc. - Azusa, California facility.

GROUNDWATER MONITORING

Attachment 1, prepared by RUST Environment & Infrastructure of Irvine, is the description of the sampling event, monthly water level measurements, and analytical results.

DATA ON ELECTRONIC MEDIA

Attachment 2 contains one 3½-inch, double sided, high density, DOS compatible diskette containing three ASCII files. The electronic data submission is required under permit condition

[1]Meredith/Boli and Associates, RCRA Facility Investigation (Phase III), Groundwater Investigation, January 11, 1993.

VI.8.A.

The file "CHEMSTRY.TXT" contains primary and duplicate field measurements and laboratory analytical results for the First Quarter 1995 event. The file is fixed format, containing 246 records, each with eleven fields. Table 1 is a description of the variable fields. Each record contains the result for one chemical analyte.

The file "BLANKS.TXT" contains the results of Travel and Field Blank analyses for the event. The file contains 72 records, each with nine fields. Variable fields are described in Table 2.

Groundwater elevation measurements are presented in "LEVELS.TXT". The file contains fifteen records, each with six fields. Table 3 describes the fields for this file.

The information presented in the electronic files is summary in nature. For specific details, please refer to the laboratory reports in the RUST report (Attachment 1).

OTHER RFI ACTIVITIES

On March 2, 1995, DTSC denied in writing, CWM's December 30, 1994 request to DTSC and U.S. EPA several chanages to the groundwater monitoring program. Changes requested were:

- Reduction of the number of wells sampled each quarter from five to three;
- Selection of the sampled wells based on groundwater gradients calculated immediately before sampling; and
- Reduction in the number of duplicate samples to one for every ten primary samples.

The DTSC denial is currently under review by CWM.

WORK PLANNED

Second Quarter 1995 groundwater sampling is scheduled for May 25 and 26, 1995.

Second Quarter 1995 groundwater level measurements are planned for April 28, May 25, and June 23, 1995.

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system design to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

If you have any questions, I can be reached at (510) 651-2964.

Sincerely,

CHEMICAL WASTE MANAGEMENT, INC.

Marc Yalom, R.G.
Hydrogeologist

Attachments (2)

/miy

cc: Mr. Wayne Chiou, Los Angeles RWQCB -- Monterey Park;Three Copies, Via Certified Mail, P 244 216 547

TABLES

TABLE 1
CHEMICAL WASTE MANAGEMENT, INC.
AZUSA FACILITY
ELECTRONIC FILE SUMMARY
"CHEMSTRY.TXT"

Cols.	Field	Description	Options
1-2	blank field		
3-18	Site_id	Source of sample	
19-28	Replicate	Type of sample	"P0" - Primary Sample "DX" - Duplicate Sample ("X" - Duplicate number) "SX" - Split Sample ("X" - Split Number)
29-38	Samp_date	Date sample was collected	Format: "MM/DD/YY"
39-48	Samp_time	Time sample was collected	Format: "HH:MM"
49-89	Name	Analyte Name	
90-101	Cas_num	Chemical Abstract Number	CAS number beginning "GIS" or "CWM" are improvised entries for analytes without true CAS designations
102-113	Conc	Concentration detected	
114-124	Det_limit	Detection limit	
125-130	Units	Analyte units	
131-138	Pf_code	Preparation fraction code	"T" - Total "D" - Dissolved
139-145	Dl_flag	Detection limit flag	"<" - Analyte not detected blank - Analyte detected

Notes:

1. First line of the file contains a field header.
2. All fields are left justified.

TABLE 2
CHEMICAL WASTE MANAGEMENT, INC.
AZUSA FACILITY
ELECTRONIC FILE SUMMARY
"BLANKS.TXT"

Cols.	Field	Description	Options
1-2	blank field		
3-13	Blank_Type	Type of QA Blank	"FX" - Field Blank ("X" - Blank Number) "TX" - Travel Blank ("X" - Blank Number)
14-54	Name	Analyte Name	
55-66	Cas_num	Chemical Abstract Number	CAS number beginning "GIS" or "CWM" are improvised entries for analytes without true CAS designations
67-78	Conc	Concentration detected	
79-89	Det_limit	Detection limit	
90-95	Units	Analyte units	
96-103	Pf_code	Preparation fraction code	"T" - Total "D" - Dissolved
104-111	Dl_Flag	Detection limit flag	"<" - Analyte not detected blank - Analyte detected
112-119	EML_Ens	Environmental Monitoring Laboratories Event Notification System Code	"YY-#####", where "YY" - Year "#####" - EML assigned laboratory sequence number

Notes:

1. First line of the file contains a field header.
2. All fields are left justified.

TABLE 3
CHEMICAL WASTE MANAGEMENT, INC.
AZUSA FACILITY
ELECTRONIC FILE SUMMARY
"LEVELS.TXT"

Cols.	Field	Description	Options
1-2	blank field		
3-18	Site_id	Measurement source	
19-27	Date	Date of measurement	Format: "MM/DD/YY"
28-32	Time	Time of measurement	Format: "HH:MM"
33-40	Level	Depth to groundwater	In feet
41-49	Mp_elev	Measuring point reference elevation	Feet above mean sea level
51-59	Elev	Groundwater elevation	Feet above mean sea level (Mp_elev - Level)

Notes:

1. First line of file contains a field header.
2. Level, Mp_elev, and Elev fields are right justified. All other fields are left justified.

ATTACHMENT 1

RUST REPORT OF GROUNDWATER MONITORING

RUST ENVIRONMENT & INFRASTRUCTURE

RUST Environment & Infrastructure Inc.
18401 Von Karman Avenue, Suite 550 - 5th Floor
Irvine, CA 92715
Tel. (714) 251-6400 • FAX (714) 251-6444

APR 1995
RECEIVED
Western Region
Environmental Mgt. Dept.
C.W.M.I.

April 13, 1995

Mr. Marc Yalom, R.G.
Hydrogeologist
Chemical Waste Management, Inc.
4227 Technology Drive
Fremont, California 94538-6337

**SUBJECT: CHEMICAL WASTE MANAGEMENT, INC.
AZUSA, CALIFORNIA FACILITY - CAD 008302903
REPORT OF FIRST QUARTER 1995 GROUNDWATER MONITORING EVENT (RUST E&I PROJECT NO. 32841)**

Mr. Yalom:

The following is a summary of the groundwater monitoring activities and results for the First Quarter 1995 Groundwater Monitoring Event at the Chemical Waste Management, Inc. (CWMI)-Azusa Facility. This letter report includes a summary of groundwater level measurements, groundwater sampling and analysis, and groundwater analytical results in Sections 1.0 - 3.0. The site is located at 107 South Motor Avenue as shown in Figure 1.

1.0 GROUNDWATER LEVEL MEASUREMENTS

On January 27, February 23 and March 24, 1995, RUST E&I personnel measured depth-to-groundwater in all five of the CWMI-Azusa RCRA facility groundwater monitoring wells (MW01 through MW05). No problems or difficulties were encountered while taking the measurements. The measurement data are summarized in Table 1, and groundwater contour maps for the three events are presented as Figures 2, 3, and 4 of this report.

Depth-to-groundwater was measured at each sample point (monitoring well) using an electronic water-level probe attached to a 300-foot fiberglass measuring tape. The measuring tape is graduated in 0.01-foot increments, and the "zero-foot" calibration point is at the water detection sensor, which allows depth-to-water to be measured directly. The probe and approximately ten feet of the measuring tape were decontaminated by washing in a bucket of dilute, non-phosphate detergent solution, followed by a double-rinse with tap water and a final rinse with distilled water prior to being lowered in each well's sounding tube. This procedure meets the CRWQCB requirement for instrument decontamination. The groundwater surface elevation was calculated for each sample point by subtracting the depth-to-groundwater value from the known reference point (top of sounding tube nipple) elevation.

The data indicate that groundwater elevations increased in each of the months in the first quarter of 1995. The total increase in groundwater elevation over the three month period was approximately 30.26 feet.

The greatest increase in groundwater elevation occurred during the month of March, with an increase of approximately 15.87 feet. The groundwater flow direction changed during the first quarter, flowing to the west/southwest in January, and to the southeast in February and March. The groundwater gradient varied from approximately 0.0007 feet/feet in January and 0.0018 feet/feet in February, to 0.0030 feet/feet in March.

2.0 GROUNDWATER SAMPLING & ANALYSES

2.1 AquaPak Inspection

Two small WMX Technologies, Inc. Environmental Monitering Laboratories (WMX-EML) AquaPaks (numbers 2053 and 2072) were received at the RUST E&I, Irvine office approximately one week prior to the planned sampling dates, February 23 and 24, 1995. Contained in the WMX-EML provided AquaPaks were pre-labeled, pre-cleaned 40 ml glass sample bottles. Each bottle label was pre-printed with an identification number, testing method, target analyte(s), type of preservative, filtration requirements and a unique bar-code which the laboratory uses to read this information. Each sample container was pre-preserved with HCL. Mr. Liles Cobb, a WMX-EML certified specialist, inspected the AquaPak's contents on February 22 and found the sample containers to be complete and labeled accurately. The WMX-EML bottle set numbers were as follows:

MW01	MW02	MW03	DUP	MW04	MW05	01FB
AL8942	AL8946	AL8943	AL8945	AL8944	AL8941	AL8940

2.2 Pre-Sample Preparation

Prior to sampling, wells MW01 through MW05 were purged of three well-volumes of groundwater. The well purge volumes are listed on Table 2 and the actual purge volumes are listed in Table 3. Parameters including pH, specific conductivity, and temperature were measured (Tables 4-8) and had stabilized to within 10% by the end of the purging activities. The bladder pump (sample pump) tubes were purged of approximately 2 gallons of groundwater just before the sample bottles were filled.

The purge-water parameters were measured using a Horiba Water Checker U-10 pH, conductivity and temperature meter. The Horiba Water Checker instrument was calibrated prior to the start of each day, and the calibration was checked at least once every 4 hours and again at the end of each day. The conductivity meter was zeroed and spanned as part of its initial calibration. The calibration records for the two sample days are listed in Table 9.

All of the purged waters were placed in CWMI-Azusa provided 55-gallon drums and properly labeled for cross-reference with the analytical data. A total of 19 drums were used, and disposal arrangements for the containerized waters were made by CWMI-Azusa.

The field notes have been typed and put in tabular form, and are provided on the following pages. Included are documentation of field meter calibrations, purge water field readings, actual purge volumes, samples times and number of drums of waste generated at each sample point.

2.3 Sample Collection

On February 23 and 24, 1995, RUST E&I personnel performed groundwater sampling at all five of the CWMI-Azusa RCRA facility groundwater monitoring wells (MW01 through MW05). Duplicate samples were collected at MW-03 and Field Blanks were collected at MW05. The sample collection order is listed in Table 10. The tasks was performed on-site by Mr. Cobb with the assistance of Mr. Doug Cross. All groundwater sampling work was performed according to WMX Groundwater Sampling Manual protocols and the CWMI-Azusa Site Specific Groundwater Monitoring Plan. The sampling times are documented on the enclosed WMX-EML Chain of Custody Records (Appendix A).

Weather conditions on February 23 and February 24 were similar, with overcast skies and mild air temperatures. The wind was calm. No difficulties were encountered during the collection of the groundwater samples.

2.4 Sample Shipment

The groundwater samples were shipped according to chain of custody protocol, via Federal Express overnight delivery service, on February 24, 1995. Two WMX-EML AquaPak coolers (AquaPak Nos. 2053 and 2072) were shipped to the WMX-EML in Geneva, Illinois, for laboratory analyses. The AquaPaks were cooled with "blue ice" and sealed prior to shipment. AquaPak 2072 was sealed with a destructive seal, and AquaPak 2053 was sealed with a lock. The samples arrived intact at WMX-EML on February 25, at temperatures ranging from 3° to 4° C.

3.0 GROUNDWATER ANALYTICAL RESULTS

Groundwater samples were analyzed by WMX-EML, according to EPA Method 624. Analyses for xylenes and ketones (acetone, MEK, and MIBK), compounds detected in previous CWMI-Azusa facility soil investigations, were included in the Method 624 analyses. Certified laboratory analytical results are presented in Appendix A.

3.1 QUALITY CONTROL RESULTS

3.1.1 Duplicate Samples

Primary and duplicate samples (MW03 and DUP) were collected at well MW-03 and analyzed according to Method 624 (see Appendix A). Both of the compounds, tetrachloroethene and tricloroethene, detected in MW03's primary sample were also detected in the duplicate sample. The relative percent

differences (RPD) for the two analytes ranged between 0% and 5% (see Table 11).

3.1.2 Field Blank

A Field Blank (01FB) was collected at well MW05 and analyzed according to Method 624. No compounds were detected in the Field Blank (see Appendix A).

3.1.3 Travel Blank

The travel blank that accompanied the field blank 01FB (TBK) was analyzed by Method 624. No chemical constituents were detected in the travel blank (see Appendix A).

If you have any questions, please do not hesitate to call us at (714) 251-6423.

Sincerely,

RUST ENVIRONMENT & INFRASTRUCTURE, INC.

R. Liles Cobb
Project Manager

Susan F. Goss
California Registered Geologist # 5639

Attachments:

Tables
Figures
Appendix A-Laboratory Analytical Results and Chain of Custody Records

TABLES

TABLE 1 GROUNDWATER ELEVATION MEASUREMENTS FIRST QUARTER 1995

WELL	DATE	MP ELEV.[1]	TIME	DEPTH TO WATER (feet)	WATER ELEV.[2]
MW01	01/27/95	529.31	17:03	286.52	242.79
MW01	02/23/95	529.31	10:08	273.26	256.05
MW01	03/24/95	529.31	11:10	257.18	272.13
MW02	01/27/95	525.65	17:55	282.65	243.00
MW02	02/23/95	525.65	10:43	270.79	254.86
MW02	03/24/95	525.65	13:02	255.25	270.40
MW03	01/27/95	519.04	17:42	276.45	242.59
MW03	02/23/95	519.04	09:40	263.15	255.89
MW03	03/24/95	519.04	12:48	246.95	272.09
MW04	01/27/95	520.48	17:14	277.96	242.52
MW04	02/23/95	520.48	10:18	264.98	255.50
MW04	03/24/95	520.48	11:23	249.09	271.39
MW05	01/27/95	519.67	17:27	277.07	242.60
MW05	02/23/95	519.67	10:31	264.58	255.09
MW05	03/24/95	519.67	11:32	248.94	270.73

[1]MP ELEV. = measuring point elevation feet above Mean Sea Level
[2]Feet above Mean Sea Level

TABLE 2 PRE-SAMPLING PURGE VOLUME CALCULATIONS					
SAMPLE POINT	TOTAL CASING DEPTH (ft.) (a)	DEPTH-TO-GROUNDWATER (ft.) (b)	VOLUME FACTOR (gal./ft.) (c)	ONE WELL VOLUME [1] (gallons) (d)	THREE WELL VOLUMES [2] (gallons)
MW01	335.0	273.26	1.02	63.0	188.9
MW02	328.0	270.79	1.02	58.4	175.1
MW03	319.5	263.15	1.02	57.5	172.4
MW04	318.0	264.98	1.02	54.1	162.2
MW05	330.0	264.58	1.02	66.7	200.2

[1] ONE WELL VOLUME (d) = (a - b) x (c)

[2] THREE WELL VOLUMES = 3 X (d)

TABLE 3 PURGE WATER QUANTITIES			
SAMPLE POINT	THREE WELL VOLUMES (gallons)	ACTUAL PURGE VOLUME (gallons)	NO. OF DRUMS OF WASTE GENERATED
MW01	188.9	192	4
MW02	175.1	178	4
MW03	172.4	175	4
MW04	162.2	165	3
MW05	200.2	202	4

TABLE 4 FIELD MEASUREMENTS OF PURGED WATER -MW01 FEBRUARY 23,1995				
VOLUME (cumulative)	pH	SPECIFIC CONDUCTIVITY (μmhos/cm)	TEMP. (°C)	TIME
1	7.97	582	22.9	13:39
95	7.57	692	19.1	13:50
140	7.60	698	19.0	13:56
190	7.48	703	18.8	14:02
192	7.53	702	19.3	14:22

TABLE 5 FIELD MEASUREMENTS OF PURGED WATER - MW02 FEBRUARY 24, 1995				
VOLUME (cumulative)	pH	SPECIFIC CONDUCTIVITY (μmhos/cm)	TEMP. (°C)	TIME
1	7.91	605	21.9	13:09
88	7.58	618	19.2	13:20
132	7.49	617	19.1	13:25
176	7.51	608	19.0	13:29
176 (dup)	7.52	606	18.9	13:30
178	7.45	616	19.2	13:45

TABLE 6 FIELD MEASUREMENTS OF PURGED WATER - MW03 FEBRUARY 24, 1995				
VOLUME (cumulative)	pH	SPECIFIC CONDUCTIVITY (μmhos/cm)	TEMP. (°C)	TIME
1	7.46	694	21.7	11:18
87	7.42	669	19.0	11:28
130	7.41	671	18.9	11:34
173	7.42	668	18.7	11:38
175	7.42	671	19.1	12:42

TABLE 7 FIELD MEASUREMENTS OF PURGED WATER - MW04 FEBRUARY 24, 1995				
VOLUME (cumulative)	pH	SPECIFIC CONDUCTIVITY (μmhos/cm)	TEMP. (°C)	TIME
1	8.05	528	22.5	09:45
81	7.41	615	19.1	09:53
121	7.34	617	18.8	10:00
163	7.40	604	19.0	10:06
165	7.32	620	19.2	11:45

TABLE 8 FIELD MEASUREMENTS OF PURGED WATER -MWO5 FEBRUARY 23, 1995				
VOLUME (cumulative)	pH	SPECIFIC CONDUCTIVITY (μmhos/cm)	TEMP. (°C)	TIME
1	7.94	600	20.9	14:55
100	7.55	636	19.2	15:07
150	7.44	640	18.9	15:11
200	7.40	633	18.9	15:16
202	7.32	640	19.2	15:28

TABLE 9 FIELD INSTRUMENT CALIBRATION RECORD
FEBRUARY 23 and 24, 1995

			pH RESULTS							SPEC. COND		
DATE	TIME	METER	TEMP (°C)	READ 7	CAL 7	READ 10	CAL 10	READ 4	CAL 4	STD (μmho/cm)	READ @ TEMP 1 (μmho/cm)	READ @ TEMP 2 (μmho/cm)
02/23/95	11:40	Horiba Water Checker U-10	18.0	6.96	7.01	10.04	10.01	4.00	4.01	1000	1010	1010
02/23/95	15:30	Horiba Water Checker U-10	19.5	6.99	--	10.01	--	4.02	--	1000	990	
02/24/95	09:30	Horiba Water Checker U-10	17.4	6.99	7.01	10.05	10.01	3.98	4.01	1000	1000	
02/24/95	13:45	Horiba Water Checker U-10	23.0	7.07	--	10.04	--	4.06	--	1000	1000	

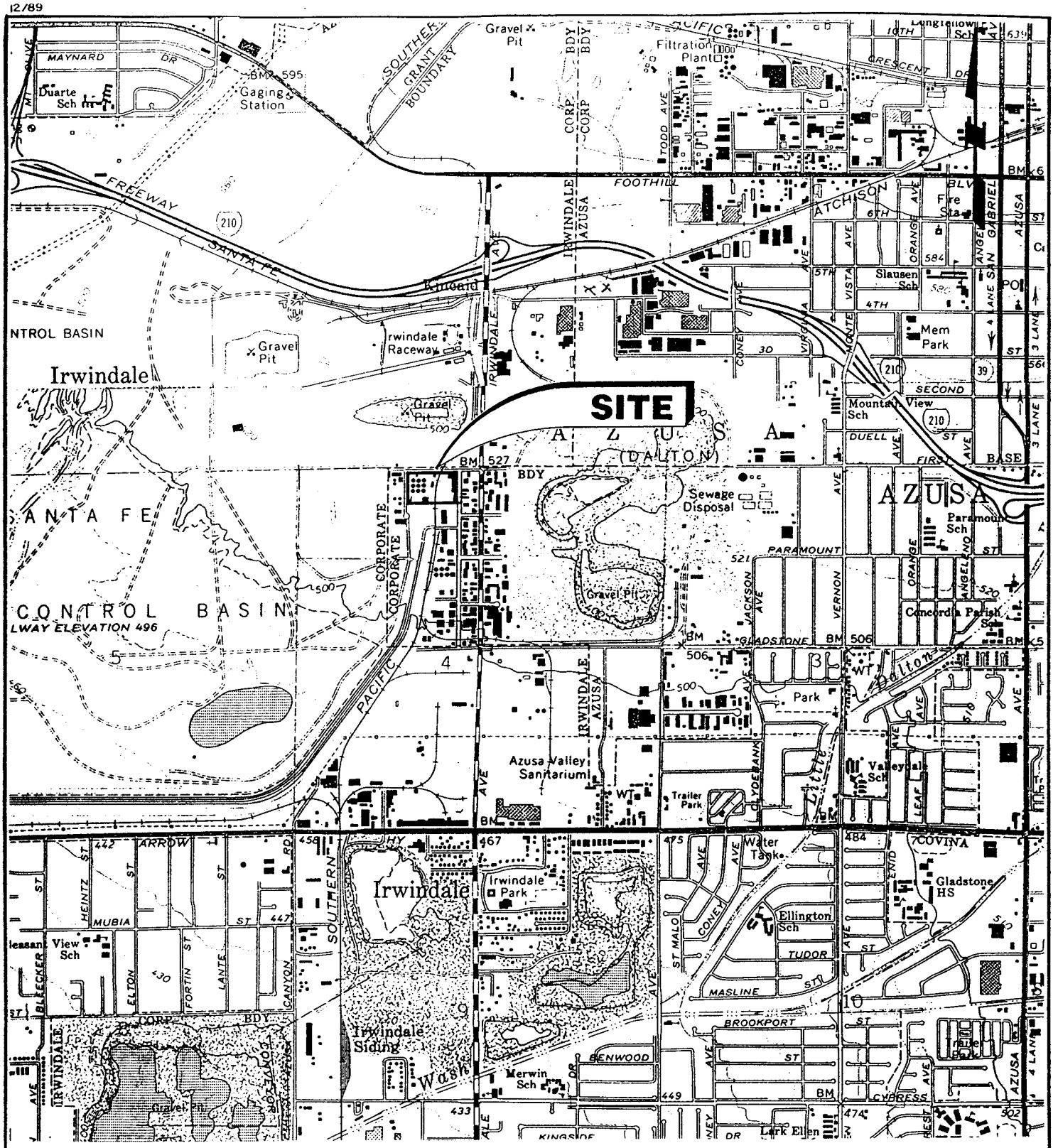
TABLE 10 SAMPLE COLLECTION ORDER
February 23 and 24, 1995

ORDER	MW01	MW02	MW03 & DUP	MW04	MW05	01FB
1	AL8942-A1	AL8946-A1	AL8943-A1	AL8944-A1	AL8941-A1	AL8940-A1
2	AL8942-A2	AL8946-A2	AL8945-A1	AL8944-A2	AL8941-A2	AL8940-A2
3	AL8942-A3	AL8946-A3	AL8943-A2	AL8944-A3	AL8941-A3	AL8940-A3
4	AL8942-A4	AL8946-A4	AL8945-A2	AL8944-A4	AL8941-A4	AL8940-A4
5			AL8943-A3			
6			AL8945-A3			
7			AL8943-A4			
8			AL8945-A4			

TABLE 11 DUPLCATE ANALYTICAL RESULTS February 23 and 24, 1995			
ANALYTE	MW03	DUP	% RELATIVE DIFFERENCE
Tetrachloroethene(µg/l)	45	43	5
Trichloroethene(µg/l)	21	21	0

FIGURES

12/89



REFERENCE: BASE MAP FROM U.S.G.S. 7.5 MIN. QUAD BALDWIN PARK.

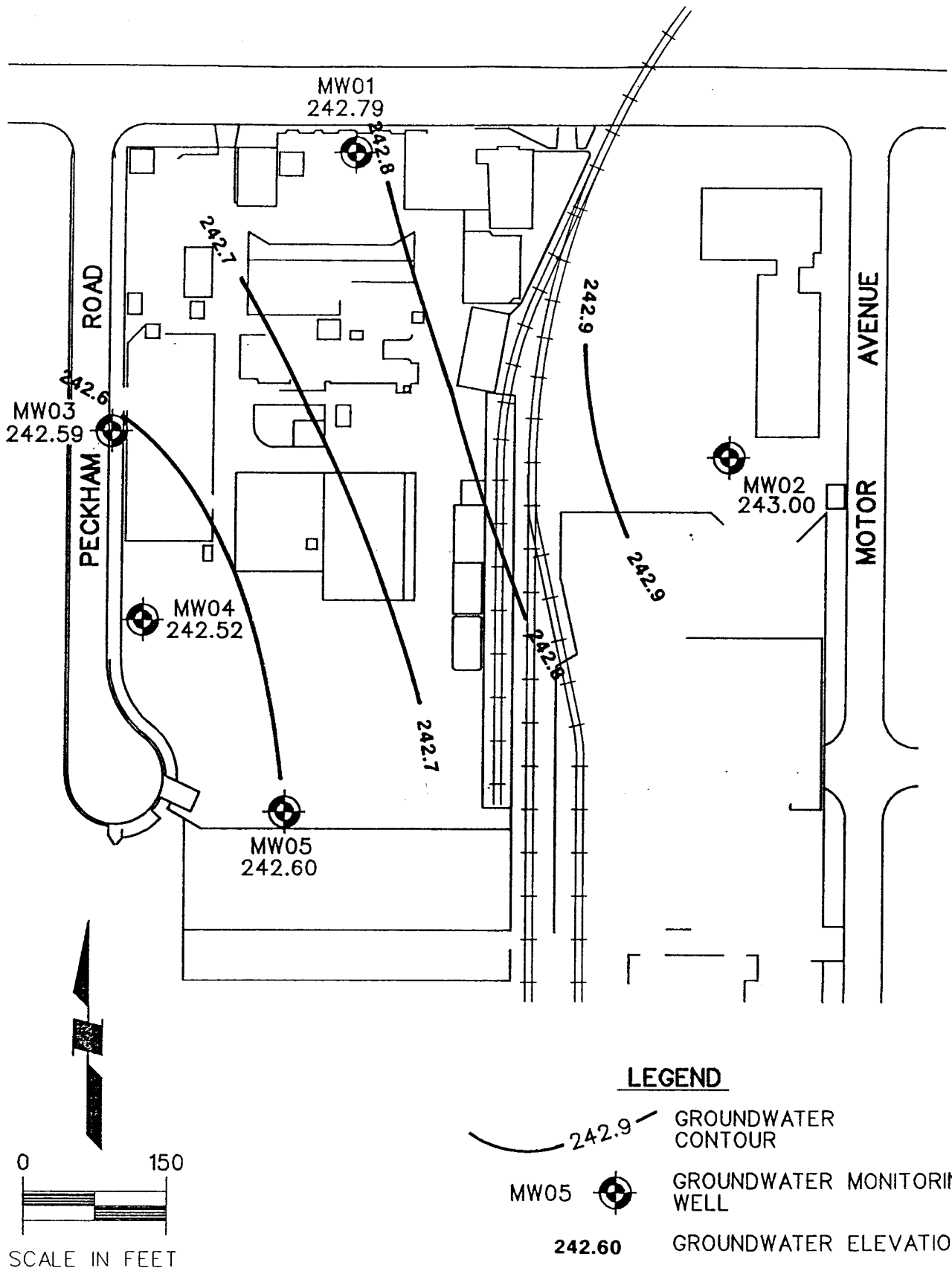
PREPARED BY:

RUST ENVIRONMENT & INFRASTRUCTURE

CWM-AZUSA
107 SOUTH MOTOR AVENUE
AZUSA, CALIFORNIA 91702

SITE LOCATION MAP

FIGURE
1



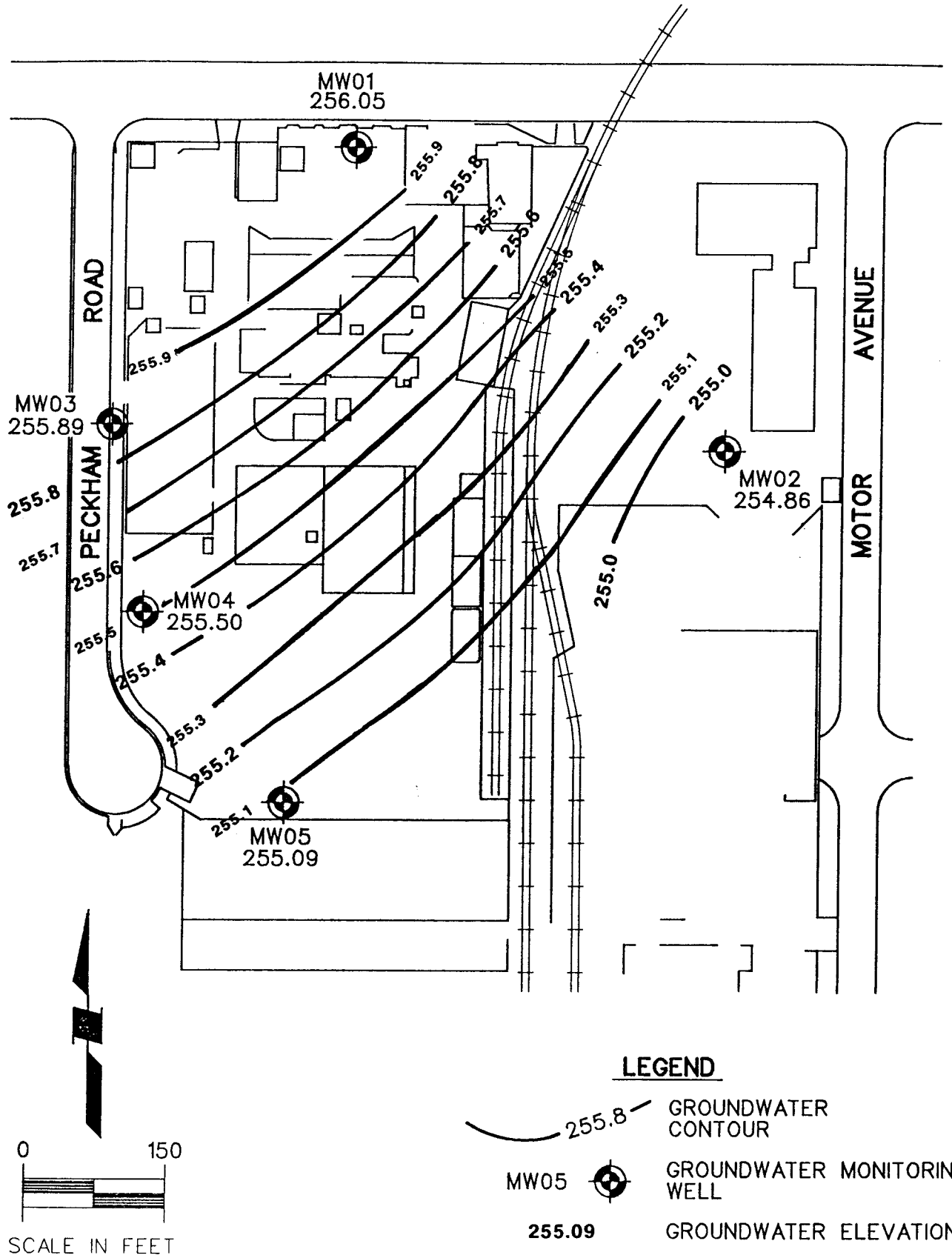
RUST ENVIRONMENT & INFRASTRUCTURE

CHEMICAL WASTE MANAGEMENT, INC.
ASUZA FACILITY

GROUNDWATER ELEVATION CONTOURS
JANUARY 27, 1995

FIGURE
2

25053



RUST ENVIRONMENT & INFRASTRUCTURE

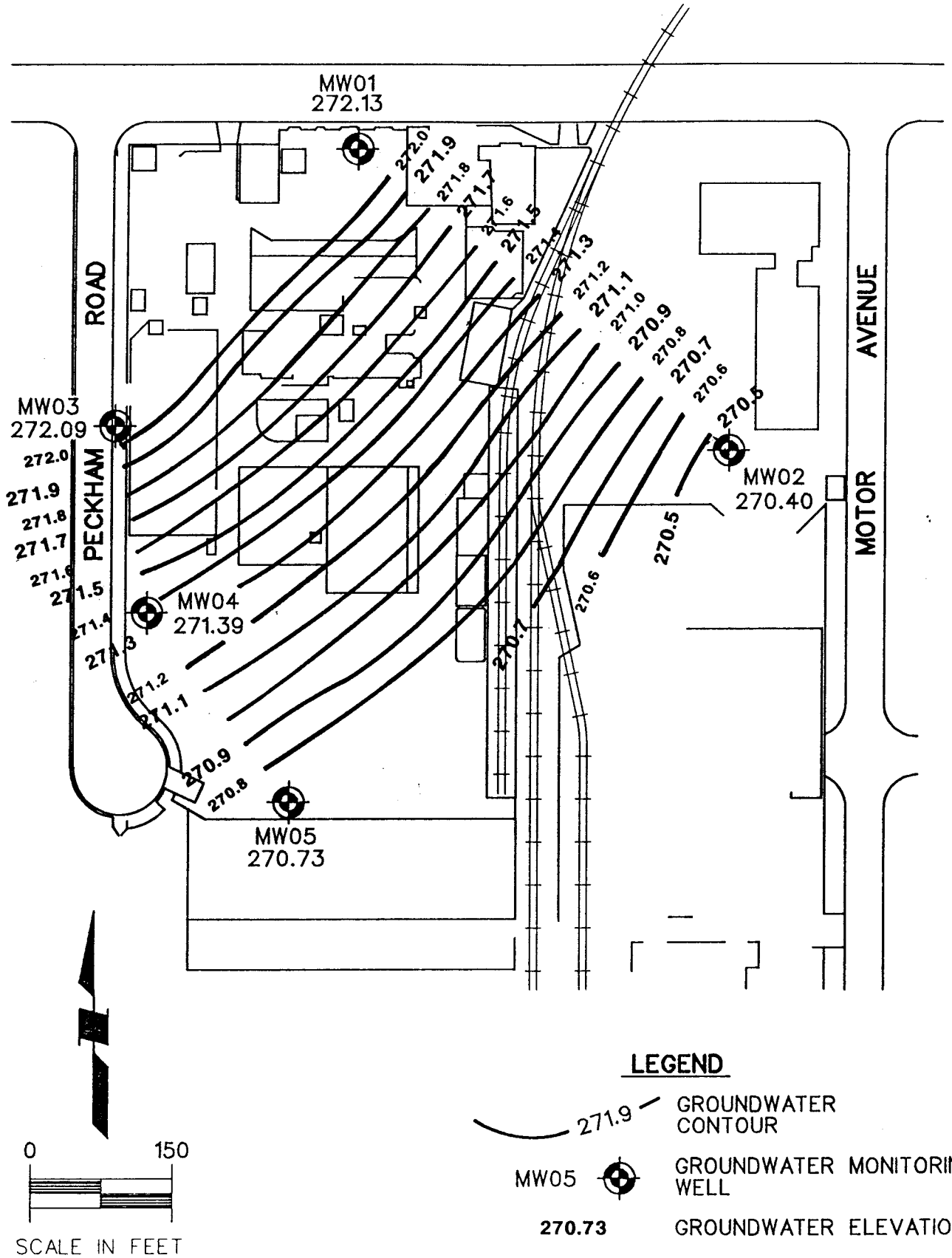
CHEMICAL WASTE MANAGEMENT, INC.
ASUZA FACILITY

GROUNDWATER ELEVATION CONTOURS
FEBRUARY 23, 1995

FIGURE 3

CHEMSITE.DGN

25053



RUST ENVIRONMENT & INFRASTRUCTURE

CHEMICAL WASTE MANAGEMENT, INC.
ASUZA FACILITY

GROUNDWATER ELEVATION CONTOURS
MARCH 24, 1995

FIGURE
4

CHEMSITE.DGN

25053

APPENDIX A

Laboratory Analytical Results
and
Chain of Custody Records

WMX Environmental Monitoring Laboratories, Inc.

Analytical Report Transmittal Memorandum

APR 1995
RECEIVED
Western Region
Environmental
Mgt. Dept.
C.W.M.I.

Date: April 5, 1995

To: Client(s) - see below

From: Donna Ingersoll

Subject: CWMI-AZUSA 95-10534

Please find enclosed the **regenerated** Client Report for the event at CWMI-AZUSA.

We have tried to provide a report that is complete and of known and documented quality. Please take a moment to review the enclosed report to ensure it meets your expectations.

If you have any questions, don't hesitate to call Joe Rentz at (708)208-3100.

Report Distribution:

Name	Report Type
Marc Yalom*	ALL

* *Program Manager*

Enclosed are the analytical results for samples received from your facility. The results in the Client Report are for a single ENS (Event Notification System) number only. The sampling event at your facility may include multiple ENS numbers. A separate Client Report will be generated for each one.

It is the goal of WMX Environmental Monitoring Laboratories Inc. to provide analytical data in a timely fashion, formatted in a way that our clients will find most useful.

If you have any questions concerning the form or content of this report, please contact the WMX EML Customer Operations Department:

Main Number (708) 208-3100
FAX Number (708) 208-1175

Note: Two designations may appear in the results column of your Client Report: NA or ND.

The designation NA (for "Not Analyzed") is used to identify analytes which were requested in the monitoring program, but for which no suitable testing methodology exists. NA may also indicate a dry well, broken sample bottle, insufficient sample volume, or other condition which precludes analysis for a sample.

The designation ND (for "Not Detected") is used to indicate that the analyte of interest was not found at or above the concentration listed under the EMLRL (EML Reporting Limit) heading.

Unless otherwise indicated, all analytes meet the requirements of holding time as specified in the method.

Deborah C. Hockman, Ph.D.

Deborah C. Hockman, Ph.D.
President
WMX Environmental Monitoring Laboratories, Inc.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

DATA QUALIFIER REPORT

Site: 562 — CWMI-AZUSA

ENS: 95-10534

Report Date: 16-MAR-1995

Sample Pt	Samp Date	Analyte	Method	Comment	Additional Comments Explanations (NQ/DL)
01FB	23-FEB-1995	2-CHLOROETHYLVINYL ETHER	VOMSAAO322	ST	
DUP	24-FEB-1995	2-CHLOROETHYLVINYL ETHER	VOMSAAO322	ST	
MW01	23-FEB-1995	2-CHLOROETHYLVINYL ETHER	VOMSAAO322	ST	
MW02	24-FEB-1995	EVERY ANALYTE FOR THIS METHOD	VOMSAAO322	DL	Dilution factor 1.2 applied.
MW02	24-FEB-1995	2-CHLOROETHYLVINYL ETHER	VOMSAAO322	ST	
MW03	24-FEB-1995	2-CHLOROETHYLVINYL ETHER	VOMSAAO322	ST	
MW04	24-FEB-1995	EVERY ANALYTE FOR THIS METHOD	VOMSAAO322	DL	Dilution factor 1.6 applied.
MW04	24-FEB-1995	2-CHLOROETHYLVINYL ETHER	VOMSAAO322	ST	
MW05	23-FEB-1995	EVERY ANALYTE FOR THIS METHOD	VOMSAAO322	DL	Dilution factor 2.0 applied.
MW05	23-FEB-1995	2-CHLOROETHYLVINYL ETHER	VOMSAAO322	ST	
TBK-01FB	23-FEB-1995	2-CHLOROETHYLVINYL ETHER	VOMSAAO322	ST	

Site: 562 — CWMI-AZUSA

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

DATA QUALIFIER REPORT

ENS: 95-10534

Report Date: 16-MAR-1995

Code	Data Qualifier Comment Code Definition
DL	Sample diluted; reporting limits have been adjusted where necessary.
ST	This compound is not stable in acidic water.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: 01FB
Sample Type: WELL
Sample Number: AL8940

ENS: 95-10534
MP: 562951
REV: 00

Sampled: 23-FEB-1995
Received: 25-FEB-1995
Reported: 5-APR-1995

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	NA		FT		FDWDTWTC01
GROUNDWATER ELEV.	NA		FT MSL		FDWGWELWDT
PH FIELD	NA		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	NA		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	NA		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	NA		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		624
1,1,1-TRICHLOROETHANE	ND	5	UG/L		624
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		624
1,1,2-TRICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHENE	ND	5	UG/L		624
1,2-DICHLOROBENZENE	ND	10.	UG/L		624
1,2-DICHLOROETHANE	ND	5	UG/L		624
1,2-DICHLOROPROPANE	ND	5	UG/L		624
1,3-DICHLOROBENZENE	ND	10.	UG/L		624
1,4-DICHLOROBENZENE	ND	10.	UG/L		624
2-BUTANONE	ND	50.	UG/L		624
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	624
4-METHYL-2-PENTANONE	ND	10.	UG/L		624
ACETONE	ND	34	UG/L		624
BENZENE	ND	5	UG/L		624
BROMODICHLOROMETHANE	ND	5	UG/L		624
BROMOFORM	ND	5	UG/L		624
BROMOMETHANE	ND	10.	UG/L		624
CARBON TETRACHLORIDE	ND	5	UG/L		624
CHLOROBENZENE	ND	5	UG/L		624
CHLOROETHANE	ND	10.	UG/L		624
CHLOROFORM	ND	5	UG/L		624
CHLOROMETHANE	ND	10.	UG/L		624
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
DIBROMOCHLOROMETHANE	ND	5	UG/L		624
ETHYLBENZENE	ND	5	UG/L		624
METHYLENE CHLORIDE	ND	5	UG/L		624
O-XYLENE	ND	10.	UG/L		624
TETRACHLOROETHENE	ND	5	UG/L		624
TOLUENE	ND	5	UG/L		624
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		624
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
TRICHLOROETHENE	ND	5	UG/L		624
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		624
VINYL CHLORIDE	ND	10.	UG/L		624

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: DUP
Sample Type: WELL
Sample Number: AL8945

ENS: 95-10534
MP: 562951
REV: 00

Sampled: 24-FEB-1995
Received: 27-FEB-1995
Reported: 5-APR-1995

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	263.15		FT		FDWDTWTC01
GROUNDWATER ELEV.	255.89		FT MSL		FDWGWELWDT
PH FIELD	7.42		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	671		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	19.1		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	319.5		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		624
1,1,1-TRICHLOROETHANE	ND	5	UG/L		624
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		624
1,1,2-TRICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHENE	ND	5	UG/L		624
1,2-DICHLOROBENZENE	ND	10.	UG/L		624
1,2-DICHLOROETHANE	ND	5	UG/L		624
1,2-DICHLOROPROPANE	ND	5	UG/L		624
1,3-DICHLOROBENZENE	ND	10.	UG/L		624
1,4-DICHLOROBENZENE	ND	10.	UG/L		624
2-BUTANONE	ND	50.	UG/L		624
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	624
4-METHYL-2-PENTANONE	ND	10.	UG/L		624
ACETONE	ND	34	UG/L		624
BENZENE	ND	5	UG/L		624
BROMODICHLOROMETHANE	ND	5	UG/L		624
BROMOFORM	ND	5	UG/L		624
BROMOMETHANE	ND	10.	UG/L		624
CARBON TETRACHLORIDE	ND	5	UG/L		624
CHLOROBENZENE	ND	5	UG/L		624
CHLOROETHANE	ND	10.	UG/L		624
CHLOROFORM	ND	5	UG/L		624
CHLOROMETHANE	ND	10.	UG/L		624
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
DIBROMOCHLOROMETHANE	ND	5	UG/L		624
ETHYLBENZENE	ND	5	UG/L		624
METHYLENE CHLORIDE	ND	5	UG/L		624
O-XYLENE	ND	10.	UG/L		624
TETRACHLOROETHENE	43	5	UG/L		624
TOLUENE	ND	5	UG/L		624
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		624
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
TRICHLOROETHENE	21	5	UG/L		624
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		624
VINYL CHLORIDE	ND	10.	UG/L		624

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW01
Sample Type: WELL
Sample Number: AL8942

ENS: 95-10534
MP: 562951
REV: 00

Sampled: 23-FEB-1995
Received: 25-FEB-1995
Reported: 5-APR-1995

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	273.26		FT		FDWDTWTC01
GROUNDWATER ELEV.	256.05		FT MSL		FDWGWELWDT
PH FIELD	7.53		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	702		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	19.3		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	335.0		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		624
1,1,1-TRICHLOROETHANE	ND	5	UG/L		624
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		624
1,1,2-TRICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHENE	ND	5	UG/L		624
1,2-DICHLOROBENZENE	ND	10.	UG/L		624
1,2-DICHLOROETHANE	ND	5	UG/L		624
1,2-DICHLOROPROPANE	ND	5	UG/L		624
1,3-DICHLOROBENZENE	ND	10.	UG/L		624
1,4-DICHLOROBENZENE	ND	10.	UG/L		624
2-BUTANONE	ND	50.	UG/L		624
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	624
4-METHYL-2-PENTANONE	ND	10.	UG/L		624
ACETONE	ND	34	UG/L		624
BENZENE	ND	5	UG/L		624
BROMODICHLOROMETHANE	ND	5	UG/L		624
BROMOFORM	ND	5	UG/L		624
BROMOMETHANE	ND	10.	UG/L		624
CARBON TETRACHLORIDE	ND	5	UG/L		624
CHLOROBENZENE	ND	5	UG/L		624
CHLOROETHANE	ND	10.	UG/L		624
CHLOROFORM	ND	5	UG/L		624
CHLOROMETHANE	ND	10.	UG/L		624
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
DIBROMOCHLOROMETHANE	ND	5	UG/L		624
ETHYLBENZENE	ND	5	UG/L		624
METHYLENE CHLORIDE	ND	5	UG/L		624
O-XYLENE	ND	10.	UG/L		624
TETRACHLOROETHENE	64	5	UG/L		624
TOLUENE	ND	5	UG/L		624
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		624
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
TRICHLOROETHENE	22	5	UG/L		624
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		624
VINYL CHLORIDE	ND	10.	UG/L		624

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW02
Sample Type: WELL
Sample Number: AL8946

ENS: 95-10534
MP: 562951
REV: 00

Sampled: 24-FEB-1995
Received: 27-FEB-1995
Reported: 5-APR-1995

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	270.79		FT		FDWDTWTC01
GROUNDWATER ELEV.	254.86		FT MSL		FDWGWELWDT
PH FIELD	7.45		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	616		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	19.2		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	328.0		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L	DL	624
1,1,1-TRICHLOROETHANE	5	5	UG/L	DL	624
1,1,2,2-TETRACHLOROETHANE	ND	6	UG/L	DL	624
1,1,2-TRICHLOROETHANE	ND	5	UG/L	DL	624
1,1-DICHLOROETHANE	ND	6	UG/L	DL	624
1,1-DICHLOROETHENE	10.	6	UG/L	DL	624
1,2-DICHLOROBENZENE	ND	10.	UG/L	DL	624
1,2-DICHLOROETHANE	ND	5	UG/L	DL	624
1,2-DICHLOROPROPANE	ND	5	UG/L	DL	624
1,3-DICHLOROBENZENE	ND	10.	UG/L	DL	624
1,4-DICHLOROBENZENE	ND	10.	UG/L	DL	624
2-BUTANONE	ND	60.	UG/L	DL	624
2-CHLOROETHYLVINYL ETHER	ND	24	UG/L	DL,ST	624
4-METHYL-2-PENTANONE	ND	12	UG/L	DL	624
ACETONE	ND	41	UG/L	DL	624
BENZENE	ND	5	UG/L	DL	624
BROMODICHLOROMETHANE	ND	5	UG/L	DL	624
BROMOFORM	ND	5	UG/L	DL	624
BROMOMETHANE	ND	10.	UG/L	DL	624
CARBON TETRACHLORIDE	ND	5	UG/L	DL	624
CHLOROBENZENE	ND	5	UG/L	DL	624
CHLOROETHANE	ND	10.	UG/L	DL	624
CHLOROFORM	ND	5	UG/L	DL	624
CHLOROMETHANE	ND	10.	UG/L	DL	624
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L	DL	624
DIBROMOCHLOROMETHANE	ND	5	UG/L	DL	624
ETHYLBENZENE	ND	5	UG/L	DL	624
METHYLENE CHLORIDE	ND	5	UG/L	DL	624
O-XYLENE	ND	10.	UG/L	DL	624
TETRACHLOROETHENE	270	5	UG/L	DL	624
TOLUENE	ND	5	UG/L	DL	624
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L	DL	624
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L	DL	624
TRICHLOROETHENE	120	5	UG/L	DL	624
TRICHLOROFLUOROMETHANE	ND	10.	UG/L	DL	624
VINYL CHLORIDE	ND	10.	UG/L	DL	624

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
624	Dilution factor 1.2 applied.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW03
Sample Type: WELL
Sample Number: AL8943

ENS: 95-10534
MP: 562951
REV: 00

Sampled: 24-FEB-1995
Received: 27-FEB-1995
Reported: 5-APR-1995

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	263.15		FT		FDWDTWTC01
GROUNDWATER ELEV.	255.89		FT MSL		FDWGWELWDT
PH FIELD	7.42		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	671		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	19.1		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	319.50		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		624
1,1,1-TRICHLOROETHANE	ND	5	UG/L		624
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		624
1,1,2-TRICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHENE	ND	5	UG/L		624
1,2-DICHLOROBENZENE	ND	10.	UG/L		624
1,2-DICHLOROETHANE	ND	5	UG/L		624
1,2-DICHLOROPROPANE	ND	5	UG/L		624
1,3-DICHLOROBENZENE	ND	10.	UG/L		624
1,4-DICHLOROBENZENE	ND	10.	UG/L		624
2-BUTANONE	ND	50.	UG/L		624
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	624
4-METHYL-2-PENTANONE	ND	10.	UG/L		624
ACETONE	ND	34	UG/L		624
BENZENE	ND	5	UG/L		624
BROMODICHLOROMETHANE	ND	5	UG/L		624
BROMOFORM	ND	5	UG/L		624
BROMOMETHANE	ND	10.	UG/L		624
CARBON TETRACHLORIDE	ND	5	UG/L		624
CHLOROBENZENE	ND	5	UG/L		624
CHLOROETHANE	ND	10.	UG/L		624
CHLOROFORM	ND	5	UG/L		624
CHLOROMETHANE	ND	10.	UG/L		624
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
DIBROMOCHLOROMETHANE	ND	5	UG/L		624
ETHYLBENZENE	ND	5	UG/L		624
METHYLENE CHLORIDE	ND	5	UG/L		624
O-XYLENE	ND	10.	UG/L		624
TETRACHLOROETHENE	45	5	UG/L		624
TOLUENE	ND	5	UG/L		624
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		624
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
TRICHLOROETHENE	21	5	UG/L		624
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		624
VINYL CHLORIDE	ND	10.	UG/L		624

NA = Not Analyzed **ND = Not Detected** **TBK = Trip Blank**

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW04
Sample Type: WELL
Sample Number: AL8944

ENS: 95-10534
MP: 562951
REV: 00

Sampled: 24-FEB-1995
Received: 27-FEB-1995
Reported: 5-APR-1995

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	264.98		FT		FDWDTWTC01
GROUNDWATER ELEV.	255.50		FT MSL		FDWGWELWDT
PH FIELD	7.32		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	620		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	19.2		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	318.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L	DL	624
1,1,1-TRICHLOROETHANE	9	5	UG/L	DL	624
1,1,2,2-TETRACHLOROETHANE	ND	8	UG/L	DL	624
1,1,2-TRICHLOROETHANE	ND	5	UG/L	DL	624
1,1-DICHLOROETHANE	ND	8	UG/L	DL	624
1,1-DICHLOROETHENE	16	8	UG/L	DL	624
1,2-DICHLOROBENZENE	ND	10.	UG/L	DL	624
1,2-DICHLOROETHANE	ND	5	UG/L	DL	624
1,2-DICHLOROPROPANE	ND	5	UG/L	DL	624
1,3-DICHLOROBENZENE	ND	10.	UG/L	DL	624
1,4-DICHLOROBENZENE	ND	10.	UG/L	DL	624
2-BUTANONE	ND	80.	UG/L	DL	624
2-CHLOROETHYLVINYL ETHER	ND	32	UG/L	DL,ST	624
4-METHYL-2-PENTANONE	ND	15	UG/L	DL	624
ACETONE	ND	54	UG/L	DL	624
BENZENE	ND	5	UG/L	DL	624
BROMODICHLOROMETHANE	ND	5	UG/L	DL	624
BROMOFORM	ND	5	UG/L	DL	624
BROMOMETHANE	ND	10.	UG/L	DL	624
CARBON TETRACHLORIDE	ND	5	UG/L	DL	624
CHLOROBENZENE	ND	5	UG/L	DL	624
CHLOROETHANE	ND	10.	UG/L	DL	624
CHLOROFORM	ND	5	UG/L	DL	624
CHLOROMETHANE	ND	10.	UG/L	DL	624
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L	DL	624
DIBROMOCHLOROMETHANE	ND	5	UG/L	DL	624
ETHYLBENZENE	ND	6	UG/L	DL	624
METHYLENE CHLORIDE	ND	7	UG/L	DL	624
O-XYLENE	ND	10.	UG/L	DL	624
TETRACHLOROETHENE	490	5	UG/L	DL	624
TOLUENE	ND	5	UG/L	DL	624
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L	DL	624
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L	DL	624
TRICHLOROETHENE	55	5	UG/L	DL	624
TRICHLOROFLUOROMETHANE	ND	10.	UG/L	DL	624
VINYL CHLORIDE	ND	10.	UG/L	DL	624

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
624	Dilution factor 1.6 applied.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW05
Sample Type: WELL
Sample Number: AL8941

ENS: 95-10534
MP: 562951
REV: 00

Sampled: 23-FEB-1995
Received: 25-FEB-1995
Reported: 5-APR-1995

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	264.58		FT		FDWDTWTC01
GROUNDWATER ELEV.	255.09		FT MSL		FDWGWELWDT
PH FIELD	7.32		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	640		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	19.2		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	330.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L	DL	624
1,1,1-TRICHLOROETHANE	18	6	UG/L	DL	624
1,1,2,2-TETRACHLOROETHANE	ND	10.	UG/L	DL	624
1,1,2-TRICHLOROETHANE	ND	6	UG/L	DL	624
1,1-DICHLOROETHANE	ND	10.	UG/L	DL	624
1,1-DICHLOROETHENE	32	10.	UG/L	DL	624
1,2-DICHLOROBENZENE	ND	10.	UG/L	DL	624
1,2-DICHLOROETHANE	6	5	UG/L	DL	624
1,2-DICHLOROPROPANE	ND	5	UG/L	DL	624
1,3-DICHLOROBENZENE	ND	10.	UG/L	DL	624
1,4-DICHLOROBENZENE	ND	10.	UG/L	DL	624
2-BUTANONE	ND	100	UG/L	DL	624
2-CHLOROETHYLVINYL ETHER	ND	40.	UG/L	DL,ST	624
4-METHYL-2-PENTANONE	ND	19	UG/L	DL	624
ACETONE	ND	68	UG/L	DL	624
BENZENE	ND	5	UG/L	DL	624
BROMODICHLOROMETHANE	ND	5	UG/L	DL	624
BROMOFORM	ND	6	UG/L	DL	624
BROMOMETHANE	ND	10.	UG/L	DL	624
CARBON TETRACHLORIDE	ND	6	UG/L	DL	624
CHLOROBENZENE	ND	5	UG/L	DL	624
CHLOROETHANE	ND	11	UG/L	DL	624
CHLOROFORM	ND	5	UG/L	DL	624
CHLOROMETHANE	ND	13	UG/L	DL	624
CIS-1,3-DICHLOROPROPENE	ND	6	UG/L	DL	624
DIBROMOCHLOROMETHANE	ND	5	UG/L	DL	624
ETHYLBENZENE	ND	7	UG/L	DL	624
METHYLENE CHLORIDE	ND	9	UG/L	DL	624
O-XYLENE	ND	10.	UG/L	DL	624
TETRACHLOROETHENE	490	6	UG/L	DL	624
TOLUENE	ND	5	UG/L	DL	624
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L	DL	624
TRANS-1,3-DICHLOROPROPENE	ND	6	UG/L	DL	624
TRICHLOROETHENE	93	5	UG/L	DL	624
TRICHLOROFLUOROMETHANE	ND	11	UG/L	DL	624
VINYL CHLORIDE	ND	13	UG/L	DL	624

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
624	Dilution factor 2.0 applied.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: TBK-01FB
Sample Type: WELL
Sample Number: AL8940

ENS: 95-10534
MP: 562951
REV: 00

Sampled: 23-FEB-1995
Received: 25-FEB-1995
Reported: 5-APR-1995

Analyte	Result	P Q L	Units	Comments	Method
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		624
1,1,1-TRICHLOROETHANE	ND	5	UG/L		624
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		624
1,1,2-TRICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHENE	ND	5	UG/L		624
1,2-DICHLOROBENZENE	ND	10.	UG/L		624
1,2-DICHLOROETHANE	ND	5	UG/L		624
1,2-DICHLOROPROPANE	ND	5	UG/L		624
1,3-DICHLOROBENZENE	ND	10.	UG/L		624
1,4-DICHLOROBENZENE	ND	10.	UG/L		624
2-BUTANONE	ND	50.	UG/L		624
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	624
4-METHYL-2-PENTANONE	ND	10.	UG/L		624
ACETONE	ND	34	UG/L		624
BENZENE	ND	5	UG/L		624
BROMODICHLOROMETHANE	ND	5	UG/L		624
BROMOFORM	ND	5	UG/L		624
BROMOMETHANE	ND	10.	UG/L		624
CARBON TETRACHLORIDE	ND	5	UG/L		624
CHLOROBENZENE	ND	5	UG/L		624
CHLOROETHANE	ND	10.	UG/L		624
CHLOROFORM	ND	5	UG/L		624
CHLOROMETHANE	ND	10.	UG/L		624
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
DIBROMOCHLOROMETHANE	ND	5	UG/L		624
ETHYLBENZENE	ND	5	UG/L		624
METHYLENE CHLORIDE	ND	5	UG/L		624
O-XYLENE	ND	10.	UG/L		624
TETRACHLOROETHENE	ND	5	UG/L		624
TOLUENE	ND	5	UG/L		624
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		624
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
TRICHLOROETHENE	ND	5	UG/L		624
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		624
VINYL CHLORIDE	ND	10.	UG/L		624

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Subcontract To: _____

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2072
Date Sealed 9 5 0 2 2 1 (YY / MM / DD)
Seal # 84094
By: [illegible]

SITE/FACILITY # 542 SITE NAME: CWMI-AZUSA

Sample Point: W 0 1 F B (Source Code)

SAMPLE DATE: 9 5 0 2 2 3 (YY / MM / DD)

SAMPLE TIME: 1 5 : 4 5 (2400 HR.) MATRIX CODE: W

Water ..... (W) Leachate ..... (C)
Soil ..... (S) Other ..... (X)

Source Codes:

Well ..... (W) Leachate System .. (C) Pretreatment Facility ... (P) River/Stream/Brook .. (R) Soil ..... (S) Generation Pt .... (G)
Dewatering/Pressure Relief .... (D) Gas Condensate ... (M) Influent ..... (U) Lake or Ocean ..... (L) Bottom Sediment ... (B) Other ..... (X)
Surface Water Impoundment ... (I) Air ..... (A) Effluent ..... (T) Outfall ..... (O) Noise ..... (N) Specify _____

ENS # *95-10534

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y — N	FIELD COMMENTS	E.M.L. COMMENTS
AL8940-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
AL8940-B	01	G	HCL 4C	VOMSAA0322	Y N	EML	TBK BOBBC
					Y N		<6mm. SW2/25/95
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 2/22/95 Time: 16:30 (2400 HR.)
Signature: R. Liles Cobb Seal #: 84094 Intact: yes

I have received these materials in good condition from the above person.

2. Name: _____ Signature: _____
Date: / / Time: : (2400 HR.) Remarks: _____

I have received these materials in good condition from the above person.

3. Name: _____ Signature: _____
Date: / / Time: : (2400 HR.) Remarks: _____

4. AquaPak™/Sub Contr. # 2072 Sealed By: Liles Cobb (Print) Date: 02/24/95 Time: 16:45 (2400 HR.)
Signature: R. Liles Cobb Seal #: 84198 Intact: yes

LAB USE ONLY
Opened By: (Signature) [signature] Date: 2/25/95 Time: 10:41 (2400 HR.)
AquaPak™/Sub. Contr. # 2072 Temp.°C 3 REGION Seal # 84198 Intact. 4

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

FIELD INFORMATION FORM

S 6 2

Site # 5 6 2

Bottle Set: A L 8 9 4 0

Sample Point: W 0 1 F B
Source Code

PURG INFO

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)

PURG & SAMPLING EQUIP

Purging Equipment ..... Dedicated | Y | | N | (circle one) Sampling Equipment ..... Dedicated | Y | | N | (circle one)

NOT Applicable

Purging Device		A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device		B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material		A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material		B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging		A-Teflon	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling		B-Tygon C-Rope X- (SPECIFY)	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
Filtering Devices 0.45 μ:		A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	(ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	(ft)	Depth to water From land surface	(ft)
Groundwater Elevation	(ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	(ft)	Stickup	(ft)

NOT Applicable

	ph		spec cond		Sample Temp.	(other parameter)	value	units
1st	(STD)	1st	μm/cm at 25° C		(° C)			
2nd	(STD)	2nd	μm/cm at 25° C					
3rd	(STD)	3rd	μm/cm at 25° C					
4th	(STD)	4th	μm/cm at 25° C					

FIELD COMMENTS

Sample Appearance: _____ (if applicable) Odor: _____ Color: _____ Turbidity: _____

Weather Conditions: Wind Speed Calm Direction — Precipitation Y/N Outlook Clear

Specific Comments:

01FB Collected at MW05
Sample collection order: A1, A2, A3, A4

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

2/23/95 (Date) R [illegible] (Signature) Employer: RMST E&I

EML FF-2A 11/94

REGION

Subcontract To: _____

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2053
Date Sealed 950221 (YY / MM / DD)
Seal # 84172
By: [illegible]

SITE/FACILITY # 562 SITE NAME: CWMI-AZUSA

Sample Point: W D U P (Source Code)

SAMPLE DATE: - 950224 (YY / MM / DD)

SAMPLE TIME: 12:45 (2400 HR.) MATRIX CODE: W

Water ..... (W) Leachate ..... (C)
Soil ..... (S) Other ..... (X)

Source Codes:

Well ..... (W) Leachate System .. (C) Pretreatment Facility ... (P) River/Stream/Brook .. (R) Soil ..... (S) Generation Pt. .... (G)
Dewatering/Pressure Relief .... (D) Gas Condensate ... (M) Influent ..... (U) Lake or Ocean ..... (L) Bottom Sediment ... (B) Other ..... (X)
Surface Water Impoundment ... (I) Air ..... (A) Effluent ..... (T) Outfall ..... (O) Noise ..... (N) Specify _____

ENS # *95-10534

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
AL8945-A	04	G	HCL 4C	VOMSAAO322	Y N	EML	
~~AL8945-B~~	~~01~~	~~G~~	~~HCL 4C~~	~~VOMSAAO322~~	Y N	~~EML~~ Cancel [illegible]	~~TBK~~ 2/21/95
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 2/22/95 Time: 14:00 (2400 HR.)
Signature: R. Liles Cobb Seal #: 84172 Intact: yes

I have received these materials in good condition from the above person.

2. Name: _____ Signature: _____
Date: / / Time: : (2400 HR.) Remarks: _____

I have received these materials in good condition from the above person.

3. Name: _____ Signature: _____
Date: / / Time: : (2400 HR.) Remarks: _____

4. AquaPak™/Sub Contr. # 2053 Sealed By: Liles Cobb (Print) Date: 2/24/95 Time: : (2400 HR.)
Signature: R. Liles Cobb Seal #: Lock Intact: _____

LAB USE ONLY
Opened By: (Signature) [illegible] Date: 2/25/95 Time: 10:35 (2400 HR.)
AquaPak™/Sub. Contr. # 2053 Temp.°C 4 REGION Seal # lock Intact: No. Bottom seal loc broken

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

FIELD INFORMATION FORM

Site # 562

Bottle Set: AL8945

Sample Point: W DUP
Source Code

PURG INFO

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
950224	11.18	0.4	57.5	175.0

PURG & SAMPLING EQUIP

Purging Equipment ..... Dedicated (Y) | N (circle one) Sampling Equipment ..... Dedicated (Y) | N (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	X	A-Teflon	D-Polypropylene	F-Silicon	X- Stainless Steel PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	NONE	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	519.04 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	263.15 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	255.89 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	319.5 (ft)	Stickup	(ft)

	ph		spec cond		
1st	7.42 (STD)	1st	671 μm/cm at 25° C	Sample Temp.	19.1 (° C)
2nd	(STD)	2nd	μm/cm at 25° C	(other parameter)	value / units
3rd	(STD)	3rd	μm/cm at 25° C	(other parameter)	value / units
4th	(STD)	4th	μm/cm at 25° C	(other parameter)	value / units

FIELD COMMENTS

Sample Appearance: Clear (if applicable) Odor: None Color: Clear Turbidity: N/A

Weather Conditions: Wind Speed 5mph Direction S Precipitation (Y/N) Outlook ptly cloudy

Specific Comments: Well depth obtained from SSGWMP
Purge volume = [319.5(TWD) - 263.15(DTW)](1.02)(3) = 172.4 gals
Horiba Water Checker U-10 meter used for pH, specific conductivity, and temperature
Sample collection order = bottle A1, A2, A3, A4

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

2/24/95 (Date) R. Lee [signature] (Signature) Employer: RUST E&I

EML FF-2A 11/94

REGION

Subcontract To: _____

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2072
Date Sealed 950212 (YY / MM / DD)
Seal # 84094
By: ZS

SITE/FACILITY # 5421 SITE NAME: CWMI-AZUSA

Sample Point: WMW01 (Source Code)

SAMPLE DATE: 950223 (YY / MM / DD)

SAMPLE TIME: 1417 (2400 HR.) MATRIX CODE: W

Water (W) Soil (S) Leachate (C) Other (X)

Source Codes:

Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generation Pt (G) Other (X) Specify _____

ENS # *95-10534

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
AL8942-A	04	G	HCL 4C	VOMSAAD322	Y N	EML	
~~AL8942-B~~	~~01~~	~~G~~	~~HCL 4C~~	~~VOMSAAD322~~	Y N	~~EML~~ Cancel ZS	~~TEK~~ 2/21/95
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 2/22/95 Time: 16:30 (2400 HR.)
   Signature: R. Liles Cobb Seal #: 84094 Intact: yes

   I have received these materials in good condition from the above person.

2. Name: _____ Signature: _____
   Date: / / Time: : (2400 HR.) Remarks: _____

   I have received these materials in good condition from the above person.

3. Name: _____ Signature: _____
   Date: / / Time: : (2400 HR.) Remarks: _____

4. AquaPak™/Sub Contr. # 2072 Sealed By: Liles Cobb (Print) Date: 2/24/95 Time: 16:45 (2400 HR.)
   Signature: R Liles Cobb Seal #: 84198 Intact: yes

LAB USE ONLY
Opened By: (Signature) S L Wells Date: 2/25/95 Time: 10:41 (2400 HR.)
AquaPak™/Sub. Contr. # 2072 Temp.°C 3 Seal # 84198 Intact. y
REGION

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories Inc.

FIELD INFORMATION FORM

Site # 562

Bottle Set: AL8942

Sample Point: WMW01 (Source Code)

PURG INFO

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
950223	1339	04	63.0	192.0

PURG & SAMPLING EQUIP

Purging Equipment ..... Dedicated |Y| |N| (circle one) Sampling Equipment ..... Dedicated |Y| |N| (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- (PURGING OTHER (SPECIFY))
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- (SAMPLING OTHER (SPECIFY))
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	B	A-Teflon	C-Polypropylene	E-Polyethylene	X- (PURGING OTHER (SPECIFY))
Sampling Material	A	B-Stainless Steel	D-PVC		X- (SAMPLING OTHER (SPECIFY))
Tubing-Purging	X	A-Teflon	D-Polypropylene	F-Silicon	X- Stainless steel (PURGING OTHER (SPECIFY))
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- (SAMPLING OTHER (SPECIFY))
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	None	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	521.31 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	273.26 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	256.05 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	335.0 (ft)	Stickup	(ft)

	ph	spec cond (μm/cm at 25° C)
1st	7.53 (STD)	702
2nd	(STD)	
3rd	(STD)	
4th	(STD)	

Sample Temp. 19.3 (° C)

(other parameter)	value	units

FIELD COMMENTS

Sample Appearance: Clear (if applicable) Odor: None Color: Clear Turbidity: N/A

Weather Conditions: Wind Speed Calm Direction — Precipitation Y/N Outlook Overcast

Specific Comments: Well depth obtained from SS GWMP
Horiba Water Checker U-10 meter used for pH, specific conductivity and temperature
Purge volume = [(335.0 − 273.26)(1.02)(3)] = 188.9 gals
Sample collection order = bottle A1, A2, A3, A4
Well in good condition

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

2/23/95 (Date) R. Lile Colb (Signature) Employer: RUST E&I

EML FF-2A 11/94

REGION

Subcontract To:

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2053
Date Sealed 9 5 0 2 2 1 (YY / MM / DD)
Seal # 84172
By: 25

SITE/FACILITY # 542 SITE NAME: CWMI-AZ USA

Sample Point: W M W 0 2 (Source Code)

SAMPLE DATE: 9 5 0 2 2 4 (YY / MM / DD)

SAMPLE TIME: 1 3 : 5 0 (2400 HR.)

MATRIX CODE: W

Water (W) Soil (S) Leachate (C) Other (X)

Source Codes:

Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generation Pt (G) Other (X) Specify

ENS # *95-10534

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
AL8946-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
~~AL8946-B~~	~~01~~	~~G~~	~~HCL 4C~~	~~VOMSAA0322~~	~~Y N~~	~~EML~~ Cncl 25	~~TBR~~ 2/21/95
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 2/22/95 Time: 14:00 (2400 HR.)
   Signature: R. Liles Cobb Seal #: 84172 Intact: yes

I have received these materials in good condition from the above person.

2. Name: Signature:
   Date: / / Time: : (2400 HR.) Remarks:

I have received these materials in good condition from the above person.

3. Name: Signature:
   Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 2053 Sealed By: Liles Cobb (Print) Date: 2/24/95 Time: 16:45 (2400 HR.)
   Signature: R. Liles Cobb Seal #: Lock Intact:

LAB USE ONLY
Opened By: (Signature) [illegible] Date: 2/25/95 Time: 10:35 (2400 HR.)
AquaPak™/Sub. Contr. # 2053 Temp.°C 4 REGION Seal # lock Intact: No. bottom seal broken

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories Inc.

FIELD INFORMATION FORM

Site # 562

Bottle Set: AL8946

Sample Point: WMW02 (Source Code)

PURG INFO

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
950224	1309	04	584	1780

PURG & SAMPLING EQUIP

Purging Equipment ..... Dedicated (Y) | N | (circle one) Sampling Equipment ..... Dedicated (Y) | N | (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	X	A-Teflon	D-Polypropylene	F-Silicon	X- Stainless Steel PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	None	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	5256.5 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	270.79 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	2548.6 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	328.0 (ft)	Stickup	(ft)

	ph	spec cond (μm/cm at 25° C)	Sample Temp.
1st	7.45 (STD)	616	19.2 (° C)
2nd	(STD)		(other parameter) value units
3rd	(STD)		(other parameter) value units
4th	(STD)		(other parameter) value units

FIELD COMMENTS

Sample Appearance: Clear (if applicable) Odor: None Color: Clear Turbidity: N/A

Weather Conditions: Wind Speed 5 mph Direction S Precipitation (Y/N) Outlook Ptly Cloudy

Specific Comments: Well depth obtained from SSGWMP

Purge Volume = [328.0 (TWD) − 270.79 (DTW)] (1.02)(3) = 175.1 gals/purge

Horiba Water Checker U-10 meter used for pH, specific conductivity, and temperature.

Sample collection order = A1, A2, A3, A4

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

2/24/95 (Date) R. Liles (Signature) Employer: RUST E&I

EML FF-2A 11/94

REGION

Subcontract To: _____

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2053
Date Sealed 950221 (YY / MM / DD)
Seal # 84172
By: 28

SITE/FACILITY # 542 SITE NAME: CWMI-AZUSA

Sample Point: W M W 0 3 (Source Code)

SAMPLE DATE: - 950224 (YY / MM / DD)

SAMPLE TIME: 12:45 (2400 HR.) MATRIX CODE: W

Water ..... (W) Leachate ..... (C)
Soil ..... (S) Other ..... (X)

Source Codes:

Well ..... (W) Leachate System .. (C) Pretreatment Facility ... (P) River/Stream/Brook .. (R) Soil ..... (S) Generation Pt. .... (G)
Dewatering/Pressure Relief .... (D) Gas Condensate ... (M) Influent ..... (U) Lake or Ocean ..... (L) Bottom Sediment ... (B) Other ..... (X)
Surface Water Impoundment ... (I) Air ..... (A) Effluent ..... (T) Outfall ..... (O) Noise ..... (N) Specify _____

ENS # *95-10534

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y — N	FIELD COMMENTS	E.M.L. COMMENTS
AL8943-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
AL8943-B	01	G	HCL 4C	VOMSAA0322	Y N	EML	TBK
					Y N		
					Y N		Bø No BBC
					Y N		N 2-27-95
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 2/22/95 Time: 14:00 (2400 HR.)
Signature: R. Liles Cobb Seal #: 84172 Intact: yes

I have received these materials in good condition from the above person.

2. Name: _____ Signature: _____
Date: / / Time: : (2400 HR.) Remarks: _____

I have received these materials in good condition from the above person.

3. Name: _____ Signature: _____
Date: / / Time: : (2400 HR.) Remarks: _____

4. AquaPak™/Sub Contr. # 2053 Sealed By: Liles Cobb (Print) Date: 2/24/95 Time: 16:45 (2400 HR.)
Signature: R. Liles Cobb Seal #: Lock Intact: _____

LAB USE ONLY
Opened By: (Signature) [signature] Date: 2/25/95 Time: 10:35 (2400 HR.)
AquaPak™/Sub. Contr. # 2053 Temp.°C 4 REGION Seal # lock Intact. No. bottom seal [illegible]

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

FIELD INFORMATION FORM

Site # 562

Bottle Set: AL8943

Sample Point: WMW03 (Source Code)

PURG INFO

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
950224	11.18	0.4	57.5	175.0

PURG & SAMPLING EQUIP

Purging Equipment ..... Dedicated (Y) | N | (circle one) Sampling Equipment ..... Dedicated (Y) | N | (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	X	A-Teflon	D-Polypropylene	F-Silicon	X- Stainless Steel PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	none	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	519.04 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	263.15 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	255.89 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	319.50 (ft)	Stickup	(ft)

	ph		spec cond				
1st	7.42 (STD)	1st	671 μm/cm at 25° C	Sample Temp.	19.1 (° C)		
2nd	(STD)	2nd	μm/cm at 25° C		(other parameter)	value	units
3rd	(STD)	3rd	μm/cm at 25° C		(other parameter)	value	units
4th	(STD)	4th	μm/cm at 25° C		(other parameter)	value	units

FIELD COMMENTS

Sample Appearance: clear (if applicable) Odor: none Color: clear Turbidity: N/A

Weather Conditions: Wind Speed 5 mph Direction S Precipitation Y/(N) Outlook ptly cloudy

Specific Comments: Well depth obtained from SSGWMP

Purge Volume = [319.5(TWD) - 263.15(DTW)](1.02)(3) = 172.4 gals

Horiba Water Checker U-10 meter used for pH specific conductivity, and temperature

Sample collection order = bottle A1, A2, A3, A4

well in good condition

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

2/24/95 (Date) R. Lee [signature] (Signature) Employer: RYST F&I

EML FF-2A 11/94

REGION

Subcontract To:

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2053
Date Sealed 95 02 21 (YY / MM / DD)
Seal # 84172
By: ZS

SITE/FACILITY # 542 SITE NAME: CWMI-AZUSA

Sample Point: W M W 0 4 (Source Code)

SAMPLE DATE: - 95 02 24 (YY / MM / DD)

SAMPLE TIME: 11:47 (2400 HR.) MATRIX CODE: W

Water (W) Leachate (C)
Soil (S) Other (X)

Source Codes:

Well (W) Leachate System (C) Pretreatment Facility (P) River/Stream/Brook (R) Soil (S) Generation Pt. (G)
Dewatering/Pressure Relief (D) Gas Condensate (M) Influent (U) Lake or Ocean (L) Bottom Sediment (B) Other (X)
Surface Water Impoundment (I) Air (A) Effluent (T) Outfall (O) Noise (N) Specify

ENS # *95-10534

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y — N	FIELD COMMENTS	E.M.L. COMMENTS
AL8944-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
~~AL8944-B~~	~~01~~	~~G~~	~~HCL 4C~~	~~VOMSAA0322~~	Y N	~~EML~~ Cancel ZS	~~TDK~~ 2/21/95
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 2/22/95 Time: 14:00 (2400 HR.)
Signature: R. Liles Cobb Seal #: 84172 Intact: yes

I have received these materials in good condition from the above person.

2. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

I have received these materials in good condition from the above person.

3. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 2053 Sealed By: Liles Cobb (Print) Date: 2/24/95 Time: 16:45 (2400 HR.)
Signature: R. Liles Cobb Seal #: Lock Intact:

LAB USE ONLY
Opened By: (Signature) SL Watt Date: 2/25/95 Time: 10:35 (2400 HR.)
AquaPak™/Sub. Contr. # 2053 Temp.°C 4 REGION Seal # lock Intact. No. bottom seal [illegible]

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

FIELD INFORMATION FORM

Site # 562

Bottle Set: AL8944

Sample Point: WMW04 (Source Code)

PURG INFO

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
950224	0945	04	541	1650

PURG & SAMPLING EQUIP

Purging Equipment ..... Dedicated (Y) | N | (Circle one) Sampling Equipment ..... Dedicated (Y) | N | (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	X	A-Teflon	D-Polypropylene	F-Silicon	X- Stainless Steel PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ	None	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	5204.8 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	264.98 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	255.50 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	318.00 (ft)	Stickup	(ft)

	ph	spec cond (μm/cm at 25° C)	
1st	7.32 (STD)	620	Sample Temp. 19.2 (° C)
2nd	(STD)		(other parameter) / value / units
3rd	(STD)		(other parameter) / value / units
4th	(STD)		(other parameter) / value / units

FIELD COMMENTS

Sample Appearance: Clear (if applicable) Odor: None Color: Clear Turbidity: N/A

Weather Conditions: Wind Speed 5mph Direction S Precipitation (Y/N) Outlook ptly cloudy

Specific Comments: Well Depth obtained from SSGWMP

Purge volume = [318.00 (TWD) - 264.98 (DTW)](1.02)(3) = 162.2

Horiba Water Checker U-10 used for pH, specific conductivity, and temperature

Sample collection order = bottle A1, A2, A3, A4

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

2/24/95 (Date) R. [illegible] (Signature) Employer: R&ST E&T

EML FF-2A 11/94

REGION

Subcontract To:

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2072
Date Sealed 9 5 0 2 2 1 (YY / MM / DD)
Seal # 84094
By: ZS

SITE/FACILITY # 1542 SITE NAME: CWMI-AZUSA

Sample Point: W M W O S (Source Code)

SAMPLE DATE: 9 5 0 2 2 3 (YY / MM / DD)

SAMPLE TIME: 1 5 : 3 2 (2400 HR.) MATRIX CODE: W

Water (W) Soil (S) Leachate (C) Other (X)

Source Codes:
Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generation Pt (G) Other (X) Specify

ENS # *52-10534

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
AL8941-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
~~AL8941-B~~	~~01~~	~~G~~	~~HCL 4C~~	~~VOMSAA0322~~	Y N	~~EML~~ Cancel ZS	✓ ~~TEK~~ 2/21/95
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 2/22/95 Time: 16:30 (2400 HR.)
Signature: R. Liles Cobb Seal #: 84094 Intact: yes

I have received these materials in good condition from the above person.

2. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks;

I have received these materials in good condition from the above person.

3. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 84198 Sealed By: Liles Cobb (Print) Date: 2/24/95 Time: 16:45 (2400 HR.)
Signature: R. Liles Cobb Seal #: 84198 Intact: yes

LAB USE ONLY
Opened By: (Signature) [signature] Date: 2/25/95 Time: 10:41 (2400 HR.)
AquaPak™/Sub. Contr. # 2072 Temp.°C 3 REGION Seal # 84198 Intact. Y

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

FIELD INFORMATION FORM

Site # S 6 2
Bottle Set: A L 8 9 4 1
Sample Point: W M W 0 5
Source Code

PURG INFO

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
9 5 0 2 2 3	1 4 5 5	0 3	6 6 7	2 0 2 0

PURG & SAMPLING EQUIP

Purging Equipment ..... Dedicated (Y) | N | (circle one) Sampling Equipment ..... Dedicated (Y) | N | (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	A	A-Teflon	D-Polypropylene	F-Silicon	X- Stainless steel PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	none	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	5 1 9 6 7 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	2 6 4 5 8 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	2 5 5 0 9 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	3 3 0 0 0 (ft)	Stickup	(ft)

	ph	spec cond (μm/cm at 25° C)
1st	7 3 2 (STD)	6 4 0
2nd	(STD)	
3rd	(STD)	
4th	(STD)	

Sample Temp. 1 9 2 (° C)

(other parameter)	value	units

FIELD COMMENTS

Sample Appearance: Clear (if applicable) Odor: None Color: Clear Turbidity: N/A

Weather Conditions: Wind Speed Calm Direction — Precipitation Y/N Outlook Clear

Specific Comments: Well Depth obtained from SSGWMP
Purge Volume = [(330.0 TWD - 264.580 TW)](1.02)(3) = 200.2 gal
Horiba Water Checker U-10 meter used for pH, specific conductivity and temperature
Sample Collection order = bottle A1, A2, A3, A4
Well in good condition

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

2/23/95 (Date) R. [illegible] (Signature) Employer: RMST E&T

EML FF-2A 11/94

REGION

ATTACHMENT 2

GROUNDWATER DATA DISKETTE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

Chemical Waste Management, Inc.

4227 Technology Drive
Fremont, California 94538-6337
510/651-2964

December 16, 1994

Mr. Jeffrey Zelikson
Director
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Two Copies
Via Certified Mail
Z 047 926 072

Mr. Allan Plaza
Unit Chief, Facilities Management Branch
California Environmental Protection Agency
Department of Toxic Substances Control
1011 North Grandview Avenue
Glendale, California 91201

Two Copies
Via Certified Mail
Z 047 926 073

Subject: Chemical Waste Management, Inc.-Azusa Facility - CAD008302903
Fourth Quarter 1994 Groundwater Monitoring Event
Preliminary Analytical Results

Gentlemen:

In accordance with our meeting of Monday, December 23, 1991, with Messrs. Wayne Praskins and Thomas Kelly of U.S. EPA, and our follow-up letter dated January 14, 1992, Chemical Waste Management, Inc. (CWM), herein forwards *preliminary* analytical results for groundwater samples collected at the subject facility on November 28 and 29, 1994.

All results contained in the attached report are considered preliminary. Judgements regarding the subsurface environmental conditions should not be derived from the results. CWM will submit final results of all samples within 60 days of the receipt of the sample results from the laboratory.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Please call me at (510) 651-2964 if have any questions.

Sincerely,

CHEMICAL WASTE MANAGEMENT, INC.

Marc Yalom, R.G.
Hydrogeologist

MIY/lf

Attachment (1)

ATTACHMENT

Preliminary Analytical Results

Printed on recycled paper

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW01
Sample Type: WELL
Sample Number: AL2251

ENS: 94-14530
MP: 562941
REV: 00

Sampled: 28-NOV-1994
Received: 30-NOV-1994
Reported: 13-DEC-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	287.13		FT		FDWDTWTC01
GROUNDWATER ELEV.	242.20		FT MSL		FDWGWELWDT
PH FIELD	7.34		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	727		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	16.2		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	335.0		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAA0322
1,1,1-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHENE	6	5	UG/L		VOMSAA0322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAA0322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
2-BUTANONE	ND	50.	UG/L		VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	VOMSAA0322
4-METHYL-2-PENTANONE	ND	10.	UG/L		VOMSAA0322
ACETONE	ND	34	UG/L		VOMSAA0322
BENZENE	ND	5	UG/L		VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAA0322
BROMOFORM	ND	5	UG/L		VOMSAA0322
BROMOMETHANE	ND	10.	UG/L		VOMSAA0322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAA0322
CHLOROBENZENE	ND	5	UG/L		VOMSAA0322
CHLOROETHANE	ND	10.	UG/L		VOMSAA0322
CHLOROFORM	ND	5	UG/L		VOMSAA0322
CHLOROMETHANE	ND	10.	UG/L		VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAA0322
ETHYLBENZENE	ND	5	UG/L		VOMSAA0322
METHYLENE CHLORIDE	ND	5	UG/L		VOMSAA0322
O-XYLENE	ND	10.	UG/L		VOMSAA0322
TETRACHLOROETHENE	36	5	UG/L		VOMSAA0322
TOLUENE	ND	5	UG/L		VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
TRICHLOROETHENE	16	5	UG/L		VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAA0322
VINYL CHLORIDE	ND	10.	UG/L		VOMSAA0322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW02
Sample Type: WELL
Sample Number: AL2249

ENS: 94-14530
MP: 562941
REV: 00

Sampled: 29-NOV-1994
Received: 30-NOV-1994
Reported: 13-DEC-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	283.02		FT		FDWDTWTC01
GROUNDWATER ELEV.	242.63		FT MSL		FDWGWELWDT
PH FIELD	7.47		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	645		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	17.4		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	328		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAAO322
1,1,1-TRICHLOROETHANE	33	6	UG/L		VOMSAAO322
1,1,2,2-TETRACHLOROETHANE	ND	10.	UG/L		VOMSAAO322
1,1,2-TRICHLOROETHANE	ND	6	UG/L		VOMSAAO322
1,1-DICHLOROETHANE	ND	10.	UG/L		VOMSAAO322
1,1-DICHLOROETHENE	49	10.	UG/L		VOMSAAO322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAAO322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
2-BUTANONE	ND	100	UG/L		VOMSAAO322
2-CHLOROETHYLVINYL ETHER	ND	40.	UG/L	ST	VOMSAAO322
4-METHYL-2-PENTANONE	ND	19	UG/L		VOMSAAO322
ACETONE	ND	68	UG/L		VOMSAAO322
BENZENE	ND	5	UG/L		VOMSAAO322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAAO322
BROMOFORM	ND	6	UG/L		VOMSAAO322
BROMOMETHANE	ND	10.	UG/L		VOMSAAO322
CARBON TETRACHLORIDE	ND	6	UG/L		VOMSAAO322
CHLOROBENZENE	ND	5	UG/L		VOMSAAO322
CHLOROETHANE	ND	11	UG/L		VOMSAAO322
CHLOROFORM	ND	5	UG/L		VOMSAAO322
CHLOROMETHANE	ND	13	UG/L		VOMSAAO322
CIS-1,3-DICHLOROPROPENE	ND	6	UG/L		VOMSAAO322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAAO322
ETHYLBENZENE	ND	7	UG/L		VOMSAAO322
METHYLENE CHLORIDE	ND	9	UG/L		VOMSAAO322
O-XYLENE	ND	10.	UG/L		VOMSAAO322
TETRACHLOROETHENE	410	6	UG/L		VOMSAAO322
TOLUENE	ND	5	UG/L		VOMSAAO322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAAO322
TRANS-1,3-DICHLOROPROPENE	ND	6	UG/L		VOMSAAO322
TRICHLOROETHENE	170	5	UG/L		VOMSAAO322
TRICHLOROFLUOROMETHANE	ND	11	UG/L		VOMSAAO322
VINYL CHLORIDE	ND	13	UG/L		VOMSAAO322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
VOMSAAO322	Dilution factor 2.000 applied.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW03
Sample Type: WELL
Sample Number: AL2245

ENS: 94-14530
MP: 562941
REV: 00

Sampled: 29-NOV-1994
Received: 30-NOV-1994
Reported: 13-DEC-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	277.00		FT		FDWDTWTC01
GROUNDWATER ELEV.	242.05		FT MSL		FDWGWELWDT
PH FIELD	7.22		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	635		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	17.0		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	319.5		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAA0322
1,1,1-TRICHLOROETHANE	17	5	UG/L		VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHENE	28	5	UG/L		VOMSAA0322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAA0322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
2-BUTANONE	ND	50.	UG/L		VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	VOMSAA0322
4-METHYL-2-PENTANONE	ND	10.	UG/L		VOMSAA0322
ACETONE	ND	34	UG/L		VOMSAA0322
BENZENE	ND	5	UG/L		VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAA0322
BROMOFORM	ND	5	UG/L		VOMSAA0322
BROMOMETHANE	ND	10.	UG/L		VOMSAA0322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAA0322
CHLOROBENZENE	ND	5	UG/L		VOMSAA0322
CHLOROETHANE	ND	10.	UG/L		VOMSAA0322
CHLOROFORM	ND	5	UG/L		VOMSAA0322
CHLOROMETHANE	ND	10.	UG/L		VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAA0322
ETHYLBENZENE	ND	5	UG/L		VOMSAA0322
METHYLENE CHLORIDE	ND	5	UG/L		VOMSAA0322
O-XYLENE	ND	10.	UG/L		VOMSAA0322
TETRACHLOROETHENE	140	5	UG/L		VOMSAA0322
TOLUENE	ND	5	UG/L		VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
TRICHLOROETHENE	87	5	UG/L		VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAA0322
VINYL CHLORIDE	ND	10.	UG/L		VOMSAA0322

NA = Not Analyzed **ND = Not Detected** **TBK = Trip Blank**

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW04
Sample Type: WELL
Sample Number: AL2248

ENS: 94-14530
MP: 562941
REV: 00

Sampled: 28-NOV-1994
Received: 30-NOV-1994
Reported: 13-DEC-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	278.48		FT		FDWDTWTC01
GROUNDWATER ELEV.	242.0		FT MSL		FDWGWELWDT
PH FIELD	7.70		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	670		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	15.6		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	318		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAA0322
1,1,1-TRICHLOROETHANE	48	5	UG/L		VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	8	UG/L		VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHANE	ND	8	UG/L		VOMSAA0322
1,1-DICHLOROETHENE	59	8	UG/L		VOMSAA0322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,2-DICHLOROETHANE	11	5	UG/L		VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAA0322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
2-BUTANONE	ND	84	UG/L		VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	33	UG/L	ST	VOMSAA0322
4-METHYL-2-PENTANONE	ND	16	UG/L		VOMSAA0322
ACETONE	ND	57	UG/L		VOMSAA0322
BENZENE	ND	5	UG/L		VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAA0322
BROMOFORM	ND	5	UG/L		VOMSAA0322
BROMOMETHANE	ND	10.	UG/L		VOMSAA0322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAA0322
CHLOROBENZENE	ND	5	UG/L		VOMSAA0322
CHLOROETHANE	ND	10.	UG/L		VOMSAA0322
CHLOROFORM	ND	5	UG/L		VOMSAA0322
CHLOROMETHANE	ND	11	UG/L		VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAA0322
ETHYLBENZENE	ND	6	UG/L		VOMSAA0322
METHYLENE CHLORIDE	ND	7	UG/L		VOMSAA0322
O-XYLENE	ND	10.	UG/L		VOMSAA0322
TETRACHLOROETHENE	350	5	UG/L		VOMSAA0322
TOLUENE	ND	5	UG/L		VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
TRICHLOROETHENE	130	5	UG/L		VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAA0322
VINYL CHLORIDE	ND	11	UG/L		VOMSAA0322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
VOMSAA0322	Dilution factor 1.670 applied.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

C L I E N T R E P O R T

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW05
Sample Type: WELL
Sample Number: AL2250

ENS: 94-14530
MP: 562941
REV: 00

Sampled: 29-NOV-1994
Received: 30-NOV-1994
Reported: 13-DEC-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	277		FT		FDWDTWTC01
GROUNDWATER ELEV.	242.11		FT MSL		FDWGWELWDT
PH FIELD	7.52		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	644		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	15.9		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	330.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAA0322
1,1,1-TRICHLOROETHANE	39	6	UG/L		VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	10.	UG/L		VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	6	UG/L		VOMSAA0322
1,1-DICHLOROETHANE	ND	10.	UG/L		VOMSAA0322
1,1-DICHLOROETHENE	61	10.	UG/L		VOMSAA0322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,2-DICHLOROETHANE	6	5	UG/L		VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAA0322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
2-BUTANONE	ND	100	UG/L		VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	40.	UG/L	ST	VOMSAA0322
4-METHYL-2-PENTANONE	ND	19	UG/L		VOMSAA0322
ACETONE	ND	68	UG/L		VOMSAA0322
BENZENE	ND	5	UG/L		VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAA0322
BROMOFORM	ND	6	UG/L		VOMSAA0322
BROMOMETHANE	ND	10.	UG/L		VOMSAA0322
CARBON TETRACHLORIDE	ND	6	UG/L		VOMSAA0322
CHLOROBENZENE	ND	5	UG/L		VOMSAA0322
CHLOROETHANE	ND	11	UG/L		VOMSAA0322
CHLOROFORM	ND	5	UG/L		VOMSAA0322
CHLOROMETHANE	ND	13	UG/L		VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	6	UG/L		VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAA0322
ETHYLBENZENE	ND	7	UG/L		VOMSAA0322
METHYLENE CHLORIDE	ND	9	UG/L		VOMSAA0322
O-XYLENE	ND	10.	UG/L		VOMSAA0322
TETRACHLOROETHENE	450	6	UG/L		VOMSAA0322
TOLUENE	ND	5	UG/L		VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	6	UG/L		VOMSAA0322
TRICHLOROETHENE	130	5	UG/L		VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	11	UG/L		VOMSAA0322
VINYL CHLORIDE	ND	13	UG/L		VOMSAA0322

NA = Not Analyzed **ND = Not Detected** **TBK = Trip Blank**

Item	Additional Comment Explanations (NQ/DL)
VOMSAA0322	Dilution factor 2.000 applied.

Chemical Waste Management, Inc.

4227 Technology Drive
Fremont, California 94538-6337
510/651-2964

MAR 27

March 23, 1995

Mr. Jeffrey Zelikson
Director
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Two Copies
Via Certified Mail
Z 047 926 299

Mr. Allan Plaza
Unit Chief, Facilities Management Branch
Department of Toxic Substances Control
1011 North Grandview Avenue
Glendale, California 91201

Two Copies
Via Certified Mail
Z 047 926 300

Subject: Chemical Waste Management, Inc.-Azusa Facility - CAD008302903
First Quarter 1995 Groundwater Monitoring Event
Preliminary Analytical Results

Gentlemen:

In accordance with our meeting of Monday, December 23, 1991, with Messrs. Wayne Praskins and Thomas Kelly of U.S. EPA, and our follow-up letter dated January 14, 1992, Chemical Waste Management, Inc. (CWM), herein forwards *preliminary* analytical results for groundwater samples collected at the subject facility on February 23 and 24, 1995.

All results contained in the attached report are considered preliminary. Judgements regarding the subsurface environmental conditions should not be derived from the results. CWM will submit final results of all samples within 60 days of the receipt of the sample results from the laboratory.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Please call me at (510) 651-2964 if have any questions.

Sincerely,

CHEMICAL WASTE MANAGEMENT, INC.

Marc Yalom, R.G.
Hydrogeologist

MIY/lf

Attachment (1)

ATTACHMENT

Preliminary Analytical Results

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

C L I E N T R E P O R T

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW01
Sample Type: WELL
Sample Number: AL8942

ENS: 95-10534
MP: 562951
REV: 00

Sampled: 23-FEB-1995
Received: 25-FEB-1995
Reported: 16-MAR-1995

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	273.26		FT		FDWDTWTC01
GROUNDWATER ELEV.	256.05		FT MSL		FDWGWELWDT
PH FIELD	7.53		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	702		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	19.3		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	335.0		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAA0322
1,1,1-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHENE	ND	5	UG/L		VOMSAA0322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAA0322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
2-BUTANONE	ND	50.	UG/L		VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	VOMSAA0322
4-METHYL-2-PENTANONE	ND	10.	UG/L		VOMSAA0322
ACETONE	ND	34	UG/L		VOMSAA0322
BENZENE	ND	5	UG/L		VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAA0322
BROMOFORM	ND	5	UG/L		VOMSAA0322
BROMOMETHANE	ND	10.	UG/L		VOMSAA0322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAA0322
CHLOROBENZENE	ND	5	UG/L		VOMSAA0322
CHLOROETHANE	ND	10.	UG/L		VOMSAA0322
CHLOROFORM	ND	5	UG/L		VOMSAA0322
CHLOROMETHANE	ND	10.	UG/L		VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAA0322
ETHYLBENZENE	ND	5	UG/L		VOMSAA0322
METHYLENE CHLORIDE	ND	5	UG/L		VOMSAA0322
O-XYLENE	ND	10.	UG/L		VOMSAA0322
TETRACHLOROETHENE	64	5	UG/L		VOMSAA0322
TOLUENE	ND	5	UG/L		VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
TRICHLOROETHENE	22	5	UG/L		VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAA0322
VINYL CHLORIDE	ND	10.	UG/L		VOMSAA0322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW02
Sample Type: WELL
Sample Number: AL8946

ENS: 95-10534
MP: 562951
REV: 00

Sampled: 24-FEB-1995
Received: 27-FEB-1995
Reported: 16-MAR-1995

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	270.79		FT		FDWDTWTC01
GROUNDWATER ELEV.	254.86		FT MSL		FDWGWELWDT
PH FIELD	7.45		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	616		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	19.2		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	328.0		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L	DL	VOMSAAO322
1,1,1-TRICHLOROETHANE	5	5	UG/L	DL	VOMSAAO322
1,1,2,2-TETRACHLOROETHANE	ND	6	UG/L	DL	VOMSAAO322
1,1,2-TRICHLOROETHANE	ND	5	UG/L	DL	VOMSAAO322
1,1-DICHLOROETHANE	ND	6	UG/L	DL	VOMSAAO322
1,1-DICHLOROETHENE	10.	6	UG/L	DL	VOMSAAO322
1,2-DICHLOROBENZENE	ND	10.	UG/L	DL	VOMSAAO322
1,2-DICHLOROETHANE	ND	5	UG/L	DL	VOMSAAO322
1,2-DICHLOROPROPANE	ND	5	UG/L	DL	VOMSAAO322
1,3-DICHLOROBENZENE	ND	10.	UG/L	DL	VOMSAAO322
1,4-DICHLOROBENZENE	ND	10.	UG/L	DL	VOMSAAO322
2-BUTANONE	ND	60.	UG/L	DL	VOMSAAO322
2-CHLOROETHYLVINYL ETHER	ND	24	UG/L	DL,ST	VOMSAAO322
4-METHYL-2-PENTANONE	ND	12	UG/L	DL	VOMSAAO322
ACETONE	ND	41	UG/L	DL	VOMSAAO322
BENZENE	ND	5	UG/L	DL	VOMSAAO322
BROMODICHLOROMETHANE	ND	5	UG/L	DL	VOMSAAO322
BROMOFORM	ND	5	UG/L	DL	VOMSAAO322
BROMOMETHANE	ND	10.	UG/L	DL	VOMSAAO322
CARBON TETRACHLORIDE	ND	5	UG/L	DL	VOMSAAO322
CHLOROBENZENE	ND	5	UG/L	DL	VOMSAAO322
CHLOROETHANE	ND	10.	UG/L	DL	VOMSAAO322
CHLOROFORM	ND	5	UG/L	DL	VOMSAAO322
CHLOROMETHANE	ND	10.	UG/L	DL	VOMSAAO322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L	DL	VOMSAAO322
DIBROMOCHLOROMETHANE	ND	5	UG/L	DL	VOMSAAO322
ETHYLBENZENE	ND	5	UG/L	DL	VOMSAAO322
METHYLENE CHLORIDE	ND	5	UG/L	DL	VOMSAAO322
O-XYLENE	ND	10.	UG/L	DL	VOMSAAO322
TETRACHLOROETHENE	270	5	UG/L	DL	VOMSAAO322
TOLUENE	ND	5	UG/L	DL	VOMSAAO322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L	DL	VOMSAAO322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L	DL	VOMSAAO322
TRICHLOROETHENE	120	5	UG/L	DL	VOMSAAO322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L	DL	VOMSAAO322
VINYL CHLORIDE	ND	10.	UG/L	DL	VOMSAAO322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
VOMSAAO322	Dilution factor 1.2 applied.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

C L I E N T R E P O R T

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW03
Sample Type: WELL
Sample Number: AL8943

ENS: 95-10534
MP: 562951
REV: 00

Sampled: 24-FEB-1995
Received: 27-FEB-1995
Reported: 16-MAR-1995

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	263.15		FT		FDWDTWTC01
GROUNDWATER ELEV.	255.89		FT MSL		FDWGWELWDT
PH FIELD	7.42		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	671		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	19.1		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	319.50		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAAO322
1,1,1-TRICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1-DICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1-DICHLOROETHENE	ND	5	UG/L		VOMSAAO322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAAO322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
2-BUTANONE	ND	50.	UG/L		VOMSAAO322
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	VOMSAAO322
4-METHYL-2-PENTANONE	ND	10.	UG/L		VOMSAAO322
ACETONE	ND	34	UG/L		VOMSAAO322
BENZENE	ND	5	UG/L		VOMSAAO322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAAO322
BROMOFORM	ND	5	UG/L		VOMSAAO322
BROMOMETHANE	ND	10.	UG/L		VOMSAAO322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAAO322
CHLOROBENZENE	ND	5	UG/L		VOMSAAO322
CHLOROETHANE	ND	10.	UG/L		VOMSAAO322
CHLOROFORM	ND	5	UG/L		VOMSAAO322
CHLOROMETHANE	ND	10.	UG/L		VOMSAAO322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAAO322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAAO322
ETHYLBENZENE	ND	5	UG/L		VOMSAAO322
METHYLENE CHLORIDE	ND	5	UG/L		VOMSAAO322
O-XYLENE	ND	10.	UG/L		VOMSAAO322
TETRACHLOROETHENE	45	5	UG/L		VOMSAAO322
TOLUENE	ND	5	UG/L		VOMSAAO322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAAO322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAAO322
TRICHLOROETHENE	21	5	UG/L		VOMSAAO322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAAO322
VINYL CHLORIDE	ND	10.	UG/L		VOMSAAO322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 — CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW04
Sample Type: WELL
Sample Number: AL8944

ENS: 95-10534
MP: 562951
REV: 00

Sampled: 24-FEB-1995
Received: 27-FEB-1995
Reported: 16-MAR-1995

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	264.98		FT		FDWDTWTC01
GROUNDWATER ELEV.	255.50		FT MSL		FDWGWELWDT
PH FIELD	7.32		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	620		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	19.2		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	318.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L	DL	VOMSAAO322
1,1,1-TRICHLOROETHANE	9	5	UG/L	DL	VOMSAAO322
1,1,2,2-TETRACHLOROETHANE	ND	8	UG/L	DL	VOMSAAO322
1,1,2-TRICHLOROETHANE	ND	5	UG/L	DL	VOMSAAO322
1,1-DICHLOROETHANE	ND	8	UG/L	DL	VOMSAAO322
1,1-DICHLOROETHENE	16	8	UG/L	DL	VOMSAAO322
1,2-DICHLOROBENZENE	ND	10.	UG/L	DL	VOMSAAO322
1,2-DICHLOROETHANE	ND	5	UG/L	DL	VOMSAAO322
1,2-DICHLOROPROPANE	ND	5	UG/L	DL	VOMSAAO322
1,3-DICHLOROBENZENE	ND	10.	UG/L	DL	VOMSAAO322
1,4-DICHLOROBENZENE	ND	10.	UG/L	DL	VOMSAAO322
2-BUTANONE	ND	80.	UG/L	DL	VOMSAAO322
2-CHLOROETHYLVINYL ETHER	ND	32	UG/L	DL,ST	VOMSAAO322
4-METHYL-2-PENTANONE	ND	15	UG/L	DL	VOMSAAO322
ACETONE	ND	54	UG/L	DL	VOMSAAO322
BENZENE	ND	5	UG/L	DL	VOMSAAO322
BROMODICHLOROMETHANE	ND	5	UG/L	DL	VOMSAAO322
BROMOFORM	ND	5	UG/L	DL	VOMSAAO322
BROMOMETHANE	ND	10.	UG/L	DL	VOMSAAO322
CARBON TETRACHLORIDE	ND	5	UG/L	DL	VOMSAAO322
CHLOROBENZENE	ND	5	UG/L	DL	VOMSAAO322
CHLOROETHANE	ND	10.	UG/L	DL	VOMSAAO322
CHLOROFORM	ND	5	UG/L	DL	VOMSAAO322
CHLOROMETHANE	ND	10.	UG/L	DL	VOMSAAO322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L	DL	VOMSAAO322
DIBROMOCHLOROMETHANE	ND	5	UG/L	DL	VOMSAAO322
ETHYLBENZENE	ND	6	UG/L	DL	VOMSAAO322
METHYLENE CHLORIDE	ND	7	UG/L	DL	VOMSAAO322
O-XYLENE	ND	10.	UG/L	DL	VOMSAAO322
TETRACHLOROETHENE	490	5	UG/L	DL	VOMSAAO322
TOLUENE	ND	5	UG/L	DL	VOMSAAO322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L	DL	VOMSAAO322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L	DL	VOMSAAO322
TRICHLOROETHENE	55	5	UG/L	DL	VOMSAAO322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L	DL	VOMSAAO322
VINYL CHLORIDE	ND	10.	UG/L	DL	VOMSAAO322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
VOMSAAO322	Dilution factor 1.6 applied.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW05
Sample Type: WELL
Sample Number: AL8941

ENS: 95-10534
MP: 562951
REV: 00

Sampled: 23-FEB-1995
Received: 25-FEB-1995
Reported: 16-MAR-1995

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	264.58		FT		FDWDTWTC01
GROUNDWATER ELEV.	255.09		FT MSL		FDWGWELWDT
PH FIELD	7.32		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	640		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	19.2		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	330.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L	DL	VOMSAA0322
1,1,1-TRICHLOROETHANE	18	6	UG/L	DL	VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	10.	UG/L	DL	VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	6	UG/L	DL	VOMSAA0322
1,1-DICHLOROETHANE	ND	10.	UG/L	DL	VOMSAA0322
1,1-DICHLOROETHENE	32	10.	UG/L	DL	VOMSAA0322
1,2-DICHLOROBENZENE	ND	10.	UG/L	DL	VOMSAA0322
1,2-DICHLOROETHANE	6	5	UG/L	DL	VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L	DL	VOMSAA0322
1,3-DICHLOROBENZENE	ND	10.	UG/L	DL	VOMSAA0322
1,4-DICHLOROBENZENE	ND	10.	UG/L	DL	VOMSAA0322
2-BUTANONE	ND	100	UG/L	DL	VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	40.	UG/L	DL,ST	VOMSAA0322
4-METHYL-2-PENTANONE	ND	19	UG/L	DL	VOMSAA0322
ACETONE	ND	68	UG/L	DL	VOMSAA0322
BENZENE	ND	5	UG/L	DL	VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L	DL	VOMSAA0322
BROMOFORM	ND	6	UG/L	DL	VOMSAA0322
BROMOMETHANE	ND	10.	UG/L	DL	VOMSAA0322
CARBON TETRACHLORIDE	ND	6	UG/L	DL	VOMSAA0322
CHLOROBENZENE	ND	5	UG/L	DL	VOMSAA0322
CHLOROETHANE	ND	11	UG/L	DL	VOMSAA0322
CHLOROFORM	ND	5	UG/L	DL	VOMSAA0322
CHLOROMETHANE	ND	13	UG/L	DL	VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	6	UG/L	DL	VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L	DL	VOMSAA0322
ETHYLBENZENE	ND	7	UG/L	DL	VOMSAA0322
METHYLENE CHLORIDE	ND	9	UG/L	DL	VOMSAA0322
O-XYLENE	ND	10.	UG/L	DL	VOMSAA0322
TETRACHLOROETHENE	490	6	UG/L	DL	VOMSAA0322
TOLUENE	ND	5	UG/L	DL	VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L	DL	VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	6	UG/L	DL	VOMSAA0322
TRICHLOROETHENE	93	5	UG/L	DL	VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	11	UG/L	DL	VOMSAA0322
VINYL CHLORIDE	ND	13	UG/L	DL	VOMSAA0322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
VOMSAA0322	Dilution factor 2.0 applied.

HAZARDOUS WASTE MANAGEMENT DIVISION
DIRECTOR'S OFFICE
ROUTING SLIP

Date 3/27/95

IMMEDIATE OFFICE

/ H-1 Zelikson Director
~~H-W-1 Yoshii Deputy Director, RCRA~~
_____ H-1-S Takata Deputy Director, SFund
_____ H-9 Anderson Federal Facility Cleanup
_____ Kemmerer
_____ Steele
_____ H-1 Jones Dir., Common Sense Initiative

_____ H-1-1 Young Community Relations
_____ H-1-A Brown Administrative Officer
_____ H-1 Kahan Program Analyst
_____ H-1 Lane Executive Office Manager

WASTE PROGRAMS

_____ H-W-2 Pollution Prevention
_____ H-W-3 Solid Waste
_____ H-W-4 UST/LUST
_____ H-2 Vaille RCRA Programs
_____ Hall, US/Mexico Coord.
/ H-3 Feeley Facilities ~~Bissa~~ mb
_____ H-4 Schwinn Compliance

SUPERFUNDS PROGRAMS

_____ H-6 Lau* Remedial Action
_____ H-7 Lindsay Enforcement
_____ H-8 White Field Operations

_____ Others:

Notes:

Mary B.

*Acting

Chemical Waste Management, Inc.

4227 Technology Drive
Fremont, California 94538 6337
510/651-2964

RECEIVED
JAN 30

January 27, 1995

Mr. Jeffrey Zelikson
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

Two Copies
Via Certified Mail
Z 047 926 282

Mr. Allan Plaza
Unit Chief, Facility Management Branch
(Attn: Mr. Andy Bajwa)
California Department of Toxic Substances Control, Region III
1011 North Grandview Avenue
Glendale, California 91201

Two Copies
Via Certified Mail
Z 047 926 283

Subject: Chemical Waste Management, Inc. - Azusa, California Facility, CAD 008302903, RCRA Facility Investigation, Combined Report of Fourth Quarter 1994 Groundwater Monitoring & RFI Events

Gentlemen:

In accordance with the recommendations presented in the Oil & Solvent Process Company RCRA Facility Investigation (RFI) Phase III Report[1], and the RCRA Part B Permit Attachment D, Section E.3.d, Chemical Waste Management, Inc., is submitting this letter report describing the Fourth Quarter 1994 Groundwater Monitoring Event at the Chemical Waste Management, Inc. - Azusa, California facility.

CWM is also submitting a computer diskette containing monitoring event analytical and groundwater elevation data. The electronic data submission is required under permit condition VI.8.A.

The last section of this report provides an update on Fourth Quarter RFI activities for the period of October 1 through December 31, 1994. The RFI status report is in accordance with Permit Condition VI.3.A.

---

[1]Meredith/Boli and Associates, RCRA Facility Investigation (Phase III), Groundwater Investigation, January 11, 1993.

GROUNDWATER MONITORING

Groundwater sampling was performed by RUST Environment & Infrastructure of Irvine, California on November 28 and 29, 1994. Laboratory analyses were performed by WMX Technologies' Environmental Monitoring Laboratory of Geneva, Illinois.

In conjunction with the regular sampling activities of November 28, RUST performed a test of "micro purge" pre-sampling techniques and supplemental sampling. The purpose was to evaluate if the micro purge method of drawing fresh formation water into the well casing would be appropriate at CWM-Azusa. The results of the test (Attachment 1) indicate that physical parameters measured during micro and standard purging tended to stabilize at different values, particularly for temperature. Detected chemical concentrations in samples collected after micro purging were, in all cases, lower than concentrations in samples collected after standard purging. Therefore, CWM will continue to perform standard purging methods in future events.

During the Fourth Quarter, groundwater levels were measured by RUST in CWM-Azusa wells on October 28, November 28, and December 23, 1994. Please note the following:

1) The "Depth to Water From Top of Well Casing" on the Field Information Form and Client Report for MW05 (277 feet) is incomplete and should read 277.56 feet. The measurements presented in RUST Table 1 and the electronic media (below) are correct, as are groundwater elevation calculations related to this measurement (RUST Table 1 and RUST Figure 3).

2) The "Measuring Point Elevation" and "Groundwater Elev." data are incorrect on the Field Information Forms and Client Reports for two wells -- MW01 and MW03. The data in RUST Table 1, RUST Figures 2, 3, and 4, and the electronic media (below) are correct.

Revised laboratory reports with corrected data will be forwarded to the agencies upon receipt by CWM.

Descriptions of the sampling event, micro and standard purging, analytical results, and groundwater elevation measurements are described in the RUST report in Attachment 1.

DATA ON ELECTRONIC MEDIA

Attachment 2 contains one 3½-inch, double sided, high density, DOS compatible diskette containing three ASCII files.

The file "CHEMSTRY.TXT" contains primary, duplicate, and micro purge field measurements and laboratory analytical results for the Fourth Quarter 1994 event. The file is fixed format, containing 323 records, each with eleven fields. Table 1 is a description of the variable fields. Each record contains the result for one chemical analyte.

The file "BLANKS.TXT" contains the results of Travel and Field Blank analyses for the event. The file contains 72 records, each with nine fields. Variable fields are described in Table 2.

Groundwater elevation measurements for the Fourth Quarter 1994 are presented in "LEVELS.TXT". The file contains fifteen records, each with six fields. Table 3 describes the fields for this file.

The information presented in the electronic files is summary in nature. For specific details, please refer to the laboratory reports in the RUST report (Attachment 1).

OTHER RFI ACTIVITIES

WORK COMPLETED

On December 30, 1994, CWM submitted a request to DTSC and U.S. EPA to: 1) reduce the number of wells sampled each quarter from five to three (one up-gradient, two down-gradient; 2) select the wells to be sampled based on groundwater gradients calculated immediately before sampling; and 3) reduce the number of duplicate samples to one for every ten primary samples. The request was accompanied by supporting technical documentation. The agencies' responses are pending.

WORK PLANNED

- First Quarter 1995 groundwater sampling is scheduled for February 23 and 24, 1995.
- First Quarter 1995 groundwater level measurements are planned for January 27, February 23, and March 31, 1995.

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system design to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

If you have any questions, I can be reached at (510) 651-2964.

Sincerely,

CHEMICAL WASTE MANAGEMENT, INC.

Marc Yalom, R.G.
Hydrogeologist

Attachments (2)

/miy

cc: Mr. Wayne Chiou, Los Angeles RWQCB - Monterey Park
(Three Copies, Via Certified Mail, Z 047 926 284)

TABLES

TABLE 1
CHEMICAL WASTE MANAGEMENT, INC.
AZUSA FACILITY
ELECTRONIC FILE SUMMARY
"CHEMSTRY.TXT"

Cols.	Field	Description	Options
1-2	blank field		
3-18	Site_id	Source of sample	
19-28	Replicate	Type of sample	"P0" - Primary Sample "DX" - Duplicate Sample ("X" - Duplicate number) "SX" - Split Sample ("X" - Split Number)
29-38	Samp_date	Date sample was collected	Format: "MM/DD/YY"
39-48	Samp_time	Time sample was collected	Format: "HH:MM"
49-89	Name	Analyte Name	
90-101	Cas_num	Chemical Abstract Number	CAS number beginning "GIS" or "CWM" are improvised entries for analytes without true CAS designations
102-113	Conc	Concentration detected	
114-124	Det_limit	Detection limit	
125-130	Units	Analyte units	
131-138	Pf_code	Preparation fraction code	"T" - Total "D" - Dissolved
139-145	Dl_flag	Detection limit flag	"<" - Analyte not detected blank - Analyte detected

Notes:

1. First line of the file contains a field header.
2. All fields are left justified.

TABLE 2
CHEMICAL WASTE MANAGEMENT, INC.
AZUSA FACILITY
ELECTRONIC FILE SUMMARY
"BLANKS.TXT"

Cols.	Field	Description	Options
1-2	blank field		
3-13	Blank_Type	Type of QA Blank	"FX" - Field Blank ("X" - Blank Number) "TX" - Travel Blank ("X" - Blank Number)
14-54	Name	Analyte Name	
55-66	Cas_num	Chemical Abstract Number	CAS number beginning "GIS" or "CWM" are improvised entries for analytes without true CAS designations
67-78	Conc	Concentration detected	
79-89	Det_limit	Detection limit	
90-95	Units	Analyte units	
96-103	Pf_code	Preparation fraction code	"T" - Total "D" - Dissolved
104-111	Dl_Flag	Detection limit flag	"<" - Analyte not detected blank - Analyte detected
112-119	EML_Ens	Environmental Monitoring Laboratories Event Notification System Code	"YY-#####", where "YY" - Year "#####" - EML assigned laboratory sequence number

Notes:

1. First line of the file contains a field header.
2. All fields are left justified.

TABLE 3
CHEMICAL WASTE MANAGEMENT, INC.
AZUSA FACILITY
ELECTRONIC FILE SUMMARY
"LEVELS.TXT"

Cols.	Field	Description	Options
1-2	blank field		
3-18	Site_id	Measurement source	
19-27	Date	Date of measurement	Format: "MM/DD/YY"
28-32	Time	Time of measurement	Format: "HH:MM"
33-40	Level	Depth to groundwater	In feet
41-49	Mp_elev	Measuring point reference elevation	Feet above mean sea level
51-59	Elev	Groundwater elevation	Feet above mean sea level (Mp_elev - Level)

Notes:

1. First line of file contains a field header.
2. Level, Mp_elev, and Elev fields are right justified. All other fields are left justified.

ATTACHMENT 1

RUST REPORTS OF GROUNDWATER MONITORING

RUST ENVIRONMENT & INFRASTRUCTURE

RUST Environment & Infrastructure Inc.
18401 Von Karman Avenue, Suite 550 - 5th Floor
Irvine, CA 92612
Tel. (714) 251-6400 • FAX (714) 251-6441

JAN 1995
RECEIVED
Western Region
Environmental
Mgt. Dept.
C.W.M.I.

December 28, 1994

Mr. Joe Rentz
Environmental Monitoring Laboratories, Inc.
2100 Cleanwater Drive
Geneva, Illinois 60134

SUBJECT: CWM FACILITY SAMPLING EVENT
100 SOUTH MOTOR DRIVE
AZUSA, CALIFORNIA
RUST E&I PROJECT NO. 88388

Dear Mr. Rentz:

RUST Environment and Infrastructure (RUST E&I) performed quarterly groundwater monitoring of the wells at the Chemical Waste Management Inc. facility on November 29, 1994. The RUST E&I sampling team collected a duplicate and an original sample from Well MW03 concurrently, alternating the duplicate sample VOA vial with the original on each pump cycle. Two different sampling times were inadvertently recorded on the field chain of custody.

Please add this correspondence to your file for the sampling record. Should you require further clarification, please feel free to contact me at (714) 251-6400.

Sincerely,

Susan Goss

Susan Goss
Project Hydrogeologist

cc: Marc Yalom; Chemical Waste Management, Inc.

17:cwmeml

RUST ENVIRONMENT & INFRASTRUCTURE

RUST Environment & Infrastructure
18401 Von Karman Avenue, Suite 550
Irvine, CA 92612
Tel. (714) 251-6400 FAX (714) 251-6414

JAN 1995
RECEIVED
Western Region
Environmental
Mgt. Dept.
C.W.M.I.

January 25, 1995

Mr. Marc Yalom, R.G.
Hydrogeologist
Chemical Waste Management, Inc.
4227 Technology Drive
Fremont, California 94538-6337

**SUBJECT: CHEMICAL WASTE MANAGEMENT, INC.
AZUSA, CALIFORNIA FACILITY - CAD 008302903
REPORT OF FOURTH QUARTER 1994 GROUNDWATER MONITORING EVENT (RUST E&I PROJECT NO. 88388)**

Mr. Yalom:

The following is a summary of the groundwater monitoring activity and results for the Fourth Quarter 1994 Groundwater Monitoring Event at the Chemical Waste Management, Inc. (CWMI)-Azusa Facility. This letter report includes a summary of groundwater level measurements, groundwater sampling and analysis, and groundwater analytical results in Sections 1.0 - 3.0, and a discussion is provided in Section 4.0. The site is located at 107 South Motor Avenue as shown in Figure 1.

1.0 GROUNDWATER LEVEL MEASUREMENTS

On October 28, November 28 and December 23, 1994, RUST E&I personnel measured depth-to-groundwater in all five of the CWMI-Azusa RCRA facility groundwater monitoring wells (MW01 through MW05). No problems or difficulties were encountered while taking the measurements. The measurement data are summarized in Table 1, and groundwater contour maps for the three events are presented as Figures 2, 3, and 4 of this report.

Depth-to-groundwater was measured at each sample point (monitoring well) using an electronic water-level probe attached to a 300-foot fiberglass measuring tape. The measuring tape is graduated in 0.01-foot increments, and the "zero-foot" calibration point is at the water detection sensor, which allows depth-to-water to be measured directly. The probe and approximately ten feet of the measuring tape were decontaminated by washing in a bucket of dilute, non-phosphate detergent solution, followed by a double-rinse with tap water and a final rinse with distilled water prior to being lowered in each well's sounding tube. This procedure meets the CRWQCB requirement for instrument decontamination. The groundwater surface elevation was calculated for each sample point by subtracting the depth-to-groundwater value from the known reference point (top of sounding tube nipple) elevation.

The data indicate that groundwater elevations decreased in each of the months in the fourth quarter of 1994. The total decrease in groundwater elevation over the three month period was approximately 8.1 feet. The greatest decrease in groundwater elevation occurred during the month of October, with a decrease of approximately 5.9 feet. The groundwater elevation data collected in October 1994 may be anomalous, since the groundwater contours have a different orientation from the previous monthly groundwater contour maps. The groundwater flow direction was consistent throughout the fourth quarter, flowing to the west in October, November, and December. The groundwater gradient varied from approximately 0.0015 feet/feet in October and 0.0009 feet/feet in November, to 0.0008 feet/feet in December.

2.0 GROUNDWATER SAMPLING & ANALYSES

2.1 AquaPak Inspection

Four small EML AquaPaks (numbers 2149, 2009, 2076 and 2014) were received at the RUST E&I, Irvine office approximately one week prior to the planned sampling dates, November 28 and 29, 1994. Contained in the WMX-EML provided AquaPaks were pre-labeled, pre-cleaned 40 ml glass sample bottles. Each bottle label was pre-printed with an identification number, testing method, target analyte(s), type of preservative, filtration requirements and a unique bar-code which the laboratory uses to read this information. Each sample container was pre-preserved with HCL. Mr. Liles Cobb, a WMX-EML-certified specialist, inspected the AquaPak's contents on November 27 and found the sample containers to be complete and labeled accurately. The WMX-EML bottle set numbers were as follows:

MW01	MW02	MW03	DUP	MW04	MW05	01FB
AL2251	AL2249	AL2245	AL2247	AL2248	AL2250	AL2246

2.2 Pre-Sample Preparation

During the fourth quarter sampling event a micropurging technique (in which a smaller quantity of water was removed from the wells prior to sampling) was used on wells MW01 and MW04 for comparison with traditional purging techniques. This technique is further described in Section 2.4.

Prior to sampling, wells MW01 through MW05 were purged of three "well-volumes" of groundwater. The well purge volumes are listed on Table 2 and the actual purge volumes are listed in Table 3. Parameters including pH, specific conductivity, and temperature were measured (Tables 4-10) and had stabilized to within 10% by the end of the purging activities for both traditional and micro purge techniques, although the parameters stabilized at different levels for the different purging techniques.

In both cases the bladder pump (sample pump) tubes were purged of approximately 2 gallons of groundwater just before the sample bottles were filled.

The purge-water parameters were measured using a QED Purge Saver pH, conductivity and temperature meter. The QED Purge Saver instrument was calibrated prior to the start of each day, and the calibration was checked at least once every 4 hours and again at the end of each day. The conductivity meter was "zeroed and spanned" as part of its initial calibration. The calibration records are listed in Tables 11 and 12.

All of the purged waters were placed in CWMI-Azusa provided 55-gallon drums and properly labeled for cross-reference with the analytical data. A total of 15 drums were used, and disposal arrangements for the containerized waters were made by CWMI-Azusa.

The field notes have been typed and put in tabular form, and are provided on the following pages. Included are documentation of field meter calibrations, purge water field readings, actual purge volumes, samples times and number of drums of waste generated at each sample point.

2.3 Sample Collection

On November 28 and 29, 1994, RUST E&I personnel performed groundwater sampling at all five of the CWMI-Azusa RCRA facility groundwater monitoring wells (MW01 through MW05). Duplicate samples and Field Blanks were collected at MW-03. The sample collection order is listed in Table 13. The task was performed on-site by Mr. Cobb with the assistance of Ms. Susan Goss, a RUST E&I Registered Geologist. All groundwater sampling work was performed according to WMX Groundwater Sampling Manual protocols and the CWMI-Azusa Site Specific Groundwater Monitoring Plan. The sampling times are documented on the enclosed WMX-EML Chain of Custody Records (Appendix A). The duplicate sample (DUP) collected at well MW03 was sampled simultaneously with sample WM03, although the sample times recorded on the Chain of Custody Records were inadvertently recorded as different times.

RUST E&I conducted a pilot study of micro purge techniques in conjunction with the regularly scheduled groundwater sampling event, and a comparison of the analytical results are presented later in this report. The micro purge sampling event at MW01 was observed by Los Angeles Regional Water Quality Control Board personnel, Mr. Wayne Chiou and Mr. David Koo. Micro purging was also utilized at MW04.

Weather conditions on November 28 and November 29 were similar, with clear skies and warm air temperatures and wind was calm. No difficulties were encountered during the collection of the groundwater samples. However, the sample tube was leaking just below the well seal at MW03, and the bladder pump at MW04 took approximately forty-five minutes to pump the two gallons of sample tube purge water. RUST E&I recommends pulling the sample pump in MW04 prior to the next sampling event and repairing the tubing, and also repairing the sample tubing below the well seal

on MW03.

2.4 Micro Purge Sampling

A pilot study of micro purge sampling techniques was conducted simultaneously with the regularly scheduled quarterly sampling event. Micro purging involves removing a small volume of groundwater from the well at a low flow rate prior to sampling the well. This procedure is intended to replace the need to remove multiple well volumes of water prior to the sampling event. Micro purging may be an effective method of obtaining representative samples of groundwater, without the mixing of stagnant water in the sampling zone, and thus, reducing the amount of purge water that needs to be disposed.

RUST E&I conducted the pilot study of micro purge sampling at MW01 and MW04. The procedure that was incorporated consisted of purging the wells at a low volume flow rate (approximately 0.1 gpm) until the sampling parameters stabilized to within at least 10%. The sampling parameters (pH, specific conductivity, and temperature) were constantly monitored using a QED Purge Saver meter, and results were recorded every half gallon of purge water. This continued until the sampling parameters were relatively stable. Samples were obtained at this time. After micro purging and sampling was complete for each well, the well was than resampled using the conventional sampling techniques as specified in the site specific groundwater monitoring plan.

2.5 Sample Shipment

The groundwater samples were shipped according to chain of custody protocol, via Federal Express overnight delivery service, on November 29, 1994. Three EML AquaPak coolers (AquaPak Nos. 2009, 2076 and 2149) were shipped to WMX Technologies, Inc.'s Environmental Monitoring Laboratories (EML) in Geneva, Illinois, for laboratory analyses. The fourth Aquapak was not needed for sample transportation. The AquaPaks were cooled with "blue ice" and sealed prior to shipment with destructive seals. The EML samples arrived intact at EML on November 30, at temperatures ranging from 2° to 3° C.

3.0 GROUNDWATER ANALYTICAL RESULTS

Groundwater samples were analyzed by EML, according to EPA Method 624. Analyses for xylenes and ketones (acetone, MEK, and MIBK), compounds detected in previous CWMI-Azusa facility soil investigations, were included in the Method 624 analyses. Certified laboratory analytical results are presented in Appendix A.

3.1 Micro Purge Analytical Results

The analytical results of the micro purge samples and the conventional samples are presented in

Table 14. The designation of the micro purge sample for MW01 was DUPMP1. The designation of the micro purge sample for MW04 was DUPMP2. The WMX-EML bottle set numbers for the micro purge samples were as follows:

WELL NUMBER	SAMPLE POINT	BOTTLE SET NUMBER
MW01	DUPMP1	AL2643
MW04	DUPMP2	AL2644

In general, the same analytes detected during micropurging were also detected in the traditional purging techniques analytical results, except for 1,1-dichloroethene, and 1,2-dichloroethane. The analytes detected after the micropurging were lower concentrations than those detected using the traditional purging technique.

3.2 QUALITY CONTROL RESULTS

3.2.1 Duplicate Samples

Primary and duplicate samples (MW03 and DUP) were collected at well MW-03 and analyzed according to Method 624 (see Appendix A). All four of the compounds detected in MW-02's primary sample were also detected in the duplicate sample. The relative percent differences (RPD) for the four analytes ranged between 4% and 7% (see Table 15).

3.2.2 Field Blank

A Field Blank (01FB) was collected at well MW03 and analyzed according to Method 624. No compounds were detected in the Field Blank (see Appendix A).

3.2.3 Travel Blank

The travel blank that accompanied the field blank 01FB (TBK) was analyzed by Method 624. No chemical constituents were detected in the travel blank (see Appendix A).

4.0 DISCUSSION

Upon review of the field parameters, it appears that during micropurging, the pH, specific conductance, and temperature stabilized to within at least 10%. Although, when the wells were pumped at higher flow rates with the electrical pump, the field parameters stabilized at different values. In addition, the micro purge analytical result concentrations were lower than the conventionally purged samples. Because of the minimal time and disposal savings for CWMI, RUST

E&I does not recommend micropurging as the best purging method for this site.

If you have any questions, please do not hesitate to call us at (714) 251-6423.

Sincerely,

RUST ENVIRONMENT & INFRASTRUCTURE, INC.

R. Liles Cobb
R. Liles Cobb
Project Manager

Susan F. Goss
Susan F. Goss
California Registered Geologist # 5639

REGISTERED GEOLOGIST
SUSAN F. GOSS
No. 5639
STATE OF CALIFORNIA

Attachments:

Tables
Figures
Appendix A- Laboratory Analytical Results and Chain of Custody Records

TABLES

TABLE 1 GROUNDWATER ELEVATION MEASUREMENTS FOURTH QUARTER 1994

WELL	DATE	MP ELEV.	TIME	DEPTH TO WATER	WATER ELEV.
MW01	10/28/94	529.31	10:50	285.62	243.69
MW01	11/28/94	529.31	09:58	287.13	242.18
MW01	12/23/94	529.31	07:00	288.23	241.08
MW02	10/28/94	525.65	12:00	282.23	243.42
MW02	11/28/94	525.65	10:55	283.02	242.63
MW02	12/23/94	525.65	07:30	284.15	241.50
MW03	10/28/94	519.04	11:40	276.51	242.53
MW03	11/28/94	519.04	10:43	277.00	242.04
MW03	12/23/94	519.04	08:00	278.10	240.94
MW04	10/28/94	520.48	11:05	276.95	243.53
MW04	11/28/94	520.48	10:11	278.48	242.00
MW04	12/23/94	520.48	08:45	279.55	240.93
MW05	10/28/94	519.67	11:20	275.92	243.75
MW05	11/28/94	519.67	10:18	277.56	242.11
MW05	12/23/94	519.67	09:30	278.66	241.01

TABLE 2 PRE-SAMPLING PURGE VOLUME CALCULATIONS					
SAMPLE POINT	TOTAL CASING DEPTH (ft.) (a)	DEPTH-TO-GROUNDWATER (ft.) (b)	VOLUME FACTOR (gal./ft.) (c)	ONE WELL VOLUME [1] (gallons) (d)	THREE WELL VOLUMES [2] (gallons)
MW01	335.0	287.13	1.02	48.8	146.5
MW02	328.0	283.02	1.02	45.9	137.6
MW03	319.5	277.00	1.02	43.4	130.1
MW04	318.0	278.48	1.02	40.3	120.9
MW05	330.0	277.56	1.02	53.5	160.5

[1] ONE "WELL VOLUME" (d) = (a - b) x (c)

[2] THREE "WELL VOLUMES" = 3 X (d)

TABLE 3 PURGE WATER QUANTITIES			
SAMPLE POINT	THREE WELL VOLUMES (gallons)	ACTUAL PURGE VOLUME (gallons)	NO. OF DRUMS OF WASTE GENERATED
MW01	146.4	150	3
MW02	137.6	142	3
MW03	130.1	130	3
MW04	120.9	132	3
MW05	160.5	165	3

TABLE 4 FIELD MEASUREMENTS OF MICRO-PURGED WATER - MW01 November 28, 1994					
Δ VOLUME (gallons)	VOLUME (cumulative)	pH	SPECIFIC CONDUCTIVITY (μmhos/cm)	TEMP. (°C)	TIME
1	1	7.00	668	18.4	12:05
0.5	1.5	7.00	721	18.0	12:08
0.5	2.0	7.00	712	18.0	12:12
0.5	2.5	7.00	707	18.0	12:15
0.5	3.0	7.00	712	18.0	12:19
0.5	3.5	7.00	707	17.9	12:23
0.5	4.0	7.00	708	17.9	12:26
0.5	4.5	7.00	721	17.5	12:30
0.5	5.0	7.00	721	17.5	12:33
0.5	5.5	7.00	716	17.4	12:35

TABLE 5 FIELD MEASUREMENTS OF PURGED WATER - MW01 November 28, 1994					
Δ VOLUME (gallons)	VOLUME (cumulative)	pH	SPECIFIC CONDUCTIVITY (µmhos/cm)	TEMP. (°C)	TIME
1	6	7.00	690	18.7	13:00
25	31	7.00	720	16.2	13:03
25	56	7.00	726	16.1	13:07
25	81	7.00	713	16.0	13:09
25	106	7.00	715	16.0	13:12
25	131	7.36	712	21.0	13:30
19	150	7.37	709	17.0	13:35
1	151	7.29	740	16.7	13:45
1	152	7.34	727	16.2	13:53

TABLE 6 FIELD MEASUREMENTS OF PURGED WATER - MW02 November 29, 1994					
Δ VOLUME (gallons)	VOLUME (cumulative)	pH	SPECIFIC CONDUCTIVITY (μmhos/cm)	TEMP. (°C)	TIME
1	1	7.94	622	20.0	10:57
24	25	7.52	692	17.7	11:00
25	50	7.65	632	16.9	11:03
25	75	7.48	630	16.9	11:06
25	100	7.43	632	16.8	11:10
25	125	7.48	644	16.8	11:12
15	140	7.51	643	16.6	11:14
2	142	7.47	645	17.4	11:39

TABLE 7 FIELD MEASUREMENTS OF PURGED WATER - MW03 November 29, 1994					
Δ VOLUME (gallons)	VOLUME (cumulative)	pH	SPECIFIC CONDUCTIVITY (µmhos/cm)	TEMP. (°C)	TIME
1	1	7.64	574	19.3	12:31
24	25	7.51	571	19.2	12:33
25	50	7.33	603	18.3	12:36
25	75	7.20	632	17.5	12:39
25	100	7.35	639	16.9	12:42
30	130	7.23	638	17.0	12:45
2	132	7.22	635	17.0	13:20

TABLE 8 FIELD MEASUREMENTS OF MICRO-PURGED WATER - MW04 November 28, 1994					
Δ VOLUME (gallons)	VOLUME (cumulative)	pH	SPECIFIC CONDUCTIVITY (μmhos/cm)	TEMP (°C)	TIME
0.5	0.5	7.28	665	18.9	14:46
0.5	1.0	7.32	665	18.5	14:50
0.5	1.5	7.35	672	18.6	14:55
0.5	2.0	7.38	672	18.4	15:01
0.5	2.5	7.39	665	18.4	15:07
0.5	3.0	7.41	663	18.2	15:12
0.5	3.5	7.42	657	18.2	15:18
0.5	4.0	7.43	657	18.0	15:22
0.5	4.5	7.42	655	18.0	15:26
0.5	5.0	7.42	657	18.0	15:27

TABLE 9 FIELD MEASUREMENTS OF PURGED WATER - MW04 November 28, 1994					
Δ VOLUME (gallons)	VOLUME (cumulative)	pH	SPECIFIC CONDUCTIVITY (µmhos/cm)	TEMP. (°C)	TIME
1	6	7.98	591	16.8	15:55
25	30	7.71	655	16.0	15:59
25	55	7.62	662	15.6	16:04
25	80	7.37	659	15.5	16:07
25	105	7.28	662	15.5	16:11
25	130	7.18	667	15.6	16:15
2	132	7.70	670	15.6	17:00

TABLE 10 FIELD MEASUREMENTS OF PURGED WATER - MW05 November 29, 1994					
Δ VOLUME (gallons)	VOLUME (cumulative)	pH	SPECIFIC CONDUCTIVITY (µmhos/cm)	TEMP. (°C)	TIME
1	1	6.91	660	14.4	09:33
24	25	7.33	648	14.6	09:35
25	50	7.47	648	14.6	09:40
25	75	7.40	642	15.4	09:44
25	100	7.37	642	15.7	09:47
25	125	7.67	636	15.5	09:50
25	150	7.55	642	15.6	09:54
15	165	7.32	629	15.9	09:55
2	167	7.52	644	15.9	10:20

TABLE 11 FIELD INSTRUMENT CALIBRATION RECORD
November 28, 1994

		pH RESULTS							SPEC. COND		
TIME	METER	TEMP (°C)	REA D 7	CAL 7	READ 10	CAL 10	REA D4	CAL 4	STD (µmho/cm)	READ @ TEMP 1 (µmho/cm)	READ @ TEMP 2 (µmho/cm)
10:30	QED Purge Saver	14.5	7.00	7.00	10.02	10.00	4.01	4.01	1413	1419	1399
14:20	QED Purge Saver	16.0	7.01	--	10.01	--	4.01	--	1413	1392	
17:00	QED Purge Saver	18.0	7.02	--	10.00	--	4.00	--	1413	1412	

TABLE 12 FIELD INSTRUMENT CALIBRATION RECORD
November 29, 1994

		pH RESULTS							SPEC. COND.		
TIME	METER	TEMP (°C)	READ 7	CAL 7	READ 10	CAL 10	REA D 4	CAL 4	STD (µmho/cm)	READ @ TEMP 1 (µmho/cm)	READ @ TEMP 2 (µmho/cm)
09:30	QED Purge Saver	16.5	7.00	7.00	10.02	10.00	4.01	4.01	1413	1399	1404
13:40	QED Purge Saver	19.0	7.01	--	10.01	--	4.01	--	1413	1410	

TABLE 13 SAMPLE COLLECTION ORDER
November 28 and 29, 1994

ORDER	MW01	MW02	MW03 & DUP	MW04	MW05	01FB
1	AL2251-A1	AL2248-A1	AL2245-A1	AL2248-A1	AL2250-A1	AL2246-A1
2	AL2251-A2	AL2248-A2	AL2247-A1	AL2248-A2	AL2250-A2	AL2246-A2
3	AL2251-A3	AL2248-A3	AL2245-A2	AL2248-A3	AL2250-A3	AL2246-A3
4	AL2251-A4	AL2248-A4	AL2247-A2	AL2248-A4	AL2250-A4	AL2246-A4
5			AL2245-A3			
6			AL2247-A3			
7			AL2245-A4			
8			AL2247-A4			

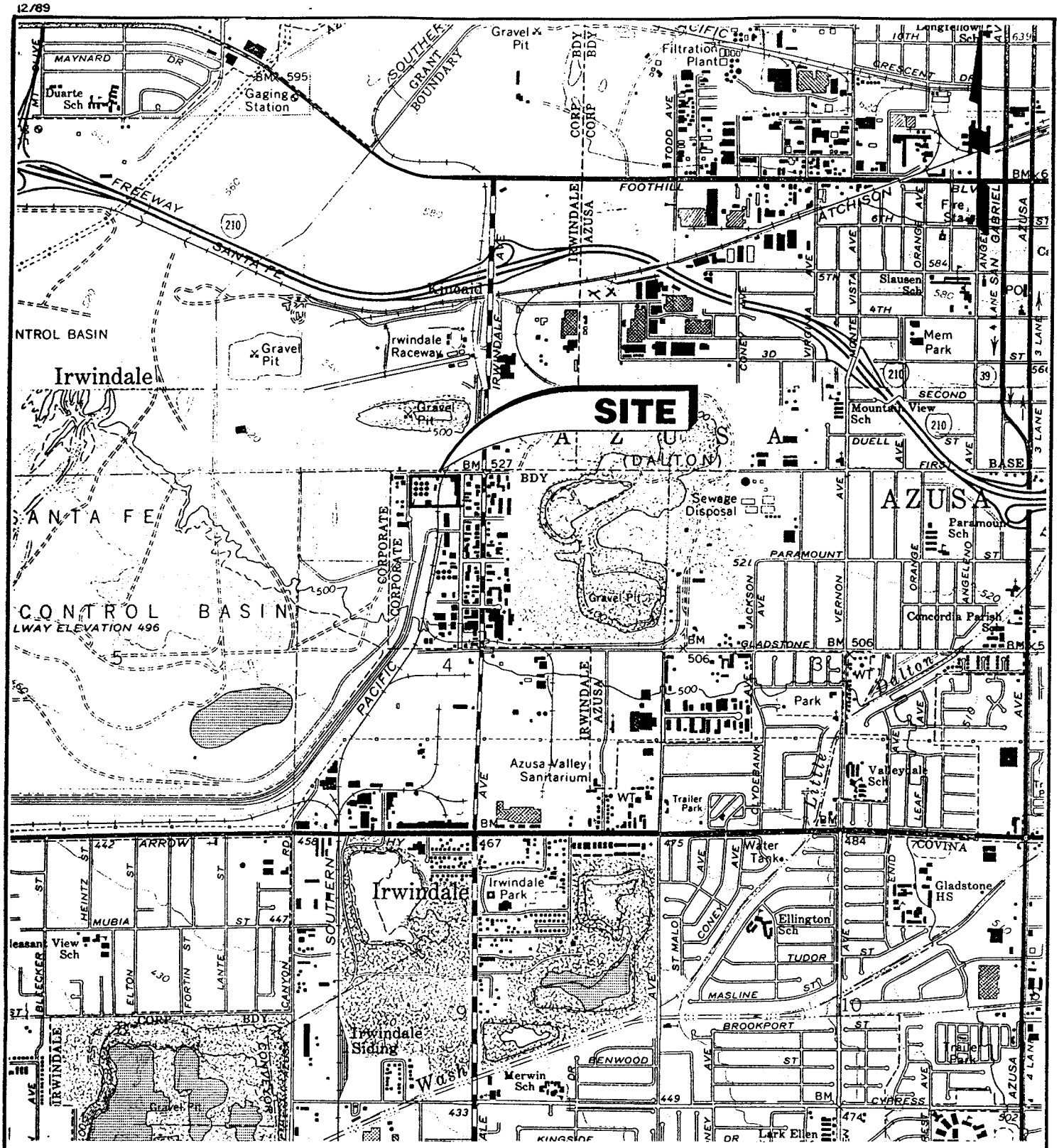
TABLE 14 MICROPURGING ANALYTICAL RESULTS
November 28 and 29, 1994

ANALYTE	DUPMP1	MW01	DUPMP2	MW04
1,1,1-Trichloroethane (µg/l)	<5	<5	15	48
1,1-Dichloroethene (µg/l)	<5	6	18	59
1,1-Dichloroethane(µg/l)	<5	<5	<5	11
Tetrachloroethene(µg/l)	28	36	200	350
Trichloroethene(µg/l)	10	16	56	130

TABLE 15 DUPLCATE ANALYTICAL RESULTS November 28 and 29, 1994			
ANALYTE	MW03	DUP	% RELATIVE DIFFERENCE
1,1,1-Trichloroethane (µg/l)	17	18	6
1,1-Dichloroethene (µg/l)	28	30	7
Tetrachloroethene(µg/l)	140	150	7
Trichloroethene(µg/l)	87	91	4

FIGURES

12/89



REFERENCE: BASE MAP FROM U.S.G.S. 7.5 MIN. QUAD BALDWIN PARK.

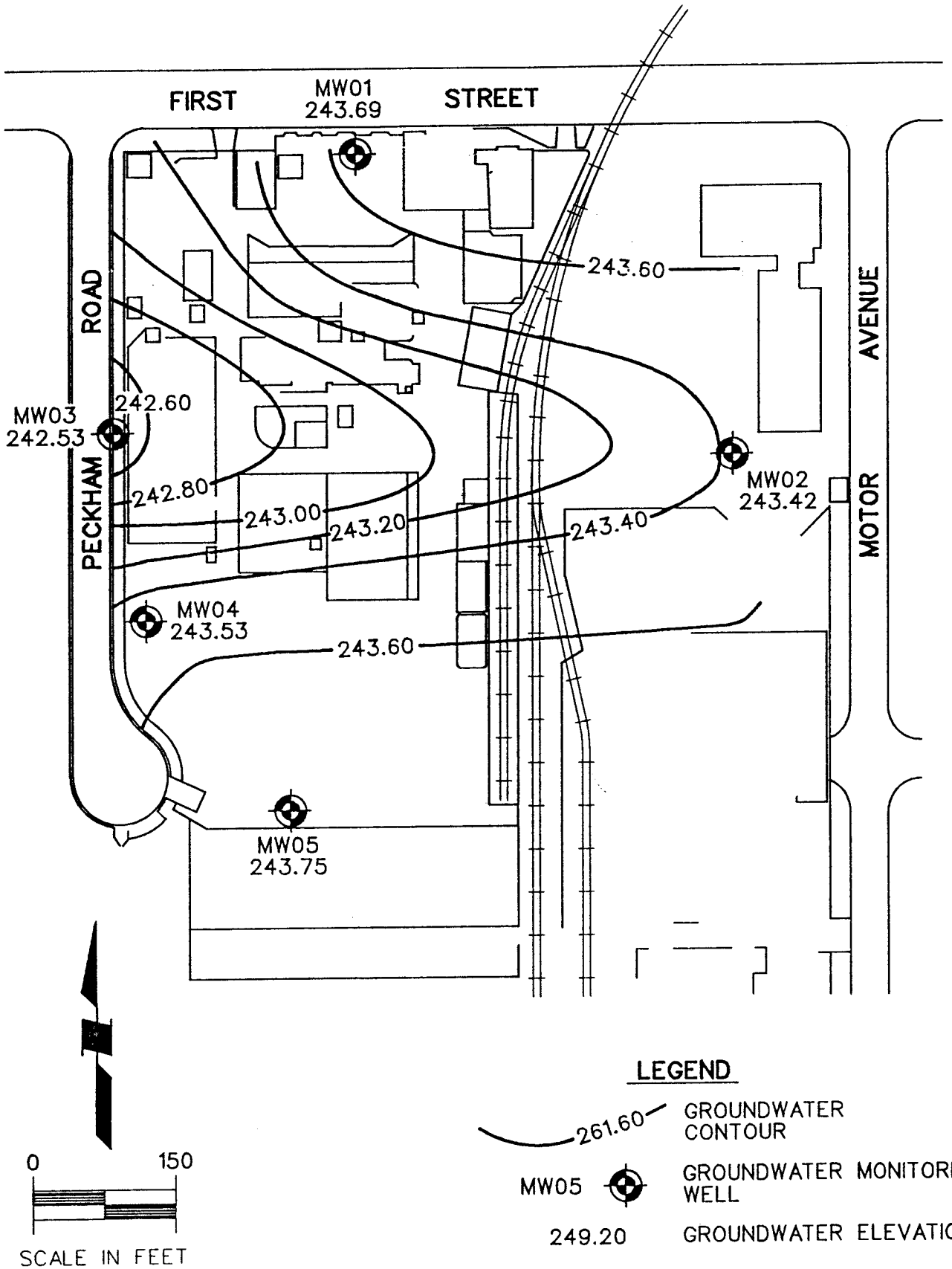
PREPARED BY:

RUST ENVIRONMENT & INFRASTRUCTURE

CWMI-AZUSA
107 SOUTH MOTOR AVENUE
AZUSA, CALIFORNIA 91702

SITE LOCATION MAP

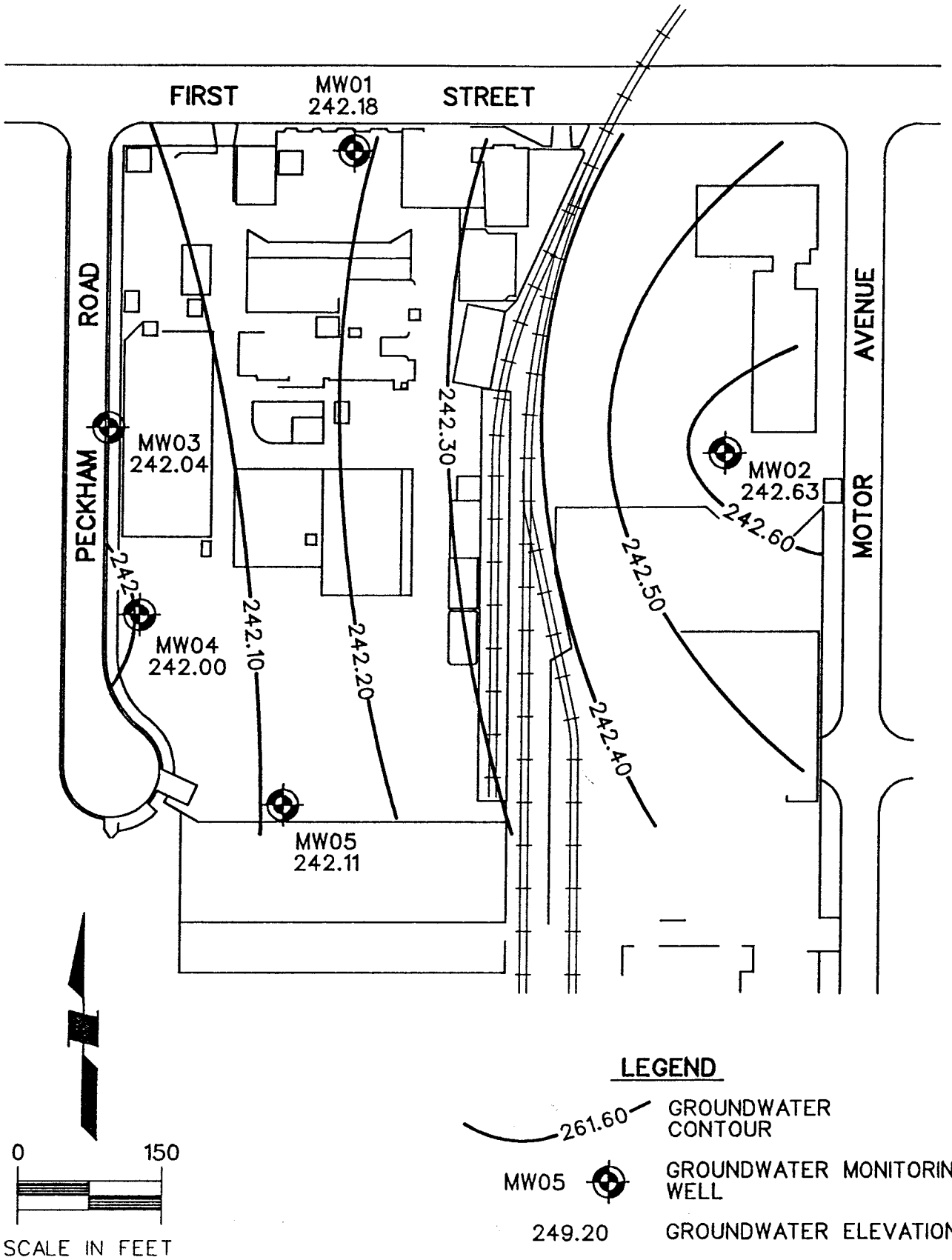
FIGURE
1



OCTOBER 28, 1994

RUST ENVIRONMENT & INFRASTRUCTURE	CHEMICAL WASTE MANAGEMENT, INC. ASUZA FACILITY GROUNDWATER ELEVATION CONTOURS OCTOBER 1994	FIGURE 2

CHEMSITE.DGN



NOVEMBER 28, 1994

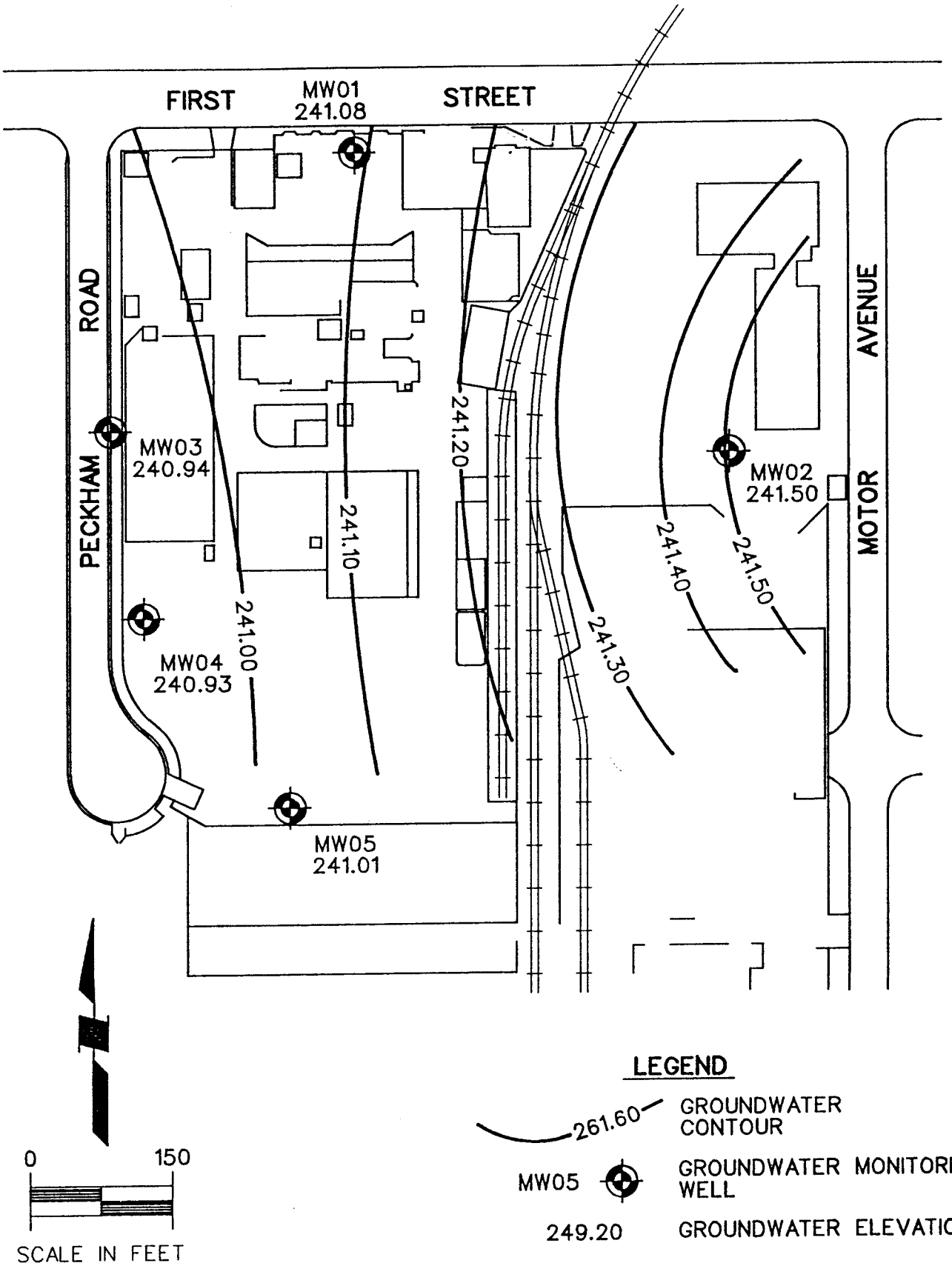
RUST ENVIRONMENT & INFRASTRUCTURE

CHEMICAL WASTE MANAGEMENT, INC.
ASUZA FACILITY

GROUNDWATER ELEVATION CONTOURS
NOVEMBER 1994

FIGURE
3

CHEMSITE.DGN



DECEMBER 23, 1994

RUST ENVIRONMENT & INFRASTRUCTURE	CHEMICAL WASTE MANAGEMENT, INC. ASUZA FACILITY GROUNDWATER ELEVATION CONTOURS DECEMBER 1994	FIGURE 4

APPENDIX A

Laboratory Analytical Results
and
Chain of Custody Records

WMX Environmental Monitoring Laboratories, Inc.

Analytical Report Transmittal Memorandum

DEC 1994
RECEIVED
Western Region
Environmental
Mgt. Dept.
C.W.M.I.

Date: December 13, 1994

To: Client(s) - see below

From: Donna Ingersoll

Subject: CWMI-AZUSA 94-14530

Please find enclosed the current Client Report, Field Information Forms, and Field Chain-of-Custody Records for the recently completed event at CWMI-AZUSA.

The data has been thoroughly reviewed and compared to historical data. We have tried to provide a report that is complete and of known and documented quality. Please take a moment to review the enclosed report to ensure it meets your expectations.

If you have any questions, don't hesitate to call Joe Rentz at (708)208-3100.

Report Distribution:

Name	Report Type
Marc Yalom*	ALL

* *Program Manager*

Mail Code: 2

Enclosed are the analytical results for samples received from your facility. The results in the Client Report are for a single ENS (Event Notification System) number only. The sampling event at your facility may include multiple ENS numbers. A separate Client Report will be generated for each one.

It is the goal of WMX Environmental Monitoring Laboratories Inc. to provide analytical data in a timely fashion, formatted in a way that our clients will find most useful.

If you have any questions concerning the form or content of this report, please contact the WMX EML Customer Operations Department:

Main Number (708) 208-3100
FAX Number (708) 208-1175

Note: Two designations may appear in the results column of your Client Report: NA or ND.

The designation NA (for "Not Analyzed") is used to identify analytes which were requested in the monitoring program, but for which no suitable testing methodology exists. NA may also indicate a dry well, broken sample bottle, insufficient sample volume, or other condition which precludes analysis for a sample.

The designation ND (for "Not Detected") is used to indicate that the analyte of interest was not found at or above the concentration listed under the EMLRL (EML Reporting Limit) heading.

Unless otherwise indicated, all analytes meet the requirements of holding time as specified in the method.

Deborah C. Hockman, Ph.D.

Deborah C. Hockman, Ph.D.
President
WMX Environmental Monitoring Laboratories, Inc.

DATA QUALIFIER COMMENT CODE DEFINITIONS

AR: Acid surrogate recoveries did not meet the acceptance criteria of the method. Oxidative degradation due to sample matrix is suggested.

BB: Broken bottle.

BL: The method blank concentrations associated with this analyte did not meet the acceptance criteria of the method.

CX: The concentration of this compound exceeded the calibration used for this analysis. The concentration reported is estimated.

CU: Co-elution with another compound interferes with the quantitation of this compound. The concentration reported is estimated.

DL: The sample was diluted during analysis. Reporting limits have been adjusted where necessary.

DP: Aliquots or spiked aliquots of this sample were analyzed in duplicate. The relative percent difference between the two results did not meet the acceptance criteria of the method.

DW: Dry Well.

HS: Headspace in sample exceeded laboratory control limit. The reported results of the analysis may be less than actual value.

IS: The internal standard recoveries associated with this analysis did not meet the acceptance criteria of the method.

IV: The bottle did not contain enough sample to perform the analysis.

MP: 3-methylphenol and 4-methylphenol co-elute under the analytical conditions of the method, and cannot be differentiated solely on the basis of their mass spectra. The concentrations reported may be either or both isomers.

MX: This sample was used as a matrix spike. The percent recovery did not meet the acceptance criteria of the method. The analysis of a quality control standard showed the analytical system was in control. The result reported may therefore be affected by matrix interferences.

NN: N-nitrosodiphenylamine cannot be distinguished from diphenylamine using gas chromatography. The concentrations reported may be either or both compounds.

NQ: No standard qualifier code is in use for this qualification. See the associated comment.

NS: There was not enough sample to repeat this analysis.

P: (Wisconsin only) Concentration found between the method detection limit and the reporting limit indicates the presence of a compound.

PL: This result may be a product of contamination from phthalate plasticizers, which are a common lab contaminant.

PX: This sample required preservation in the field to a pH of less than 2. The pH was checked before analysis and did not have a pH of less than 2.

PY: This sample required preservation in the field to a pH of 4 to 5. The pH was checked before analysis and did not have a pH of 4 to 5.

PZ: This sample required preservation in the field to a pH of 12 or greater. The pH was checked before analysis and did not have a pH of 12 or greater.

QX: This sample was used as a matrix spike. The percent recovery did not meet the acceptance criteria of the method. The analysis of a quality control standard showed the analytical system was out-of-control. The analytical result for this parameter in the unspiked sample is suspect and may not be reported for regulatory compliance purposes.

SB: The analysis of this sample was performed by an approved subcontract laboratory.

ST: This compound is not stable in acidic water.

SU: The analysis of the surrogate with this sample did not meet the acceptance criteria of the method.

TX: The analysis for this parameter was conducted after the holding time specified in the method.

UN: This compound is not stable under the conditions of the analysis.

WMX - Environmental Monitoring Laboratories, Inc. - Data Qualifier Report ENS #: 94-14530

Sample Point	EML Method	Analyte	Comment Code	Dilution Factor	Additional Comment
MW01	VOMSAAO322	2-CHLOROETHYLVINYL ETHER	ST		
MW05	VOMSAAO322	EVERY ANALYTE FOR THIS METHOD	DL	2.000	
MW05	VOMSAAO322	2-CHLOROETHYLVINYL ETHER	ST		
MW02	VOMSAAO322	EVERY ANALYTE FOR THIS METHOD	DL	2.000	
MW02	VOMSAAO322	2-CHLOROETHYLVINYL ETHER	ST		
MW04	VOMSAAO322	EVERY ANALYTE FOR THIS METHOD	DL	1.670	
MW04	VOMSAAO322	2-CHLOROETHYLVINYL ETHER	ST		
DUP	VOMSAAO322	2-CHLOROETHYLVINYL ETHER	ST		
01FB	VOMSAAO322	2-CHLOROETHYLVINYL ETHER	ST		
01FB	FDPHSING01	PH FIELD	NQ		NOT APPLICABLE
MW03	VOMSAAO322	2-CHLOROETHYLVINYL ETHER	ST		
					** End of Comments **

WMX - Environmental Monitoring Laboratories, Inc. - Data Qualifier Report ENS #: 94-14530

Sample Point	Sample ID	EML Method	Comment Code	Dilution Factor	Additional Comment
					NO SAMPLE LEVEL COMMENTS

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: 01FB
Sample Type: WELL
Sample Number: AL2246

ENS: 94-14530
MP: 562941
REV: 00

Sampled: 29-NOV-1994
Received: 30-NOV-1994
Reported: 13-DEC-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	NA		FT		FDWDTWTC01
GROUNDWATER ELEV.	NA		FT MSL		FDWGWELWDT
PH FIELD	NA		PH UNITS	NQ	FDPHSING01
SPECIFIC CONDUCTANCE FIELD	NA		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	NA		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	NA		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAA0322
1,1,1-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHENE	ND	5	UG/L		VOMSAA0322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAA0322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
2-BUTANONE	ND	50.	UG/L		VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	VOMSAA0322
4-METHYL-2-PENTANONE	ND	10.	UG/L		VOMSAA0322
ACETONE	ND	34	UG/L		VOMSAA0322
BENZENE	ND	5	UG/L		VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAA0322
BROMOFORM	ND	5	UG/L		VOMSAA0322
BROMOMETHANE	ND	10.	UG/L		VOMSAA0322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAA0322
CHLOROBENZENE	ND	5	UG/L		VOMSAA0322
CHLOROETHANE	ND	10.	UG/L		VOMSAA0322
CHLOROFORM	ND	5	UG/L		VOMSAA0322
CHLOROMETHANE	ND	10.	UG/L		VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAA0322
ETHYLBENZENE	ND	5	UG/L		VOMSAA0322
METHYLENE CHLORIDE	ND	5	UG/L		VOMSAA0322
O-XYLENE	ND	10.	UG/L		VOMSAA0322
TETRACHLOROETHENE	ND	5	UG/L		VOMSAA0322
TOLUENE	ND	5	UG/L		VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
TRICHLOROETHENE	ND	5	UG/L		VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAA0322
VINYL CHLORIDE	ND	10.	UG/L		VOMSAA0322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
PH FIELD	NOT APPLICABLE

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: DUP
Sample Type: WELL
Sample Number: AL2247

ENS: 94-14530
MP: 562941
REV: 00

Sampled: 29-NOV-1994
Received: 30-NOV-1994
Reported: 13-DEC-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	277.00		FT		FDWDTWTC01
GROUNDWATER ELEV.	242.05		FT MSL		FDWGWELWDT
PH FIELD	7.22		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	635		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	17.0		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	319.5		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAA0322
1,1,1-TRICHLOROETHANE	18	5	UG/L		VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHENE	30.	5	UG/L		VOMSAA0322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAA0322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
2-BUTANONE	ND	50.	UG/L		VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	VOMSAA0322
4-METHYL-2-PENTANONE	ND	10.	UG/L		VOMSAA0322
ACETONE	ND	34	UG/L		VOMSAA0322
BENZENE	ND	5	UG/L		VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAA0322
BROMOFORM	ND	5	UG/L		VOMSAA0322
BROMOMETHANE	ND	10.	UG/L		VOMSAA0322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAA0322
CHLOROBENZENE	ND	5	UG/L		VOMSAA0322
CHLOROETHANE	ND	10.	UG/L		VOMSAA0322
CHLOROFORM	ND	5	UG/L		VOMSAA0322
CHLOROMETHANE	ND	10.	UG/L		VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAA0322
ETHYLBENZENE	ND	5	UG/L		VOMSAA0322
METHYLENE CHLORIDE	ND	5	UG/L		VOMSAA0322
O-XYLENE	ND	10.	UG/L		VOMSAA0322
TETRACHLOROETHENE	150	5	UG/L		VOMSAA0322
TOLUENE	ND	5	UG/L		VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
TRICHLOROETHENE	91	5	UG/L		VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAA0322
VINYL CHLORIDE	ND	10.	UG/L		VOMSAA0322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 — CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW01
Sample Type: WELL
Sample Number: AL2251

ENS: 94-14530
MP: 562941
REV: 00

Sampled: 28-NOV-1994
Received: 30-NOV-1994
Reported: 13-DEC-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	287.13		FT		FDWDTWTC01
GROUNDWATER ELEV.	242.20		FT MSL		FDWGWELWDT
PH FIELD	7.34		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	727		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	16.2		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	335.0		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAA0322
1,1,1-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHENE	6	5	UG/L		VOMSAA0322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAA0322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
2-BUTANONE	ND	50.	UG/L		VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	VOMSAA0322
4-METHYL-2-PENTANONE	ND	10.	UG/L		VOMSAA0322
ACETONE	ND	34	UG/L		VOMSAA0322
BENZENE	ND	5	UG/L		VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAA0322
BROMOFORM	ND	5	UG/L		VOMSAA0322
BROMOMETHANE	ND	10.	UG/L		VOMSAA0322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAA0322
CHLOROBENZENE	ND	5	UG/L		VOMSAA0322
CHLOROETHANE	ND	10.	UG/L		VOMSAA0322
CHLOROFORM	ND	5	UG/L		VOMSAA0322
CHLOROMETHANE	ND	10.	UG/L		VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAA0322
ETHYLBENZENE	ND	5	UG/L		VOMSAA0322
METHYLENE CHLORIDE	ND	5	UG/L		VOMSAA0322
O-XYLENE	ND	10.	UG/L		VOMSAA0322
TETRACHLOROETHENE	36	5	UG/L		VOMSAA0322
TOLUENE	ND	5	UG/L		VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
TRICHLOROETHENE	16	5	UG/L		VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAA0322
VINYL CHLORIDE	ND	10.	UG/L		VOMSAA0322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW02
Sample Type: WELL
Sample Number: AL2249

ENS: 94-14530
MP: 562941
REV: 00

Sampled: 29-NOV-1994
Received: 30-NOV-1994
Reported: 13-DEC-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	283.02		FT		FDWDTWTC01
GROUNDWATER ELEV.	242.63		FT MSL		FDWGWELWDT
PH FIELD	7.47		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	645		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	17.4		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	328		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAA0322
1,1,1-TRICHLOROETHANE	33	6	UG/L		VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	10.	UG/L		VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	6	UG/L		VOMSAA0322
1,1-DICHLOROETHANE	ND	10.	UG/L		VOMSAA0322
1,1-DICHLOROETHENE	49	10.	UG/L		VOMSAA0322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAA0322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
2-BUTANONE	ND	100	UG/L		VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	40.	UG/L	ST	VOMSAA0322
4-METHYL-2-PENTANONE	ND	19	UG/L		VOMSAA0322
ACETONE	ND	68	UG/L		VOMSAA0322
BENZENE	ND	5	UG/L		VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAA0322
BROMOFORM	ND	6	UG/L		VOMSAA0322
BROMOMETHANE	ND	10.	UG/L		VOMSAA0322
CARBON TETRACHLORIDE	ND	6	UG/L		VOMSAA0322
CHLOROBENZENE	ND	5	UG/L		VOMSAA0322
CHLOROETHANE	ND	11	UG/L		VOMSAA0322
CHLOROFORM	ND	5	UG/L		VOMSAA0322
CHLOROMETHANE	ND	13	UG/L		VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	6	UG/L		VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAA0322
ETHYLBENZENE	ND	7	UG/L		VOMSAA0322
METHYLENE CHLORIDE	ND	9	UG/L		VOMSAA0322
O-XYLENE	ND	10.	UG/L		VOMSAA0322
TETRACHLOROETHENE	410	6	UG/L		VOMSAA0322
TOLUENE	ND	5	UG/L		VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	6	UG/L		VOMSAA0322
TRICHLOROETHENE	170	5	UG/L		VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	11	UG/L		VOMSAA0322
VINYL CHLORIDE	ND	13	UG/L		VOMSAA0322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
VOMSAA0322	Dilution factor 2.000 applied.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW03
Sample Type: WELL
Sample Number: AL2245

ENS: 94-14530
MP: 562941
REV: 00

Sampled: 29-NOV-1994
Received: 30-NOV-1994
Reported: 13-DEC-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	277.00		FT		FDWDTWTC01
GROUNDWATER ELEV.	242.05		FT MSL		FDWGWELWDT
PH FIELD	7.22		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	635		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	17.0		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	319.5		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAA0322
1,1,1-TRICHLOROETHANE	17	5	UG/L		VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHENE	28	5	UG/L		VOMSAA0322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAA0322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
2-BUTANONE	ND	50.	UG/L		VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	VOMSAA0322
4-METHYL-2-PENTANONE	ND	10.	UG/L		VOMSAA0322
ACETONE	ND	34	UG/L		VOMSAA0322
BENZENE	ND	5	UG/L		VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAA0322
BROMOFORM	ND	5	UG/L		VOMSAA0322
BROMOMETHANE	ND	10.	UG/L		VOMSAA0322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAA0322
CHLOROBENZENE	ND	5	UG/L		VOMSAA0322
CHLOROETHANE	ND	10.	UG/L		VOMSAA0322
CHLOROFORM	ND	5	UG/L		VOMSAA0322
CHLOROMETHANE	ND	10.	UG/L		VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAA0322
ETHYLBENZENE	ND	5	UG/L		VOMSAA0322
METHYLENE CHLORIDE	ND	5	UG/L		VOMSAA0322
O-XYLENE	ND	10.	UG/L		VOMSAA0322
TETRACHLOROETHENE	140	5	UG/L		VOMSAA0322
TOLUENE	ND	5	UG/L		VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
TRICHLOROETHENE	87	5	UG/L		VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAA0322
VINYL CHLORIDE	ND	10.	UG/L		VOMSAA0322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW04
Sample Type: WELL
Sample Number: AL2248

ENS: 94-14530
MP: 562941
REV: 00

Sampled: 28-NOV-1994
Received: 30-NOV-1994
Reported: 13-DEC-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	278.48		FT		FDWDTWTC01
GROUNDWATER ELEV.	242.0		FT MSL		FDWGWELWDT
PH FIELD	7.70		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	670		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	15.6		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	318		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAA0322
1,1,1-TRICHLOROETHANE	48	5	UG/L		VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	8	UG/L		VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHANE	ND	8	UG/L		VOMSAA0322
1,1-DICHLOROETHENE	59	8	UG/L		VOMSAA0322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,2-DICHLOROETHANE	11	5	UG/L		VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAA0322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
2-BUTANONE	ND	84	UG/L		VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	33	UG/L	ST	VOMSAA0322
4-METHYL-2-PENTANONE	ND	16	UG/L		VOMSAA0322
ACETONE	ND	57	UG/L		VOMSAA0322
BENZENE	ND	5	UG/L		VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAA0322
BROMOFORM	ND	5	UG/L		VOMSAA0322
BROMOMETHANE	ND	10.	UG/L		VOMSAA0322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAA0322
CHLOROBENZENE	ND	5	UG/L		VOMSAA0322
CHLOROETHANE	ND	10.	UG/L		VOMSAA0322
CHLOROFORM	ND	5	UG/L		VOMSAA0322
CHLOROMETHANE	ND	11	UG/L		VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAA0322
ETHYLBENZENE	ND	6	UG/L		VOMSAA0322
METHYLENE CHLORIDE	ND	7	UG/L		VOMSAA0322
O-XYLENE	ND	10.	UG/L		VOMSAA0322
TETRACHLOROETHENE	350	5	UG/L		VOMSAA0322
TOLUENE	ND	5	UG/L		VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
TRICHLOROETHENE	130	5	UG/L		VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAA0322
VINYL CHLORIDE	ND	11	UG/L		VOMSAA0322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
VOMSAA0322	Dilution factor 1.670 applied.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW05
Sample Type: WELL
Sample Number: AL2250

ENS: 94-14530
MP: 562941
REV: 00

Sampled: 29-NOV-1994
Received: 30-NOV-1994
Reported: 13-DEC-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	277		FT		FDWDTWTC01
GROUNDWATER ELEV.	242.11		FT MSL		FDWGWELWDT
PH FIELD	7.52		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	644		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	15.9		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	330.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAAO322
1,1,1-TRICHLOROETHANE	39	6	UG/L		VOMSAAO322
1,1,2,2-TETRACHLOROETHANE	ND	10.	UG/L		VOMSAAO322
1,1,2-TRICHLOROETHANE	ND	6	UG/L		VOMSAAO322
1,1-DICHLOROETHANE	ND	10.	UG/L		VOMSAAO322
1,1-DICHLOROETHENE	61	10.	UG/L		VOMSAAO322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,2-DICHLOROETHANE	6	5	UG/L		VOMSAAO322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAAO322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
2-BUTANONE	ND	100	UG/L		VOMSAAO322
2-CHLOROETHYLVINYL ETHER	ND	40.	UG/L	ST	VOMSAAO322
4-METHYL-2-PENTANONE	ND	19	UG/L		VOMSAAO322
ACETONE	ND	68	UG/L		VOMSAAO322
BENZENE	ND	5	UG/L		VOMSAAO322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAAO322
BROMOFORM	ND	6	UG/L		VOMSAAO322
BROMOMETHANE	ND	10.	UG/L		VOMSAAO322
CARBON TETRACHLORIDE	ND	6	UG/L		VOMSAAO322
CHLOROBENZENE	ND	5	UG/L		VOMSAAO322
CHLOROETHANE	ND	11	UG/L		VOMSAAO322
CHLOROFORM	ND	5	UG/L		VOMSAAO322
CHLOROMETHANE	ND	13	UG/L		VOMSAAO322
CIS-1,3-DICHLOROPROPENE	ND	6	UG/L		VOMSAAO322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAAO322
ETHYLBENZENE	ND	7	UG/L		VOMSAAO322
METHYLENE CHLORIDE	ND	9	UG/L		VOMSAAO322
O-XYLENE	ND	10.	UG/L		VOMSAAO322
TETRACHLOROETHENE	450	6	UG/L		VOMSAAO322
TOLUENE	ND	5	UG/L		VOMSAAO322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAAO322
TRANS-1,3-DICHLOROPROPENE	ND	6	UG/L		VOMSAAO322
TRICHLOROETHENE	130	5	UG/L		VOMSAAO322
TRICHLOROFLUOROMETHANE	ND	11	UG/L		VOMSAAO322
VINYL CHLORIDE	ND	13	UG/L		VOMSAAO322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
VOMSAAO322	Dilution factor 2.000 applied.

Subcontract To:

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2009
Date Sealed 94/11/17 (YY / MM / DD)
Seal # 80030
By:

SITE/FACILITY # 562 SITE NAME: CWMI-AZUSA

Sample Point: W01FB (Source Code)

B A R C O D E

SAMPLE DATE: 94/11/29 (YY / MM / DD)

SAMPLE TIME: 13:40 (2400 HR.)

MATRIX CODE: W

Water (W) Soil (S) Leachate (C) Other (X)

Source Codes:
Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generation Pt. (G) Other (X) Specify

ENS # *94-14530

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
AL2246-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
~~AL2246-B~~	~~01~~	~~G~~	~~HCL 4C~~	~~VOMSAA0322~~	~~Y N~~	~~EML~~	~~TBR~~
					Y N	✓ (MMCC)	11-17-94
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 11/27/94 Time: 16:00 (2400 HR.)
   Signature: R. Liles Cobb Seal #: 80030 Intact: yes

I have received these materials in good condition from the above person.

2. Name: Signature:
   Date: / / Time: : (2400 HR.) Remarks:

I have received these materials in good condition from the above person.

3. Name: Signature:
   Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 2076 Sealed By: R. Liles Cobb (Print) Date: 11/29/94 Time: 17:00 (2400 HR.)
   Signature: R. Liles Cobb Seal #: 80572 Intact: yes

LAB USE ONLY
Opened By: (Signature) Date: 11/30/94 Time: 2400 HR.

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AL2246

FIELD INFORMATION FORM

Sample Point: W01FB (Source Code)

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)

PURGING AND SAMPLING EQUIPMENT

Purging Equipment . . . . . Dedicated | Y | | N | (circle one) Sampling Equipment . . . . . Dedicated | Y | | N | (circle one)

Purging Device		A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X-_____ PURGING OTHER (SPECIFY)
Sampling Device		B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X-_____ SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material		A-Teflon	C-Polypropylene	E-Polyethylene	X-_____ PURGING OTHER (SPECIFY)
Sampling Material		B-Stainless Steel	D-PVC		X-_____ SAMPLING OTHER (SPECIFY)
Tubing-Purging		A-Teflon	D-Polypropylene	F-Silicon	X-_____ PURGING OTHER (SPECIFY)
Tubing-Sampling		B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X-_____ SAMPLING OTHER (SPECIFY)
		C-Rope X-_____ (SPECIFY)			
Filtering Devices 0.45 μ:		A-In-line Disposable	B-Pressure	C-Vacuum	

NOT APPLICABLE

FIELD MEASUREMENTS

Well Elevation	(ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	(ft)	Depth to water From land surface	(ft)
Groundwater Elevation	(ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	(ft)	Stickup	(ft)

NOT APPLICABLE

1st	(STD) ph	1st	μm/cm at 25° C spec. cond.	Sample Temp.	(° C)
2nd	(STD) ph	2nd	μm/cm at 25° C spec. cond.	(other parameter) value units	
3rd	(STD) ph	3rd	μm/cm at 25° C spec. cond.	(other parameter) value units	
4th	(STD) ph	4th	μm/cm at 25° C spec cond.	(other parameter) value units	

FIELD COMMENTS

Sample Appearance: _____ (if applicable) Odor: _____ Color: _____ Turbidity: _____

Weather Conditions: Wind Speed _____ Direction _____ Precipitation Y/N Outlook _____

Specific Comments: _____

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

11/29/94 (Date) R. Lila Cole (Signature) Employer: RUST E&I

Subcontract To: _____

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP 2009
AquaPak™ # _____
Date Sealed 94 / 11 / 17 (YY / MM / DD)
Seal # 80630
By: _____

SITE/FACILITY # 562 SITE NAME: CWMI-AZUSA

Sample Point: WDUP (Source Code)

SAMPLE DATE: 94 / 11 / 29 (YY / MM / DD)

SAMPLE TIME: 13:50 (2400 HR.)

MATRIX CODE: W

Water (W) Soil (S) Leachate (C) Other (X)

Source Codes:
Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generation Pt. (G) Other (X) Specify _____

ENS # *94-14530

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
AL2247-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
~~AL2247-B~~	~~01~~	~~G~~	~~HCL 4C~~	~~VOMSAA0322~~	~~Y N~~	~~EML~~	~~TBR~~
					Y N	/ CANCEL	11-17-94
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 11/27/94 Time: 16:00 (2400 HR.)
   Signature: R. Liles Cobb Seal #: 80630 Intact: yes

I have received these materials in good condition from the above person.

2. Name: _____ Signature: _____
   Date: / / Time: : (2400 HR.) Remarks: _____

I have received these materials in good condition from the above person.

3. Name: _____ Signature: _____
   Date: / / Time: : (2400 HR.) Remarks: _____

4. AquaPak™/Sub Contr. # 2076 Sealed By: Liles Cobb (Print) Date: 11/29/94 Time: 17:00 (2400 HR.)
   Signature: R. Liles Cobb Seal #: 80572 Intact: yes

LAB USE ONLY
Opened By: (Signature) [illegible] Date: 11/30/94 Time: 10:32 (2400 HR.)

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AL2247

Sample Point: W D4P (Source Code)

FIELD INFORMATION FORM

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
941129	12.31	0.2	43.3	130.0

PURGING AND SAMPLING EQUIPMENT

Purging Equipment . . . . . Dedicated (Y) N (circle one) Sampling Equipment . . . . . Dedicated (Y) N (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	X	A-Teflon	D-Polypropylene	F-Silicon	X- stainless Steel PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	none	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	519.05 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	277.00 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	242.05 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	319.5 (ft)	Stickup	(ft)

	ph		spec. cond.		
1st	7.22 (STD)	1st	635 μm/cm at 25° C	Sample Temp.	17.0 (° C)
2nd	(STD)	2nd	μm/cm at 25° C	(other parameter)	value / units
3rd	(STD)	3rd	μm/cm at 25° C	(other parameter)	value / units
4th	(STD)	4th	μm/cm at 25° C	(other parameter)	value / units

FIELD COMMENTS

Sample Appearance: clear (if applicable) Odor: none Color: clear Turbidity: slight

Weather Conditions: Wind Speed Calm Direction N/A Precipitation Y/(N) Outlook clear

Specific Comments: well depth obtained from SSGWMP
QED purge saver ph, cond, & temp meter used
samples collected in order A1, A2, A3, A4

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

11/29/94 (Date) R. Lee Collins (Signature) Employer: RYST EoI

Subcontract To:

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ #: 2014
Date Sealed: 94 / 11 / 17 (YY / MM / DD)
Seal #: 80513
By:

SITE/FACILITY #: 642 SITE NAME: CWMI-AZUSA

Sample Point: W M W 0 1 (Source Code)

BAR CODE

SAMPLE DATE: 94 11 28 (YY / MM / DD)

SAMPLE TIME: 13:57 (2400 HR.)

MATRIX CODE: W

Water (W) Soil (S) Leachate (C) Other (X)

Source Codes:
Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generation Pt. (G) Other (X) Specify

ENS # *94-14530

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
AL2251-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
~~AL2251-B~~	~~01~~	~~G~~	~~HCL 4C~~	~~VOMSAA0322~~	~~Y N~~	~~EML~~	~~TBK~~
					Y N	✓ CANCEL	11-17-94
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 11/27/94 Time: 16:00 (2400 HR.)
Signature: R. Liles Cobb Seal #: 80513 Intact: yes

I have received these materials in good condition from the above person.

2. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

I have received these materials in good condition from the above person.

3. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 2009 Sealed By: R. Liles Cobb (Print) Date: 11/29/94 Time: 17:15 (2400 HR.)
Signature: R. Liles Cobb Seal #: 80666 Intact: yes

LAB USE ONLY
Opened By: (Signature) Date: 11-30-94 Time: 10:46 (2400 HR.)

WMX Environmental Monitoring Laboratories, Inc.

FIELD INFORMATION FORM

Site # 562

Bottle Set: A12851

Sample Point: WMW01 (Source Code)

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
941128	1300	06	48.8	150.0

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated |Y| |N| (circle one) Sampling Equipment ..... Dedicated |Y| |N| (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	X	A-Teflon	D-Polypropylene	F-Silicon	X- Stainless steel PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	none	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	529.33 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	287.13 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	242.20 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	335.0 (ft)	Stickup	(ft)

	ph	spec. cond. (μm/cm at 25° C)	
1st	7.34 (STD)	727	Sample Temp. 16.2 (° C)
2nd	(STD)		(other parameter) / value / units
3rd	(STD)		(other parameter) / value / units
4th	(STD)		(other parameter) / value / units

FIELD COMMENTS

Sample Appearance: clear (if applicable) Odor: none Color: clear Turbidity: N/A

Weather Conditions: Wind Speed Calm Direction N/A Precipitation Y/N Outlook Clear

Specific Comments: well Depth was obtained from SSGWMP
QED pH cond + temp Purge SAVER meter was used
Temp measured in °C
Purge volume = (335 - 287.13 X1.02 X3) = 146.5
Sample collected in Bottles A1, A2, A3, A4

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

11/29/94 (Date) R. [illegible] (Signature) Employer: RUST E&I

Subcontract To:

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2014
Date Sealed 94 / 11 / 17 (YY / MM / DD)
Seal # 80513
By:

SITE/FACILITY # 542 SITE NAME: CWMI-AZUSA

Sample Point: WMW02 (Source Code)

B A R C O D E

SAMPLE DATE: 94 / 11 / 29 (YY / MM / DD)

SAMPLE TIME: 11:45 (2400 HR.)

MATRIX CODE: W

Water (W) Soil (S) Leachate (C) Other (X)

Source Codes:
Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generation Pt. (G) Other (X) Specify

ENS # *94-14530

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
AL2249-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
AL2249-B	01	G	HCL 4C	VOMSAA0322	Y N	EML	TBK
					Y N	✓ CTNLEC	11-17-94
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 11/27/94 Time: 16:[illegible] (2400 HR.)
Signature: R. Liles Cobb Seal #: 80513 Intact: yes

I have received these materials in good condition from the above person.

2. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

I have received these materials in good condition from the above person.

3. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 2009 Sealed By: R. Liles Cobb (Print) Date: 11/29/94 Time: 17:15 (2400 HR.)
Signature: R. Liles Cobb Seal #: 80666 Intact: yes

LAB USE ONLY
Opened By: (Signature) [illegible] Date: 11/30/94 Time: 10:[illegible] (2400 HR.)

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AL2249

Sample Point: WMW02 (Source Code)

FIELD INFORMATION FORM

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
941129	1057	69	458	1420

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated | Y | N | (circle one) Sampling Equipment ..... Dedicated | Y | N | (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	X	A-Teflon	D-Polypropylene	F-Silicon	X- Stainless PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	None	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	525.65 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	283.02 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	242.63 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	328 (ft)	Stickup	(ft)

	ph	spec. cond. (μm/cm at 25° C)	Sample Temp. (° C)
1st	7.47 (STD)	6455	17.4
2nd	(STD)		
3rd	(STD)		
4th	(STD)		

(other parameter)	value	units

FIELD COMMENTS

Sample Appearance: Clear (if applicable) Odor: none Color: Clear Turbidity: Slight

Weather Conditions: Wind Speed CALM Direction N/A Precipitation Y/N Outlook 70° SUNNY

Specific Comments: Well Depth obtained from SSG-WMP
QED pH, cond + temp (Purge SAVER) meter used
Purge volume = (328 − 283.02 X 1.02 X 3) = 137.6
Temp measured in °C
Samples collected in Bottles A1, A2, A3, A4 order

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

11/29/94 (Date) Randall T Cole (Signature) Employer: RUST E&I

Subcontract To:

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

2076

AquaPak™ PREP
AquaPak™ # 2009
Date Sealed 94/1/1/17 (YY MM DD)
Seal # 80030
By:

SITE/FACILITY # 542 SITE NAME: CWMI-AZUSA

Sample Point: WMW03 (Source Code)

BARCODE

SAMPLE DATE: 94/1/29 (YY / MM / DD)

SAMPLE TIME: 13:45 (2400 HR.)

MATRIX CODE: W

Water (W) Soil (S) Leachate (C) Other (X)

Source Codes:

Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generation Pt. (G) Other (X) Specify

ENS # *94-14530

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
AL2245-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
AL2245-B	01	G	HCL 4C	VOMSAA0322	Y N	EML	TBK ~~BOTTLE~~
					Y N		SW11-30-94
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 11/27/94 Time: 16:00 (2400 HR.)
   Signature: R. Liles Cobb Seal #: 80030 Intact: YES

I have received these materials in good condition from the above person.

2. Name: Signature:
   Date: / / Time: : (2400 HR.) Remarks:

I have received these materials in good condition from the above person.

3. Name: Signature:
   Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 2076 Sealed By: R. Liles Cobb (Print) Date: 11/29/94 Time: 17:00 (2400 HR.)
   Signature: R. Liles Cobb Seal #: 80572 Intact: YES

LAB USE ONLY
Opened By: (Signature) Date: 11/30/94 Time: 10:32 (2400 HR.)

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AL2245

FIELD INFORMATION FORM

Sample Point: WMW03 (Source Code)

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
94 11 29	12:31	0.2	43.3	130.0

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated (Y) | N (circle one) Sampling Equipment ..... Dedicated (Y) | N (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	X	A-Teflon	D-Polypropylene	F-Silicon	X- Stainless Steel PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ: none		A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	519.05 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	277.00 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	242.05 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	319.5 (ft)	Stickup	(ft)

	ph		spec. cond.		
1st	7.22 (STD)	1st	635 μm/cm at 25° C	Sample Temp.	17.0 (° C)
2nd	(STD)	2nd	μm/cm at 25° C	(other parameter)	value / units
3rd	(STD)	3rd	μm/cm at 25° C	(other parameter)	value / units
4th	(STD)	4th	μm/cm at 25° C	(other parameter)	value / units

FIELD COMMENTS

Sample Appearance: Clear (if applicable) Odor: None Color: Clear Turbidity: Cloudy slightly

Weather Conditions: Wind Speed CALM Direction N/A Precipitation Y/N Outlook Clear

Specific Comments: Well Depth obtained from SSGWMP
QED Purge SAVER pH, Cond, + temp meter used
Temp measured in °C
Purge volume = (319.5 − 277 × 1.02 × 3) = 130.05 1 vol (43.3)
Samples collected in order A1, A2, A3, + A4

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

11/29/94 (Date) R. L. De Colle (Signature) Employer: RYST E&I

2009

Subcontract To: [illegible]

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2014
Date Sealed 9 4 1 1 1 7 (YY / MM / DD)
Seal # 80513
By: [illegible]

SITE/FACILITY # 562 SITE NAME: CWMI-AZUSA

Sample Point: W MW04 (Source Code)

B A R C O D E

SAMPLE DATE: - 9 4 1 1 2 8 (YY / MM / DD)

SAMPLE TIME: 17:10 (2400 HR.) MATRIX CODE: W

Water ..... (W) Leachate ..... (C)
Soil ..... (S) Other ..... (X)

Source Codes:
Well ..... (W) Leachate System ... (C) Pretreatment Facility ... (P) River/Stream/Brook ... (R) Soil ..... (S) Generation Pt. ..... (G)
Dewatering/Pressure Relief .... (D) Gas Condensate ... (M) Influent ..... (U) Lake or Ocean ..... (L) Bottom Sediment ... (B) Other ..... (X)
Surface Water Impoundment ... (I) Air ..... (A) Effluent ..... (T) Outfall ..... (O) Noise ..... (N) Specify _____

ENS # *94-14530 **AquaPak™ CONTENT**

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
AL2248-A	04	G	HCL 4C	VOMSAAD322	Y N	EML	
AL2248-B	01	G	HCL 4C	VOMSAAD322	Y N	EML	TBK BØ 135 BBL. SW 11-30-94.
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 11/27/94 Time: 16:00 (2400 HR.)
Signature: R. Liles Cobb Seal #: 80513 Intact: yes

I have received these materials in good condition from the above person.

2. Name: _____ Signature: _____
Date: / / Time: : (2400 HR.) Remarks: _____

I have received these materials in good condition from the above person.

3. Name: _____ Signature: _____
Date: / / Time: : (2400 HR.) Remarks: _____

4. AquaPak™/Sub Contr. # 2009 Sealed By: R. Liles Cobb (Print) Date: 11/29/94 Time: 17:15 (2400 HR.)
Signature: R. Liles Cobb Seal #: 80666 Intact: yes

LAB USE ONLY
Opened By: (Signature) [illegible] Date: 11/30/94 Time: 16:46 (2400 HR.)
80666

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AL2248

FIELD INFORMATION FORM

Sample Point: WMW04 (Source Code)

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
941128	1555	0.3	40.3	130.0

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated (Y) | N | (circle one) Sampling Equipment ..... Dedicated (Y) | N | (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	X	A-Teflon	D-Polypropylene	F-Silicon	X- Stainless steel PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	none	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	520.48 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	278.48 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	242.0 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	318. (ft)	Stickup	(ft)

	ph		spec. cond.		
1st	7.70 (STD)	1st	670. μm/cm at 25° C	Sample Temp.	15.6 (° C)
2nd	(STD)	2nd	μm/cm at 25° C	(other parameter)	value / units
3rd	(STD)	3rd	μm/cm at 25° C	(other parameter)	value / units
4th	(STD)	4th	μm/cm at 25° C	(other parameter)	value / units

FIELD COMMENTS

Sample Appearance: Clear (if applicable) Odor: none Color: Clear Turbidity: slight

Weather Conditions: Wind Speed CALM Direction N/A Precipitation Y/N Outlook SUNNY

Specific Comments: Depth (well) obtained from SSGWMP
QED Purge SAVER used to measure pH cond + temp
Purge vol = (318 − 278.48) × 1.02 × 3 = 120.9
Temp measured in °C
SOLVENT ODOR from DRUM PAD construction - BACKGROUND

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

11/29/94 (Date) R. L. [illegible] (Signature) Employer: RYSTEAT

Subcontract To:

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2014
Date Sealed 94 / 11 / 17 (YY / MM / DD)
Seal # 80513
By:

SITE/FACILITY # 562 SITE NAME: CWMI-AZUSA

Sample Point: WmW05 (Source Code)

BARCODE

SAMPLE DATE: 94 / 11 / 29 (YY / MM / DD)

SAMPLE TIME: 10:20 (2400 HR.)

MATRIX CODE: W

Water (W) Soil (S) Leachate (C) Other (X)

Source Codes:

Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generation Pt. (G) Other (X) Specify

ENS # *94-14530

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
AL2250-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
AL2250-B	01	G	HCL 4C	VOMSAA0322	Y N	EML	TBR
					Y N	✓	CANCEL 11-17-94
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 11/27/94 Time: 15:00 (2400 HR.)
Signature: R. Liles Cobb Seal #: 80513 Intact: yes

I have received these materials in good condition from the above person.

2. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

I have received these materials in good condition from the above person.

3. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 2009 Sealed By: R. Liles Cobb (Print) Date: 11/29/94 Time: 17:15 (2400 HR.)
Signature: R. Liles Cobb Seal #: 80665 Intact: yes

LAB USE ONLY
Opened By: (Signature) Date: 11/30/94 Time: 10:46 (2400 HR.)

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: A22250

FIELD INFORMATION FORM

Sample Point: WMW05 (Source Code)

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
941129	0932	0.5	53.5	165.0

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated | Y | N | (circle one) Sampling Equipment ..... Dedicated | Y | N | (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	X	A-Teflon	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- Stainless Steel SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ: none		A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	5197.67 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	277.1 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	2421.11 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	330.00 (ft)	Stickup	(ft)

	ph	spec. cond. (μm/cm at 25° C)	
1st	7.52 (STD)	644.4	Sample Temp. 15.9 (° C)
2nd	(STD)		(other parameter) value units
3rd	(STD)		(other parameter) value units
4th	(STD)		(other parameter) value units

FIELD COMMENTS

Sample Appearance: clear (if applicable) Odor: none Color: clear Turbidity: N/A

Weather Conditions: Wind Speed CALM Direction N/A Precipitation Y/N Outlook

Specific Comments: Well Depth obtained from SSGWMP
Purge Volume = (330(WD) − DTW 277.56 X1.02 X3 = 160.5
QED Purge SAVER conductivity, temp + pH meter used
Temp measured in °C
Samples collected in order A1, A2, A3, A4

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

4/29/94 (Date) D. [illegible] (Signature) Employer: RUST E&I

WMX Environmental Monitoring Laboratories, Inc.

Analytical Report Transmittal Memorandum

Date: January 24, 1995

To: Client(s) - see below

From: Donna Ingersoll

Subject: CWMI-AZUSA 94-14600

Please find enclosed the current Client Report, Field Information Forms, and Field Chain-of-Custody Records for the recently completed event at CWMI-AZUSA.

The data has been thoroughly reviewed and compared to historical data. We have tried to provide a report that is complete and of known and documented quality. Please take a moment to review the enclosed report to ensure it meets your expectations.

If you have any questions, don't hesitate to call Joe Rentz at (708)208-3100.

Report Distribution:

Name	Report Type
Marc Yalom*	ALL
~~Liles Cobb~~	ALL

* *Program Manager*

Mail Code: 2

Enclosed are the analytical results for samples received from your facility. The results in the Client Report are for a single ENS (Event Notification System) number only. The sampling event at your facility may include multiple ENS numbers. A separate Client Report will be generated for each one.

It is the goal of WMX Environmental Monitoring Laboratories Inc. to provide analytical data in a timely fashion, formatted in a way that our clients will find most useful.

If you have any questions concerning the form or content of this report, please contact the WMX EML Customer Operations Department:

Main Number (708) 208-3100
FAX Number (708) 208-1175

Note: Two designations may appear in the results column of your Client Report: NA or ND.

The designation NA (for "Not Analyzed") is used to identify analytes which were requested in the monitoring program, but for which no suitable testing methodology exists. NA may also indicate a dry well, broken sample bottle, insufficient sample volume, or other condition which precludes analysis for a sample.

The designation ND (for "Not Detected") is used to indicate that the analyte of interest was not found at or above the concentration listed under the EMLRL (EML Reporting Limit) heading.

Unless otherwise indicated, all analytes meet the requirements of holding time as specified in the method.

Deborah C. Hockman, Ph.D.

Deborah C. Hockman, Ph.D.
President
WMX Environmental Monitoring Laboratories, Inc.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

DATA QUALIFIER REPORT

Site: 562 — CWMI-AZUSA

ENS: 94-14600

Report Date: 24-JAN-1995

Sample Pt	Samp Date	Analyte	Method	Comment	Additional Comments Explanations (NQ/DL)
DUPMP1	28-NOV-1994	2-CHLOROETHYLVINYL ETHER	VOMSAA0322	ST	
DUPMP2	28-NOV-1994	2-CHLOROETHYLVINYL ETHER	VOMSAA0322	ST	
TBK-DUPMP1	28-NOV-1994	2-CHLOROETHYLVINYL ETHER	VOMSAA0322	ST	

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

DATA QUALIFIER REPORT

Site: 562 – CWMI-AZUSA

ENS: 94-14600

Report Date: 24-JAN-1995

Code	Data Qualifier Comment Code Definition
ST	This compound is not stable in acidic water.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: DUPMP1
Sample Type: WELL
Sample Number: AL2643

ENS: 94-14600
MP: 562942
REV: 00

Sampled: 28-NOV-1994
Received: 30-NOV-1994
Reported: 24-JAN-1995

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	287.13		FT		FDWDTWTC01
GROUNDWATER ELEV.	242.20		FT MSL		FDWGWELWDT
PH FIELD	7.00		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	716		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	17.4		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	335.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAAO322
1,1,1-TRICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1-DICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1-DICHLOROETHENE	ND	5	UG/L		VOMSAAO322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAAO322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
2-BUTANONE	ND	50.	UG/L		VOMSAAO322
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	VOMSAAO322
4-METHYL-2-PENTANONE	ND	10.	UG/L		VOMSAAO322
ACETONE	ND	34	UG/L		VOMSAAO322
BENZENE	ND	5	UG/L		VOMSAAO322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAAO322
BROMOFORM	ND	5	UG/L		VOMSAAO322
BROMOMETHANE	ND	10.	UG/L		VOMSAAO322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAAO322
CHLOROBENZENE	ND	5	UG/L		VOMSAAO322
CHLOROETHANE	ND	10.	UG/L		VOMSAAO322
CHLOROFORM	ND	5	UG/L		VOMSAAO322
CHLOROMETHANE	ND	10.	UG/L		VOMSAAO322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAAO322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAAO322
ETHYLBENZENE	ND	5	UG/L		VOMSAAO322
METHYLENE CHLORIDE	ND	5	UG/L		VOMSAAO322
O-XYLENE	ND	10.	UG/L		VOMSAAO322
TETRACHLOROETHENE	28	5	UG/L		VOMSAAO322
TOLUENE	ND	5	UG/L		VOMSAAO322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAAO322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAAO322
TRICHLOROETHENE	10.	5	UG/L		VOMSAAO322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAAO322
VINYL CHLORIDE	ND	10.	UG/L		VOMSAAO322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 — CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: DUPMP2
Sample Type: WELL
Sample Number: AL2644

ENS: 94-14600
MP: 562942
REV: 00

Sampled: 28-NOV-1994
Received: 30-NOV-1994
Reported: 24-JAN-1995

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	278.48		FT		FDWDTWTC01
GROUNDWATER ELEV.	242.00		FT MSL		FDWGWELWDT
PH FIELD	7.42		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	657		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEG. CELSIUS FIELD	18.0		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	318.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAAO322
1,1,1-TRICHLOROETHANE	15	5	UG/L		VOMSAAO322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1-DICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1-DICHLOROETHENE	18	5	UG/L		VOMSAAO322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAAO322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
2-BUTANONE	ND	50.	UG/L		VOMSAAO322
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	VOMSAAO322
4-METHYL-2-PENTANONE	ND	10.	UG/L		VOMSAAO322
ACETONE	ND	34	UG/L		VOMSAAO322
BENZENE	ND	5	UG/L		VOMSAAO322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAAO322
BROMOFORM	ND	5	UG/L		VOMSAAO322
BROMOMETHANE	ND	10.	UG/L		VOMSAAO322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAAO322
CHLOROBENZENE	ND	5	UG/L		VOMSAAO322
CHLOROETHANE	ND	10.	UG/L		VOMSAAO322
CHLOROFORM	ND	5	UG/L		VOMSAAO322
CHLOROMETHANE	ND	10.	UG/L		VOMSAAO322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAAO322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAAO322
ETHYLBENZENE	ND	5	UG/L		VOMSAAO322
METHYLENE CHLORIDE	ND	5	UG/L		VOMSAAO322
O-XYLENE	ND	10.	UG/L		VOMSAAO322
TETRACHLOROETHENE	200	5	UG/L		VOMSAAO322
TOLUENE	ND	5	UG/L		VOMSAAO322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAAO322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAAO322
TRICHLOROETHENE	56	5	UG/L		VOMSAAO322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAAO322
VINYL CHLORIDE	ND	10.	UG/L		VOMSAAO322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 — CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: TBK-DUPMP1
Sample Type: WELL
Sample Number: AL2643

ENS: 94-14600
MP: 562942
REV: 00

Sampled: 28-NOV-1994
Received: 30-NOV-1994
Reported: 24-JAN-1995

Analyte	Result	P Q L	Units	Comments	Method
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAA0322
1,1,1-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHENE	ND	5	UG/L		VOMSAA0322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAA0322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
2-BUTANONE	ND	50.	UG/L		VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	VOMSAA0322
4-METHYL-2-PENTANONE	ND	10.	UG/L		VOMSAA0322
ACETONE	ND	34	UG/L		VOMSAA0322
BENZENE	ND	5	UG/L		VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAA0322
BROMOFORM	ND	5	UG/L		VOMSAA0322
BROMOMETHANE	ND	10.	UG/L		VOMSAA0322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAA0322
CHLOROBENZENE	ND	5	UG/L		VOMSAA0322
CHLOROETHANE	ND	10.	UG/L		VOMSAA0322
CHLOROFORM	ND	5	UG/L		VOMSAA0322
CHLOROMETHANE	ND	10.	UG/L		VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAA0322
ETHYLBENZENE	ND	5	UG/L		VOMSAA0322
METHYLENE CHLORIDE	ND	5	UG/L		VOMSAA0322
O-XYLENE	ND	10.	UG/L		VOMSAA0322
TETRACHLOROETHENE	ND	5	UG/L		VOMSAA0322
TOLUENE	ND	5	UG/L		VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
TRICHLOROETHENE	ND	5	UG/L		VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAA0322
VINYL CHLORIDE	ND	10.	UG/L		VOMSAA0322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Subcontract To:

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP 2149
AquaPak™ #
Date Sealed 94 11 17 (YY / MM / DD)
Seal # 80352
By:

SITE/FACILITY # 562 SITE NAME: CWMI-AZUSA

Sample Point: W DUPMP1 (Source Code S.G.)

SAMPLE DATE: 94 11 28 (YY / MM / DD)

SAMPLE TIME: 12:40 (2400 HR.) MATRIX CODE: W

Source Codes:
Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Water (W) Soil (S) Soil (S) Bottom Sediment (B) Noise (N) Leachate (C) Other (X) Generation Pt. (G) Other (X) Specify

ENS # *94-14600

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y — N	FIELD COMMENTS	E.M.L. COMMENTS
AL2643-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
AL2643-B	01	G	HCL 4C	VOMSAA0322	Y N	EML	TBK BØNoBB SW 11-30-94
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 11/27/94 Time: 15:00 (2400 HR.)
Signature: R. Liles Cobb Seal #: 80352 Intact: yes

I have received these materials in good condition from the above person.

2. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

I have received these materials in good condition from the above person.

3. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks: 01

4. AquaPak™/Sub Contr. # 2149 Sealed By: R. Liles Cobb (Print) Date: 11/29/94 Time: 16:45 (2400 HR.)
Signature: R. Liles Cobb Seal #: 80737 Intact: yes

LAB USE ONLY
Opened By: (Signature) [signature] Date: 11/30/94 Time: 10:35 (2400 HR.)
2149 2 80737

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AL2643

FIELD INFORMATION FORM

Sample Point: W DUPMP1 (Source Code S.G.)

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
941128	1148	0.8	48.8	5.5

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated (Y) N (circle one) Sampling Equipment ..... Dedicated (Y) N (circle one)

Purging Device	C	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	A	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	A	A-Teflon	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	Wand	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	529.33 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	287.13 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	242.20 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	335.0 (ft)	Stickup	(ft)

	ph		spec. cond.		
1st	7.00 (STD)	1st	716 μm/cm at 25° C	Sample Temp.	17.4 (° C)
2nd	(STD)	2nd	μm/cm at 25° C	(other parameter)	value / units
3rd	(STD)	3rd	μm/cm at 25° C	(other parameter)	value / units
4th	(STD)	4th	μm/cm at 25° C	(other parameter)	value / units

FIELD COMMENTS

Sample Appearance: Clear (if applicable) Odor: None Color: Clear Turbidity: N/A

Weather Conditions: Wind Speed Calm Direction N/A Precipitation Y(N) Outlook Clear

Specific Comments: Micro purge - well WM01 well WM04

Well Depth obtained from SSGWMP

~~Purge volume = (~~

QED PURGE SAVER pH cond + temp meter used

TEMP. measured in °C

Samples collected in Bottles A1, A2, A3 + A4 order

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

11/28/94 (Date) R Tiles Cobb (Signature) Employer: RUST E & I

Subcontract To:

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2149
Date Sealed 9 4 / 1 / 1 / 7 (YY / MM / DD)
Seal # 80352
By:

SITE/FACILITY # 562 SITE NAME: CWMI-AZUSA

Sample Point: W ~~R N B M~~ P 2 (Source Code)

SAMPLE DATE: 9 4 1 1 2 8 (YY / MM / DD)

SAMPLE TIME: 1 5 : 2 7 (2400 HR.) MATRIX CODE: W

Water (W) Leachate (C)
Soil (S) Other (X)

Source Codes:
Well (W) Leachate System (C) Pretreatment Facility (P) River/Stream/Brook (R) Soil (S) Generation Pt. (G)
Dewatering/Pressure Relief (D) Gas Condensate (M) Influent (U) Lake or Ocean (L) Bottom Sediment (B) Other (X)
Surface Water Impoundment (I) Air (A) Effluent (T) Outfall (O) Noise (N) Specify

ENS # *94-14600

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
AL2644-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
~~AL2644-B~~	~~01~~	~~G~~	~~HCL 4C~~	~~VOMSAA0322~~	~~Y N~~	~~EML~~	~~IBK~~
					Y N	✓ CANCEL	11-17-94
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 11/27/94 Time: 16:00 (2400 HR.)
Signature: R. Liles Cobb Seal #: 80352 Intact: yes

I have received these materials in good condition from the above person.

2. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

I have received these materials in good condition from the above person.

3. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 2149 Sealed By: Liles Cobb (Print) Date: 11/29/94 Time: 16:45 (2400 HR.)
Signature: R. Liles Cobb Seal #: 80737 Intact: yes

LAB USE ONLY
Opened By: (Signature) [illegible] Date: 11/30/94 Time: 10:35 (2400 HR.)
7115 2 80737 Intact

WMX Environmental Monitoring Laboratories, Inc.

FIELD INFORMATION FORM

Site # 562

Bottle Set: AL2644

Sample Point: W ~~PW04~~ PMP2 (Source Code)

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
941128	1442	0.8	40.3	5.0

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated (Y) | N | (circle one) Sampling Equipment ..... Dedicated (Y) | N | (circle one)

Purging Device	C	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	A	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	A	A-Teflon	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	none	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	520.48 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	278.48 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	242.00 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	318.00 (ft)	Stickup	(ft)

	ph		spec. cond.		
1st	7.42 (STD)	1st	657 μm/cm at 25° C	Sample Temp.	18.0 (° C)
2nd	(STD)	2nd	μm/cm at 25° C	(other parameter)	value / units
3rd	(STD)	3rd	μm/cm at 25° C	(other parameter)	value / units
4th	(STD)	4th	μm/cm at 25° C	(other parameter)	value / units

FIELD COMMENTS

Sample Appearance: clear (if applicable) Odor: none Color: clear Turbidity: N/A

Weather Conditions: Wind Speed calm Direction Precipitation Y/(N) Outlook clear

Specific Comments: Micro purge event — well WM04
Well Depth obtained from SSGWMP
QED Purge SAVER pH, cond + temp meter used
TEMP measured in °C
Samples collected in order A1, A2, A3, A4

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

11/28/94 (Date) R. Lile Cohen (Signature) Employer: RUSTE & I

RUST ENVIRONMENT & INFRASTRUCTURE

RUST Environment & Infrastructure Inc.
18401 Von Karman Avenue, Suite 550 - 5th Floor
Irvine, CA 92715
Tel. (714) 251-6400 • FAX (714) 251-6444

January 27, 1995

Mr. Marc Yalom, R.G.
Chemical Waste Management, Inc.
4227 Technology Drive
Fremont, CA 94538

RE: Revision of Field Information Forms
Chemical Waste Management, Inc.
Azusa, CA

Dear Mr. Yalom:

RUST Environment & Infrastructure, Inc. (RUST E&I) submits this correspondence to Chemical Management, Inc. (CWMI) to clarify the inconsistencies in the Field Information Forms for the 4th Quarter 1994 groundwater monitoring round, and the report submitted on January 25, 1995. All of the report information is correct, although data recorded on the field information forms for wells MW01, MW03 and MW05 are inconsistent with the report. The wells were repaired by RUST E&I and the surveyed elevations of the top of casings were changed to 529.31 and 519.04 for wells MW01 and MW03, respectively. In addition, the depth to water was omitted for well MW05, which should have been 277.56 feet.

If you have any questions, please contact me at (714) 251-6422.

Sincerely,

Susan Goss

Susan Goss, R.G.
Registered Geologist #5639

REGISTERED GEOLOGIST
SUSAN F. GOSS
No. 5639
STATE OF CALIFORNIA

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

Chemical Waste Management, Inc.

4227 Technology Drive
Fremont, California 94538-6537
510/651-2964

October 26, 1994

Mr. Jeffrey Zelikson
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

Two Copies
Via Certified Mail
Z 047 926 058

Mr. Allan Plaza
Unit Chief, Facility Management Branch
(Attn: Mr. Andy Bajwa)
California Department of Toxic Substances Control, Region III
1011 North Grandview Avenue
Glendale, California 91201

Two Copies
Via Certified Mail
Z 047 926 058

Subject: Chemical Waste Management, Inc. - Azusa, California Facility, CAD 008302903, RCRA Facility Investigation, Combined Report of Third Quarter 1994 Groundwater Monitoring & RFI Events

Gentlemen:

In accordance with the recommendations presented in the Oil & Solvent Process Company RCRA Facility Investigation (RFI) Final Report[1], and the RCRA Part B Permit Attachment D, Section E.3.d, Chemical Waste Management, Inc., (CWM) is submitting this letter report describing the Third Quarter 1994 Groundwater Monitoring Event at the Chemical Waste Management, Inc. - Azusa, California facility.

CWM is also submitting a computer diskette containing monitoring event analytical and groundwater elevation data. The electronic media submission is required under permit condition VI.8.A.

The last section of this report provides an update on Third Quarter RFI activities for the period of July 1 through September 30, 1994. The RFI status report is in accordance with Permit Condition VI.3.A.

---

[1]Meredith/Boli and Associates, RCRA Facility Investigation (Phase III), Groundwater Investigation, January 11, 1993.

GROUNDWATER MONITORING

Groundwater sampling was performed by RUST Environment & Infrastructure (RUST) of Irvine, California on August 26, 1994. Primary laboratory analyses were performed by WMX Technologies' Environmental Monitoring Laboratory of Geneva, Illinois. A split groundwater sample was analyzed by Weston Gulf Coast Labs of University Park, Illinois.

During the Third Quarter, groundwater levels were measured by RUST in CWM-Azusa wells on July 29, August 25, and September 30, 1994.

Descriptions of the sampling event, analytical results, and groundwater elevation measurements are described in the RUST report in Attachment 1.

Second Quarter 1994 analytical data collected on May 28, 1994, had indicated acetone at a concentration of 92 ug/l at well MW02. MW02 is located up- or cross-gradient (depending on seasonal groundwater flow direction) with respect to the solvent handling portion of the facility. Therefore, CWM considered the detection as highly suspect. During the Third Quarter 1994 sampling event, several quality control samples were collected at MW02: 1) a duplicate groundwater sample; 2) a laboratory split groundwater sample; 3) a field blank collected at MW02; 4) a travel blank associated with the field blank sample AquaPak; and 5) a travel blank associated with the split MW02 sample AquaPak. Acetone was not detected in the primary, duplicate, split, or blank samples. The detection of Acetone in the Second Quarter 1994 event sample at MW02 may not have been representative of groundwater conditions.

DATA ON ELECTRONIC MEDIA

Attachment 2 contains one 3½-inch, double sided, high density, DOS compatible diskette containing three ASCII files.

The file "CHEMSTRY.TXT" contains primary, duplicate, and split field and laboratory analytical results for the Third Quarter 1994 event. The file is fixed format, containing 267 records, each with eleven fields. Table 1 is a description of the variable fields. Each record contains the result for one chemical analyte.

The file "BLANKS.TXT" contains the results of Travel and Field Blank analyses for the event. The file contains 108 records, each with nine fields. Variable fields are described in Table 2.

Printed on recycled paper

Groundwater elevation measurements for the Third Quarter 1994 are presented in "LEVELS.TXT". The file contains fifteen records, each with six fields. Table 3 describes the fields for this file.

The information presented in the electronic files is summary in nature. For specific details, please refer to the laboratory reports in the RUST report (Attachment 1).

OTHER RFI ACTIVITIES

WORK COMPLETED

No additional RFI related activities occurred between July 1 and September 30, 1994.

WORK PLANNED

- Fourth Quarter 1994 groundwater sampling is scheduled for Monday, November 28, 1994. During that event, RUST will test "micro-purge" pre-sampling well purging and sampling techniques to determine if reduced purge volumes can provide samples and analytical results comparable to the current three well volume purge.

- Fourth Quarter 1994 groundwater level measurements are planned for October 28, November 25, and December 23, 1994.

- CWM has approved a Meredith/Boli & Associates technical proposal to determine if a reduction in the number of wells and/or the sampling schedule at CWM-Azusa is technically supported. The five monitoring wells at CWM-Azusa were installed when few local subsurface data were available to support models of flow and contaminant transport in the local and regional settings. Since the CWM-Azusa wells were installed in 1992, additional wells have been installed in the local area by other property owners/operators. The wells are monitored on a schedule coordinated by the Regional Water Quality Control Board. The five CWM-Azusa wells, each sampled quarterly, may be providing redundant information. Meredith/Boli will examine available records and determine if a reduction in sampling at CWM-Azusa is technically feasible.

Printed on recycled paper

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system design to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

If you have any questions, I can be reached at (510) 651-2964.

Sincerely,

CHEMICAL WASTE MANAGEMENT, INC.

Marc Yalom, R.G.
Hydrogeologist

Attachments (2)

/miy

cc: Mr. Wayne Chiou, Los Angeles RWQCB - Monterey Park (Three Copies, Via Certified Mail, Z 047 926 066)

Printed on recycled paper

TABLES

TABLE 1
CHEMICAL WASTE MANAGEMENT, INC.
AZUSA FACILITY
ELECTRONIC FILE SUMMARY
"CHEMSTRY.TXT"

Cols.	Field	Description	Options
1-2	blank field		
3-18	Site_id	Source of sample	
19-28	Replicate	Type of sample	"P0" - Primary Sample "DX" - Duplicate Sample ("X" - Duplicate number) "SX" - Split Sample ("X" - Split Number)
29-38	Samp_date	Date sample was collected	Format: "MM/DD/YY"
39-48	Samp_time	Time sample was collected	Format: "HH:MM"
49-89	Name	Analyte Name	
90-101	Cas_num	Chemical Abstract Number	CAS number beginning "GIS" or "CWM" are improvised entries for analytes without true CAS designations
102-113	Conc	Concentration detected	
114-124	Det_limit	Detection limit	
125-130	Units	Analyte units	
131-138	Pf_code	Preparation fraction code	"T" - Total "D" - Dissolved
139-145	Dl_flag	Detection limit flag	"<" - Analyte not detected blank - Analyte detected

Notes:

1. First line of the file contains a field header.
2. All fields are left justified.

TABLE 2
CHEMICAL WASTE MANAGEMENT, INC.
AZUSA FACILITY
ELECTRONIC FILE SUMMARY
"BLANKS.TXT"

Cols.	Field	Description	Options
1-2	blank field		
3-13	Blank_Type	Type of QA Blank	"FX" - Field Blank ("X" - Blank Number) "TX" - Travel Blank ("X" - Blank Number)
14-54	Name	Analyte Name	
55-66	Cas_num	Chemical Abstract Number	CAS number beginning "GIS" or "CWM" are improvised entries for analytes without true CAS designations
67-78	Conc	Concentration detected	
79-89	Det_limit	Detection limit	
90-95	Units	Analyte units	
96-103	Pf_code	Preparation fraction code	"T" - Total "D" - Dissolved
104-111	Dl_Flag	Detection limit flag	"<" - Analyte not detected blank - Analyte detected
112-119	EML_Ens	Environmental Monitoring Laboratories Event Notification System Code	"YY-#####", where "YY" - Year "#####" - EML assigned laboratory sequence number

Notes:

1. First line of the file contains a field header.
2. All fields are left justified.

Printed on recycled paper

TABLE 3
CHEMICAL WASTE MANAGEMENT, INC.
AZUSA FACILITY
ELECTRONIC FILE SUMMARY
"LEVELS.TXT"

Cols.	Field	Description	Options
1-2	blank field		
3-18	Site_id	Measurement source	
19-27	Date	Date of measurement	Format: "MM/DD/YY"
28-32	Time	Time of measurement	Format: "HH:MM"
33-40	Level	Depth to groundwater	In feet
41-49	Mp_elev	Measuring point reference elevation	Feet above mean sea level
51-59	Elev	Groundwater elevation	Feet above mean sea level (Mp_elev - Level)

Notes:

1. First line of file contains a field header.
2. Level, Mp_elev, and Elev fields are right justified. All other fields are left justified.

Printed on recycled paper

ATTACHMENT 1

RUST REPORT OF GROUNDWATER MONITORING

Printed on recycled paper

RUST ENVIRONMENT & INFRASTRUCTURE

RUST Environment & Infrastructure Inc.
18401 Von Karman Avenue, Suite 550
Irvine, CA 92612
Tel. (714) 251-6400 • FAX (714) 251-6444

OCT 1994
RECEIVED
Western Region
Environmental
Mgt. Dept.
C.W.M.I.

October 25, 1994

Mr. Marc Yalom, R.G.
Hydrogeologist
Chemical Waste Management, Inc.
4227 Technology Drive
Fremont, California 94538-6337

SUBJECT: CHEMICAL WASTE MANAGEMENT, INC. - AZUSA, CALIFORNIA FACILITY - CAD 008302903. REPORT OF THIRD QUARTER 1994 GROUNDWATER MONITORING EVENT (RUST E & I PROJECT NO. 88388)

Dear Marc:

The following is a summary of the groundwater monitoring activity and results for the Third Quarter 1994 Groundwater Monitoring Event at the Chemical Waste Management, Inc. (CWMI)-Azusa Facility.

GROUNDWATER SAMPLING & ANALYSES

SAMPLE COLLECTION

Groundwater samples were collected from five monitoring wells by RUST Environment & Infrastructure (RUST E&I) personnel on August 26, 1994. Details of the sampling activities are described in Appendix A - Third Quarter 1994 Groundwater Monitoring Event Detail. The laboratory's validation for all the sample results are discussed in Appendix C - Data Quality Report Letters.

SAMPLE SHIPMENT

The groundwater samples were shipped according to chain of custody protocol, via Federal Express overnight delivery service, on August 26, 1994. Three EML AquaPak coolers (AquaPak Nos. 2027, 2072 and 2191) were shipped to WMX Technologies, Inc.'s Environmental Monitoring Laboratories (EML) in Geneva, Illinois, for laboratory analyses. The split sample was shipped to Gulf Coast Laboratories in an EML AquaPak cooler (AquaPak No. 2062). The AquaPaks were cooled with "blue ice" and sealed prior to shipment with destructive seals. The EML samples arrived intact at EML on August 27, at temperatures ranging from 1° to 5° C.

GROUNDWATER ANALYTICAL RESULTS

Groundwater samples were analyzed by EML, with the split sample analyzed by Gulf Coast Laboratories, according to EPA Method 624. Analyses for xylenes and ketones (acetone, MEK, and MIBK), compounds detected in previous CWMI-Azusa Facility soil investigations, were included in the Method 624 analyses. Certified laboratory analytical results are presented in Appendix B. Table 1 presents a summary of the detected analytes.

QUALITY CONTROL RESULTS

Duplicate and Split Samples

Primary, duplicate, and split samples (MW02, DUP, and MW02-A) were collected at well MW-02 and analyzed according to Method 624 (see Appendix B). All four of the compounds detected in MW-02's primary sample were also detected in the duplicate and split samples. The relative percent differences (RPD) for the four analytes ranged between 7% and 15% (see Table 2).

Field Blank

A Field Blank (01FB) was collected at well MW-02 and analyzed according to Method 624. No compounds were detected in the Field Blank (see Appendix B).

Travel Blank

A travel blank sample accompanied each AquaPak shipment to the laboratory. One travel blank from each AquaPak shipment (TBK-01FB from EML shipment and TBK-MW02 from Gulf Coast shipment) was analyzed by Method 624. Contamination was not detected in either of the travel blanks (see Appendix B).

GROUNDWATER LEVEL MEASUREMENTS

During the third quarter, groundwater levels were measured by RUST in CWMI-Azusa Facility wells on July 29, August 25 and September 30, 1994. Details of the measurement events are provided in Appendix A. The measurement data are summarized in Table 3, and contour maps for the three events are presented as Figures 1, 2, and 3 of this report.

The data indicate that groundwater elevations decreased in each of the months in the third quarter of 1994. The total decrease in groundwater elevation, over the three month period was approximately 9.6 feet. The groundwater flow direction varied throughout the third quarter, flowing to the southwest in July, to the west in August and to the west in September. The groundwater gradient varied from approximately 0.0012 feet/feet in July, 0.0012 feet/feet in August to 0.0011 feet/feet in September.

If you have any questions, please do not hesitate to call me at (714) 251-6423.

Sincerely,

RUST ENVIRONMENT & INFRASTRUCTURE, INC.

R. Liles Cobb
Project Manager

Susan F. Goss, R.G.
Assistant Project Manager

Attachments

REGISTERED GEOLOGIST
SUSAN F. GOSS
No. 5639
STATE OF CALIFORNIA

TABLES

TABLE 1

CHEMICAL WASTE MANAGEMENT, INC.

AZUSA FACILITY

THIRD QUARTER 1994 GROUNDWATER

MONITORING EVENT

Summary of Split Sample Results

	SAMPLE INFORMATION	PRIMARY SAMPLE	FIRST SPLIT	SECOND SPLIT	THIRD SPLIT	FOURTH SPLIT	PRECISION SUMMARY	
	SITE	MW02	MW02				RELATIVE PERCENT DIFFERENCE (RPD)	
	FIELD SAMPLE NO	MW-02	MW02					
	LAB CODE	EML	GULF					
	LAB SAMPLE NO	AK6044	AK7921					
	CASE NO	94Q03	94Q03					
	SDG NO	AQUAPAK 2027	AQUAPAK 2062				RPD MEASURED	RPD GOAL
	BATCH NO	94-13366	94-13736					
COMPOUNDS	UNITS ->	(ug/l)	(ug/l)				%	%
Carbon tetrachloride		<6	<5				---	0
Acetone		<68	<10.				---	0
Chloroform		<5	<5				---	0
Benzene		<5	<5				---	0
1,1,1-Trichloroethane		51	59				15	0
Bromomethane		<10.	<10.				---	0
Chloromethane		<13	<10.				---	0
Chloroethane		<11	<10.				---	0
Vinyl chloride		<13	<10.				---	0
Methylene chloride		<9	<5				---	0
Bromoform		<6	<5				---	0
Bromodichloromethane		<5	<5				---	0
1,1-Dichloroethane		<10.	<5				---	0
1,1-Dichloroethene		78	71				9	0
Trichlorofluoromethane		<11	<10.				---	0
1,2-Dichloropropane		<5	<5				---	0

< = Not detected at indicated reporting limit --- = Not sampled and/or analyzed

() = Concentration is less than reporting limit * = Value not calculated and/or reported

( ) = Reported at less than detection limit

TABLE 1

CHEMICAL WASTE MANAGEMENT, INC.

AZUSA FACILITY

THIRD QUARTER 1994 GROUNDWATER

MONITORING EVENT

Summary of Split Sample Results

SAMPLE INFORMATION	PRIMARY SAMPLE	FIRST SPLIT	SECOND SPLIT	THIRD SPLIT	FOURTH SPLIT	PRECISION SUMMARY	
SITE	MW02	MW02				RELATIVE PERCENT DIFFERENCE (RPD)	
FIELD SAMPLE NO	MW-02	MW02					
LAB CODE	EML	GULF					
LAB SAMPLE NO	AK6044	AK7921					
CASE NO	94Q03	94Q03					
SDG NO	AQUAPAK 2027	AQUAPAK 2062				RPD MEASURED	RPD GOAL
BATCH NO	94-13366	94-13736					
COMPOUNDS UNITS ->	(ug/l)	(ug/l)				%	%
2-Butanone	<5	<5				---	0
1,1,2-Trichloroethane	<6	<5				---	0
Trichloroethene	210	180				15	0
1,1,2,2-Tetrachloroethane	<10.	<5				---	0
o-Xylene	<10.	<5				---	0
1,2-Dichlorobenzene	<10.	<5				---	0
Ethylbenzene	<7	<5				---	0
1,4-Dichlorobenzene	<10.	<5				---	0
1,2-Dichloroethane	<5	<5				---	0
4-Methyl-2-pentanone	<19	<10.				---	0
Toluene	<5	<5				---	0
Chlorobenzene	<5	<5				---	0
2-Chloroethylvinylether	<40.	<10.				---	0
Dibromochloromethane	<5	<5				---	0
Tetrachloroethene	450	420				7	0
trans-1,2-Dichloroethene	<10.	<5				---	0

< = Not detected at indicated reporting limit

() = Concentration is less than reporting limit

--- = Not sampled and/or analyzed

* = Value not calculated and/or reported

( ) = Reported at less than detection limit

TABLE 1

CHEMICAL WASTE MANAGEMENT, INC.

AZUSA FACILITY

THIRD QUARTER 1994 GROUNDWATER

MONITORING EVENT

Summary of Split Sample Results

SAMPLE INFORMATION	PRIMARY SAMPLE	FIRST SPLIT	SECOND SPLIT	THIRD SPLIT	FOURTH SPLIT	PRECISION SUMMARY	
SITE	MW02	MW02				RELATIVE PERCENT DIFFERENCE (RPD)	
FIELD SAMPLE NO	MW-02	MW02					
LAB CODE	EML	GULF					
LAB SAMPLE NO	AK6044	AK7921					
CASE NO	94Q03	94Q03					
SDG NO	AQUAPAK 2027	AQUAPAK 2062				RPD MEASURED	RPD GOAL
BATCH NO	94-13366	94-13736					
COMPOUNDS UNITS ->	(ug/l)	(ug/l)				%	%
1,3-Dichlorobenzene	<5	<5				---	0
m+p Xylenes	<10.	<5				---	0
cis-1,3-Dichloropropene	<6	<5				---	0
trans-1,3-Dichloropropene	<6	<5				---	0

< = Not detected at indicated reporting limit

() = Concentration is less than reporting limit

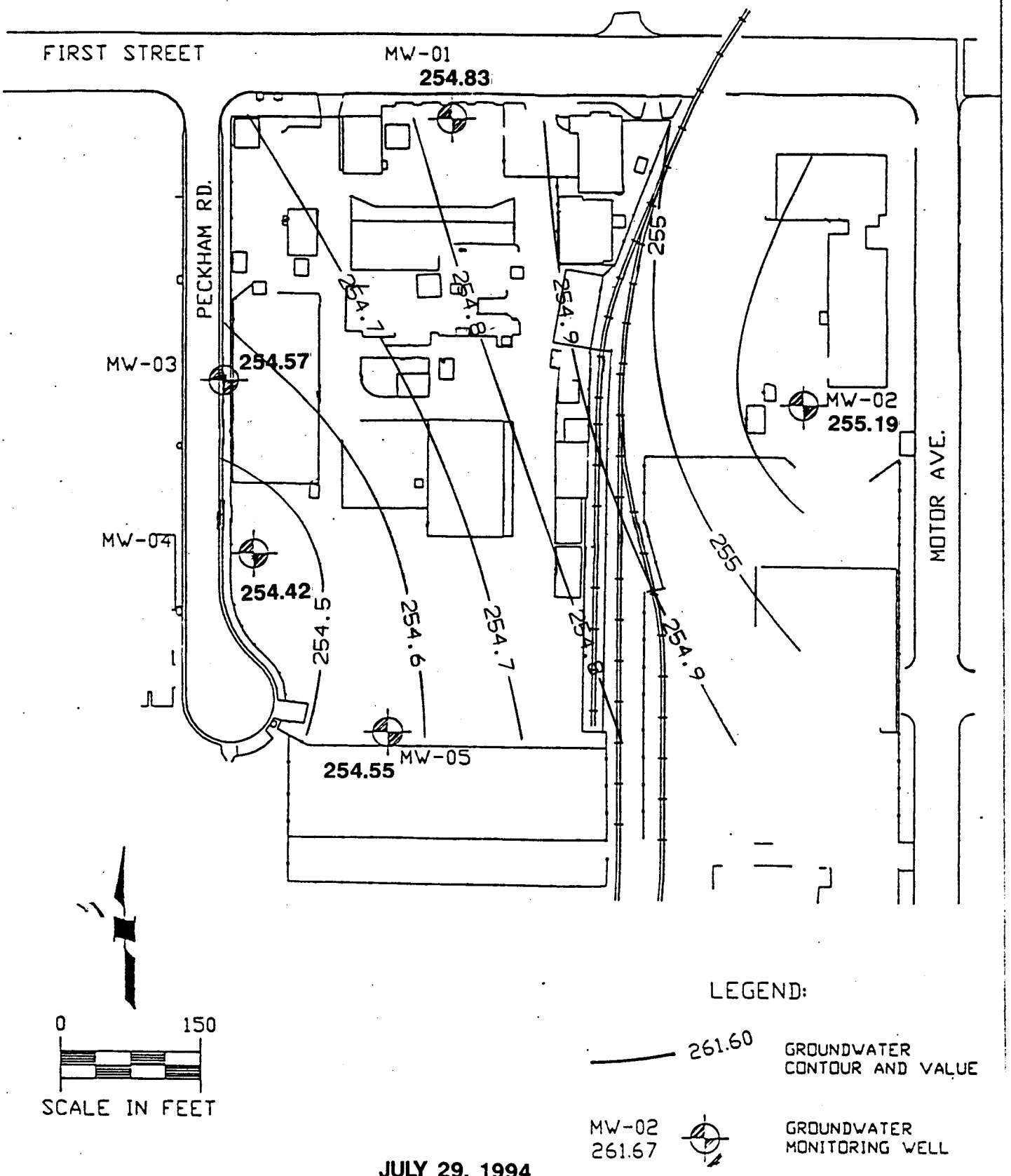
--- = Not sampled and/or analyzed

* = Value not calculated and/or reported

( ) = Reported at less than detection limit

FIGURES

Figure 1



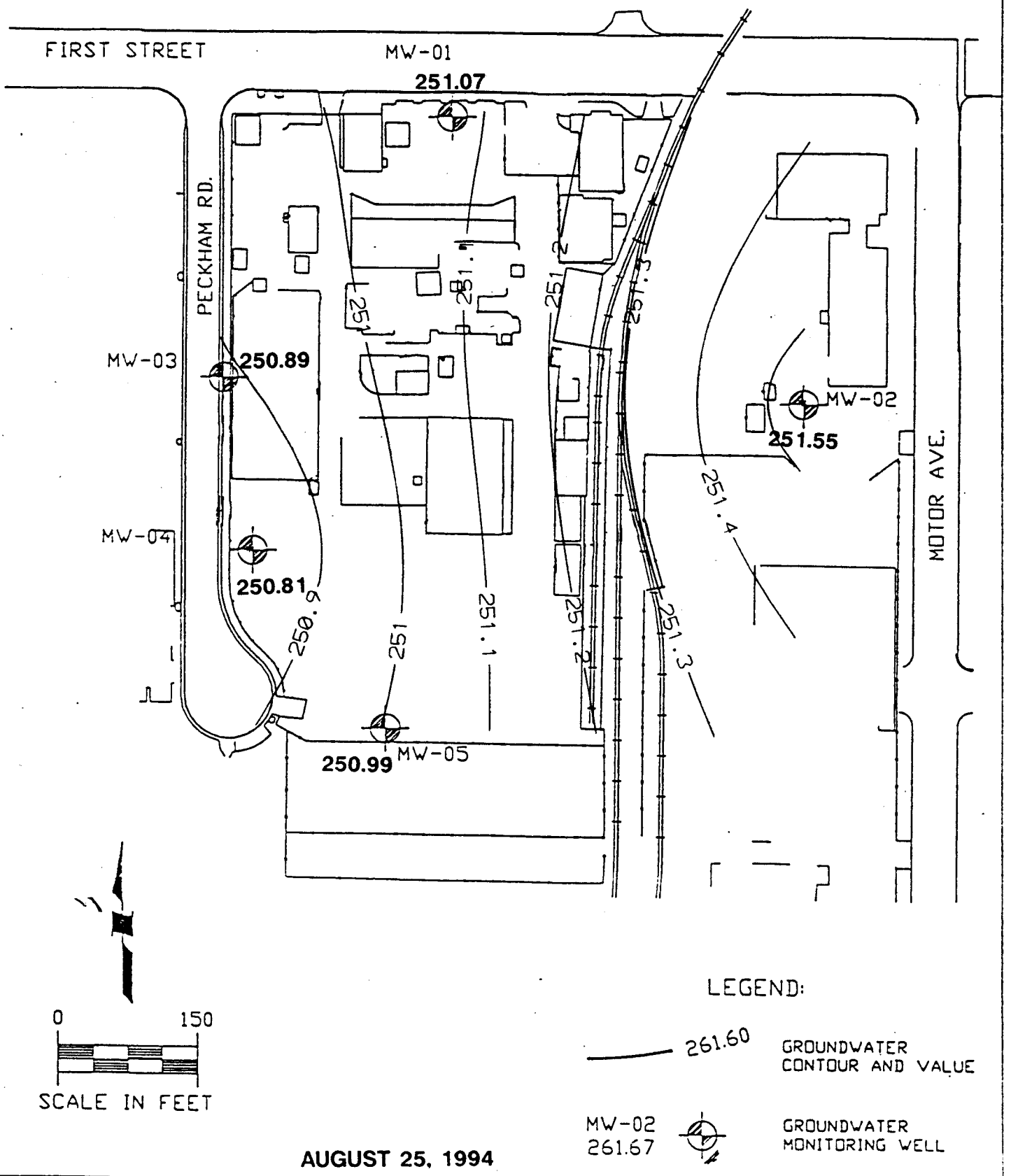
JULY 29, 1994

RUST ENVIRONMENT & INFRASTRUCTURE

CHEMICAL WASTE MANAGEMENT, INC.
OSCO AZUSA FACILITY

GROUNDWATER ELEVATION CONTOURS

Figure 2



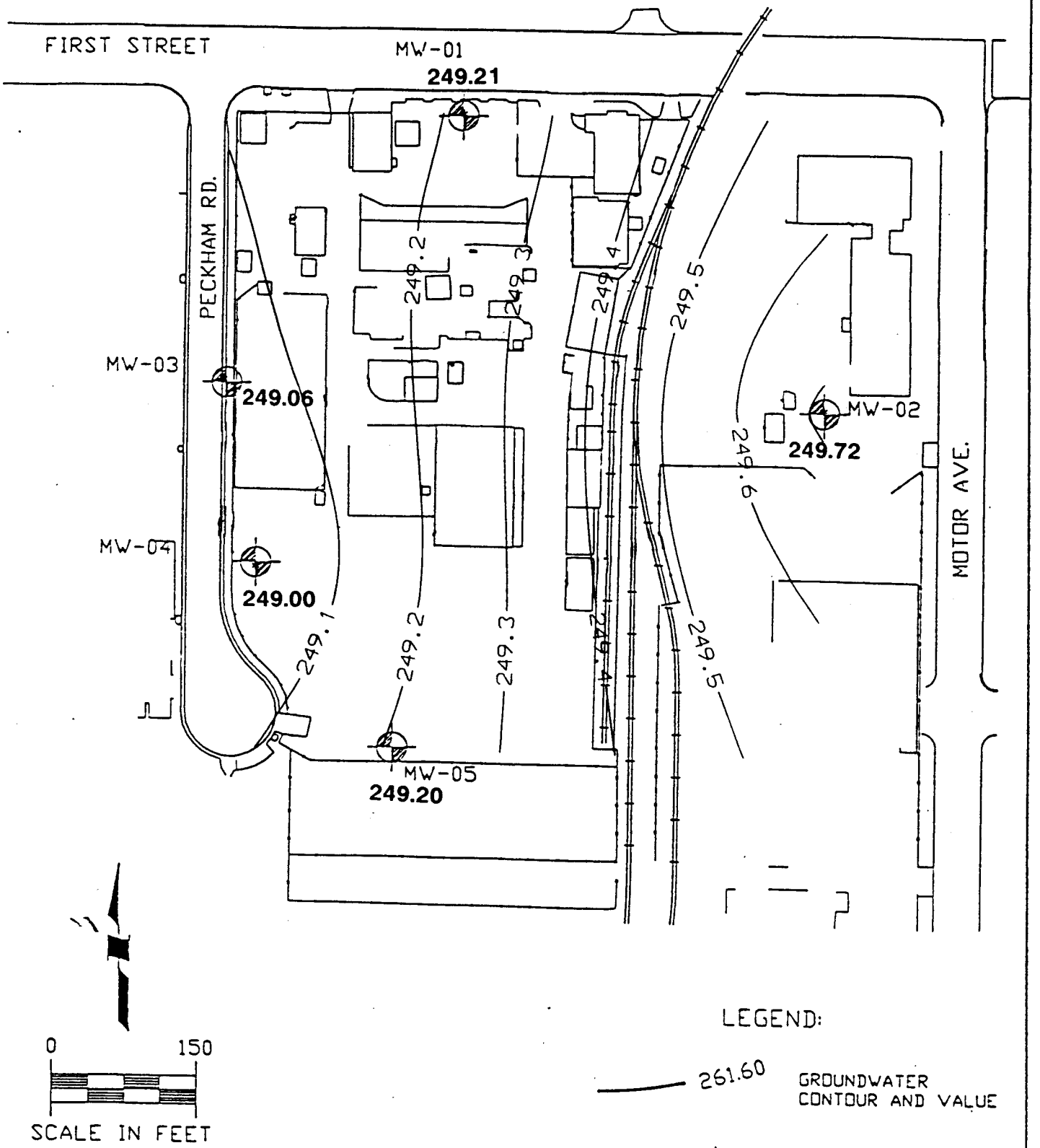
AUGUST 25, 1994

RUST ENVIRONMENT & INFRASTRUCTURE

CHEMICAL WASTE MANAGEMENT, INC.
OSCO AZUSA FACILITY

GROUNDWATER ELEVATION CONTOURS

Figure 3



LEGEND:

261.60 GROUNDWATER CONTOUR AND VALUE

MW-02 261.67 GROUNDWATER MONITORING WELL

SEPTEMBER 30, 1994

RUST ENVIRONMENT & INFRASTRUCTURE

CHEMICAL WASTE MANAGEMENT, INC.
OSCO AZUSA FACILITY

GROUNDWATER ELEVATION CONTOURS

APPENDIX A

Third Quarter Groundwater Monitoring Event Detail

GROUNDWATER SAMPLING

AquaPak Inspection

Four small EML AquaPaks (numbers 2027, 2072, 2062 and 2191) were received at the RUST E&I, Irvine office approximately one week prior to the planned sampling date, August 26, 1994. Contained in the WMX-EML provided AquaPaks were pre-labeled, pre-cleaned 40 ml glass sample bottles. Each bottle label was pre-printed with an identification number, testing method, target analyte(s), type of preservative, filtration requirements and a unique bar-code which the laboratory uses to read this information. Mr. Matthew Katen, R. G. , a WMX-EML-certified specialist, inspected the AquaPak's contents on August 25 and found the sample containers to be complete and labeled accurately. The WMX-EML bottle set numbers were as follows:

MW01	MW02	MW02A	DUP	MW03	MW04	MW05	01FB
AK6047	AK6044	AK7921	AK6043	AK6048	AK6046	AK6045	AK6042

Groundwater Sampling

On August 26, 1994, RUST E & I personnel performed groundwater sampling at all five of the CWMI-Azusa RCRA facility groundwater monitoring wells (MW01 through MW05). Duplicate samples, split samples, and Field Blanks were collected at MW-02. The task was performed on-site by Mr. Katen with the assistance of Mr. Mark Jackson, a RUST E & I technician. All groundwater sampling work was performed according to WMX Groundwater Sampling Manual protocols and the CWMI-Azusa Site Specific Groundwater Monitoring Plan. The sampling times are documented on the enclosed WMX-EML Field Information Forms.

Weather conditions on August 26 were clear and sunny with warm air temperatures and a slight easterly breeze, approximately 0 to 5 MPH. No difficulties were encountered during the collection of the groundwater samples.

The sampling event was observed by DTSC personnel, Andy Bajwa and Craig Christmann.

All samples were immediately preserved, and placed in chilled AquaPaks for delivery to WMX Technologies, Inc.'s Environmental Monitoring laboratories in Geneva, Illinois, with the exception of the split sample which was sent to Gulf Coast Labs in Illinois. The samples were shipped according to chain of custody protocol via Federal Express overnight delivery service. The chain of custody documents contained instructions for the laboratory to perform EML analysis VOMSBAO322 (EPA Method 624) on each sample.

Prior to sampling, each well was purged of three "well-volumes" of groundwater, making sure

that pH, specific conductivity, and temperature had stabilized by the end of the purging activities. These purge-water parameters were measured using a Hydac pH, conductivity and temperature meter. The Hydac instrument was calibrated prior to the start of the job, and the calibration was checked at least once every 4 hours and again at the end of the day. The conductivity meter was "zeroed and spanned" as part of its initial calibration. In addition, the sample pump tubes were purged of approximately 3 gallons of groundwater just before the sample bottles were filled.

All of the purged waters were placed in CWMI-Azusa provided 55-gallon drums and properly labeled for cross-reference with the analytical data. A total of 18 drums were used, and disposal arrangements for the containerized waters were made by CWMI-Azusa.

The field notes have been typed and put in tabular form, and are provided on the following pages. Included in them are documentation of field meter calibrations, purge water field readings, actual purge volumes, samples times and number of drums of waste generated at each sample point.

GROUNDWATER LEVEL MEASUREMENTS

On July 29, August 25 and September 30, 1994, RUST E&I personnel measured depth-to-groundwater in all five of the CWMI-Azusa RCRA facility groundwater monitoring wells (MW01 through MW05). No problems or difficulties were encountered while taking the measurements.

Depth-to-groundwater was measured at each sample point (monitoring well) using an electronic water-level probe attached to a 300-foot fiberglass measuring tape. The measuring tape is graduated in 0.01-foot increments, and the "zero-foot" calibration point is at the water detection sensor, which allows depth-to-water to be measured directly. The probe and measuring tape were decontaminated by washing them in a bucket of dilute, non-phosphate detergent solution, followed by a double-rinse with tap water and a final rinse with distilled water prior to being lowered in each well's sounding tube. This procedure meets the CRWQCB requirement for instrument decontamination.

The groundwater surface elevation was calculated for each sample point by subtracting the depth-to-groundwater value from the known reference point (top of sounding tube nipple) elevation.

TABLE 1 PRE-SAMPLING PURGE VOLUME CALCULATIONS					
SAMPLE POINT	TOTAL CASING DEPTH (ft.) (a)	DEPTH-TO-GROUNDWATER (ft.) (b)	VOLUME FACTOR (gal./ft.) (c)	ONE WELL VOLUMES [1] (gallons) (d)	THREE WELL VOLUMES [2] (gallons)
MW01	335	278.38	1.02	57.75	173.3
MW02	328	274.24	1.02	54.83	164.5
MW03	319.5	268.15	1.02	52.37	157.1
MW04	318	269.80	1.02	49.16	147.5
MW05	330	268.83	1.02	62.39	187.2

[1] ONE "WELL VOLUME" (d) = (a - b) x (c)

[2] THREE "WELL VOLUMES" = 3 X (d)

TABLE 2 PURGE WATER QUANTITIES				
SAMPLE POINT	THREE WELL VOLUMES (gallons)	ACTUAL PURGE VOLUME (gallons)	SAMPLE TUBING PURGE VOLUME (gallons)	NO. OF DRUMS OF WASTE GENERATED
MW01	173.3	174	3	4
MW02	164.5	168	3	4
MW03	157.1	158	3	3
MW04	147.5	151	3	3
MW05	187.2	188	3	4

TABLE 3
CHEMICAL WASTE MANAGEMENT, INC.
CWMI-AZUSA FACILITY - AZUSA, CALIFORNIA
SUMMARY OF GROUNDWATER ELEVATION MEASUREMENTS
THIRD QUARTER 1994

WELL	DATE	MP ELEV.	TIME	DEPTH TO WATER feet	WATER ELEV. feet (msl)
MW-01	07/29/94	529.33	09:00	274.50	254.83
MW-01	08/25/94	529.33	18:15	278.24	251.09
MW-01	09/30/94	529.33	07:40	280.12	249.21
MW-02	07/29/94	525.65	08:45	270.46	255.19
MW-02	08/25/94	525.65	17:22	274.10	251.55
MW-02	09/30/94	525.65	08:45	275.93	249.72
MW-03	07/29/94	519.05	10:51	264.48	254.57
MW-03	08/25/94	519.05	17:35	268.15	250.90
MW-03	09/30/94	519.05	08:25	269.99	249.06
MW-04	07/29/94	520.48	09:15	266.06	254.42
MW-04	08/25/94	520.48	18:15	269.67	250.81
MW-04	09/30/94	520.48	08:01	271.48	249.00
MW-05	07/29/94	519.67	09:30	265.12	254.55
MW-05	08/25/94	519.67	18:25	268.68	250.99
MW-05	09/30/94	519.67	08:14	270.47	249.20

TABLE 3a FIELD MEASUREMENTS OF PURGED WATER - MW01 August 26, 1994					
INTERVAL	VOLUME (gallons)	pH	SPECIFIC CONDUCTIVITY	TEMP. (°C)	TIME
START	1	6.90	450	26.5	10:07
1/2	87	7.10	543	22.7	10:16
3/4	130	7.20	528	20.7	10:21
END	174	7.36	524	20.4	10:27

TABLE 3b FIELD MEASUREMENTS OF PURGED WATER - MW02 August 26, 1994					
INTERVAL	VOLUME (gallons)	pH	SPECIFIC CONDUCTIVITY	TEMP. (°C)	TIME
START	1	7.74	557	23.3	14:48
1/2	83	7.76	538	19.7	14:58
3/4	124	7.59	545	19.8	15:02
END	168	7.43	542	19.4	15:06

TABLE 3c FIELD MEASUREMENTS OF PURGED WATER - MW03 August 26, 1994					
INTERVAL	VOLUME (gallons)	pH	SPECIFIC CONDUCTIVITY	TEMP. (°C)	TIME
START	1	6.23	642	22.8	08:18
1/2	78	6.81	596	19.3	08:25
3/4	118	6.85	596	19.6	08:32
END	158	6.90	604	20.0	08:37

TABLE 3d FIELD MEASUREMENTS OF PURGED WATER - MW04 August 26, 1994					
INTERVAL	VOLUME (gallons)	pH	SPECIFIC CONDUCTIVITY	TEMP. (°C)	TIME
START	1.5	8.22	461	27.1	11:35
1/2	75	7.90	502	19.9	11:43
3/4	113	7.85	489	19.5	11:49
END	151	7.82	486	19.5	11:54

TABLE 3e FIELD MEASUREMENTS OF PURGED WATER - MW05 August 26, 1994					
INTERVAL	VOLUME (gallons)	pH	SPECIFIC CONDUCTIVITY	TEMP. (°C)	TIME
START	1	7.77	485	22.0	12:31
1/2	94	7.70	504	19.7	12:41
3/4	141	7.66	503	19.5	12:46
END	188	7.68	502	19.6	12:51

TABLE 4a FIELD INSTRUMENT CALIBRATION RECORD
August 26, 1994

		pH RESULTS							SPEC. COND.		
TIME	METER	TEMP (°C)	READ 7	CAL 7	READ 10	CAL 10	READ 4	CAL 4	STD (mmho)	READ @ TEMP 1 (mmho)	READ @ TEMP 2 (mmho)
08:02	HYDAC No. 9402	19.6	7.30	7.02	9.75	9.91	4.02		1000	1060 @ 25°C	1050 @ 20°C
12:00	HYDAC No. 9402	25.6	6.90	6.90	9.80	9.90	4.00	4.00	1000	965 @ 25°C	
16:30	HYDAC No. 9402	27.4	6.90		9.85		4.00		1000	1030 @ 25°C	

TABLE 5 SAMPLE COLLECTION ORDER
August 26, 1994

ORDER	MW-03	MW-01	MW-04	MW-05	MW-02, MW-02 SPLIT & DUPLICATE	MW-05
1	AK6048A1	AK6047A1	AK6046A1	AK6045A1	AK6044A1	AK6045A1
2	AK6048A2	AK6047A2	AK6046A2	AK6045A2	AK7921A1	AK6045A2
3	AK6048A3	AK6047A3	AK6046A3	AK6045A3	AK6043A1	AK6045A3
4	AK6048A4	AK6047A4	AK6046A4	AK6045A4	AK6044A2	AK6045A4
5					AK7921A2	
6					AK6043A2	
7					AK6044A3	
8					AK7921A3	
9					AK6043A3	
10					AK6044A4	
11					AK7921A4	
12					AK6043A4	

APPENDIX B

Laboratory Analytical Results
and
Chain of Custody Records

WMX Environmental Monitoring Laboratories, Inc.

Analytical Report Transmittal Memorandum

OCT 1994
RECEIVED
Western Region
Environmental
Mgt. Dept.
C.W.M.I.

Date: October 13, 1994

To: Client(s) - see below

From: Diana Strode

Subject: CWMI-AZUSA 94-13366

Please find enclosed the **regenerated** Client Report for the event at CWMI-AZUSA.

We have tried to provide a report that is complete and of known and documented quality. Please take a moment to review the enclosed report to insure it meets your expectations.

If you have any questions, don't hesitate to call Joe Rentz at (708)208-3100.

Report Distribution:

Name	Report Type
Marc Yalom*	ALL

* *Program Manager*

RUST ENVIRONMENT & INFRASTRUCTURE

SEP 1994
RECEIVED
Western Region
Environmental
Mgt. Dept.
C.W.M.I.

MEMORANDUM

TO: Joe Rentz, EML

FROM: Matt Katen, RUST E&I MK

COPIES: Debra Paluch, EML
Marc Yalom, CWMI
File #94-13366, EML

DATE: September 6, 1994

SUBJECT: **Entries missing from Chain of Custody (COC) and Field Information Forms (FIF) for 3rd Quarter Sampling Event at CWMI-Azusa (Site 562)**

A couple of entries were inadvertently omitted from one of the Chain of Custody (COC) documents, and a signature was mistakenly left off of one of the Field Information Forms (FIF) during the recent sampling event at CWMI-Azusa.

The AquaPak seal time was not recorded on the COC for sample point MW02, however, the seal time for AquaPak #2027, which contained the samples from MW02, MW04 and MW05 was 16:15 on August 26, 1994 as indicated on the COC documents for sample points MW04 and MW05. Additionally, the COC documents from MW04 and MW05 indicate that AquaPak #2027 was sealed with destructive seal #77246 and that it was intact at the time of sealing. As indicated by EML log-in personnel, the seal was still intact when EML received the AquaPak.

As for the missing signature on MW01's the FIF for MW01, I do certify that sampling procedures were in accordance with EPA, State and WMI protocols during the sampling of MW01. I was the RUST E&I sampling specialist that sampled MW01 on August 26, 1994, and I was the only person to have custody of the sample until the AquaPak was opened at EML's log-in facility, as indicated on the COC for MW01.

I hope that this information now completes the sampling documentation for the Third Quarter Sampling Event. (ENS#94-13366) at CWMI-Azusa. If you should have any questions regarding this information, please call me at (714) 251-6420.

MK:ej

88388/chncust

Enclosed are the analytical results for samples received from your facility. The results in the Client Report are for a single ENS (Event Notification System) number only. The sampling event at your facility may include multiple ENS numbers. A separate Client Report will be generated for each one.

It is the goal of WMX Environmental Monitoring Laboratories Inc. to provide analytical data in a timely fashion, formatted in a way that our clients will find most useful.

If you have any questions concerning the form or content of this report, please contact the WMX EML Customer Operations Department:

Main Number (708) 208-3100
FAX Number (708) 208-1175

Note: Two designations may appear in the results column of your Client Report: NA or ND.

The designation NA (for "Not Analyzed") is used to identify analytes which were requested in the monitoring program, but for which no suitable testing methodology exists. NA may also indicate a dry well, broken sample bottle, insufficient sample volume, or other condition which precludes analysis for a sample.

The designation ND (for "Not Detected") is used to indicate that the analyte of interest was not found at or above the concentration listed under the EMLRL (EML Reporting Limit) heading.

Unless otherwise indicated, all analytes meet the requirements of holding time as specified in the method.

Deborah C. Hockman, Ph.D.

Deborah C. Hockman, Ph.D.
President
WMX Environmental Monitoring Laboratories, Inc.

DATA QUALIFIER COMMENT CODE DEFINITIONS

AR: Acid surrogate recoveries did not meet the acceptance criteria of the method. Oxidative degradation due to sample matrix is suggested.

BB: Broken bottle.

BL: The method blank concentrations associated with this analyte did not meet the acceptance criteria of the method.

CX: The concentration of this compound exceeded the calibration used for this analysis. The concentration reported is estimated.

CU: Co-elution with another compound interferes with the quantitation of this compound. The concentration reported is estimated.

DL: The sample was diluted during analysis. Reporting limits have been adjusted where necessary.

DP: Aliquots or spiked aliquots of this sample were analyzed in duplicate. The relative percent difference between the two results did not meet the acceptance criteria of the method.

DW: Dry Well.

HS: Headspace in sample exceeded laboratory control limit. The reported results of the analysis may be less than actual value.

IS: The internal standard recoveries associated with this analysis did not meet the acceptance criteria of the method.

IV: The bottle did not contain enough sample to perform the analysis.

MP: 3-methylphenol and 4-methylphenol co-elute under the analytical conditions of the method, and cannot be differentiated solely on the basis of their mass spectra. The concentrations reported may be either or both isomers.

MX: This sample was used as a matrix spike. The percent recovery did not meet the acceptance criteria of the method. The analysis of a quality control standard showed the analytical system was in control. The result reported may therefore be affected by matrix interferences.

NN: N-nitrosodiphenylamine cannot be distinguished from diphenylamine using gas chromatography. The concentrations reported may be either or both compounds.

NQ: No standard qualifier code is in use for this qualification. See the associated comment.

NS: There was not enough sample to repeat this analysis.

P: (Wisconsin only) Concentration found between the method detection limit and the reporting limit indicates the presence of a compound.

PL: This result may be a product of contamination from phthalate plasticizers, which are a common lab contaminant.

PX: This sample required preservation in the field to a pH of less than 2. The pH was checked before analysis and did not have a pH of less than 2.

PY: This sample required preservation in the field to a pH of 4 to 5. The pH was checked before analysis and did not have a pH of 4 to 5.

PZ: This sample required preservation in the field to a pH of 12 or greater. The pH was checked before analysis and did not have a pH of 12 or greater.

QX: This sample was used as a matrix spike. The percent recovery did not meet the acceptance criteria of the method. The analysis of a quality control standard showed the analytical system was out-of-control. The analytical result for this parameter in the unspiked sample is suspect and may not be reported for regulatory compliance purposes.

SB: The analysis of this sample was performed by an approved subcontract laboratory.

ST: This compound is not stable in acidic water.

SU: The analysis of the surrogate with this sample did not meet the acceptance criteria of the method.

TX: The analysis for this parameter was conducted after the holding time specified in the method.

UN: This compound is not stable under the conditions of the analysis.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: 01FB
Sample Type: WELL
Sample Number: AK6042

ENS: 94-13366
MP: 562941
REV: 00

Sampled: 26-AUG-1994
Received: 27-AUG-1994
Reported: 13-OCT-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	NA		FT		FDWDTWTC01
GROUNDWATER ELEV.	NA		FT MSL		FDWGWELWDT
PH FIELD	NA		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	NA		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEGREES CELSIUS	NA		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	NA		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAA0322
1,1,1-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHENE	ND	5	UG/L		VOMSAA0322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAA0322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
2-BUTANONE	ND	50.	UG/L		VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	VOMSAA0322
4-METHYL-2-PENTANONE	ND	10.	UG/L		VOMSAA0322
ACETONE	ND	34	UG/L		VOMSAA0322
BENZENE	ND	5	UG/L		VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAA0322
BROMOFORM	ND	5	UG/L		VOMSAA0322
BROMOMETHANE	ND	10.	UG/L		VOMSAA0322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAA0322
CHLOROBENZENE	ND	5	UG/L		VOMSAA0322
CHLOROETHANE	ND	10.	UG/L		VOMSAA0322
CHLOROFORM	ND	5	UG/L		VOMSAA0322
CHLOROMETHANE	ND	10.	UG/L		VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAA0322
ETHYLBENZENE	ND	5	UG/L		VOMSAA0322
METHYLENE CHLORIDE	ND	5	UG/L		VOMSAA0322
O-XYLENE	ND	10.	UG/L		VOMSAA0322
TETRACHLOROETHENE	ND	5	UG/L		VOMSAA0322
TOLUENE	ND	5	UG/L		VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
TRICHLOROETHENE	ND	5	UG/L		VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAA0322
VINYL CHLORIDE	ND	10.	UG/L		VOMSAA0322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: DUP
Sample Type: WELL
Sample Number: AK6043

ENS: 94-13366
MP: 562941
REV: 00

Sampled: 26-AUG-1994
Received: 27-AUG-1994
Reported: 13-OCT-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	274.24		FT		FDWDTWTC01
GROUNDWATER ELEV.	252.41		FT MSL		FDWGWELWDT
PH FIELD	7.43		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	542		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEGREES CELSIUS	19.4		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	328.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAAO322
1,1,1-TRICHLOROETHANE	46	6	UG/L		VOMSAAO322
1,1,2,2-TETRACHLOROETHANE	ND	10.	UG/L		VOMSAAO322
1,1,2-TRICHLOROETHANE	ND	6	UG/L		VOMSAAO322
1,1-DICHLOROETHANE	ND	10.	UG/L		VOMSAAO322
1,1-DICHLOROETHENE	72	10.	UG/L		VOMSAAO322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAAO322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
2-BUTANONE	ND	100	UG/L		VOMSAAO322
2-CHLOROETHYLVINYL ETHER	ND	40.	UG/L	ST	VOMSAAO322
4-METHYL-2-PENTANONE	ND	19	UG/L		VOMSAAO322
ACETONE	ND	68	UG/L		VOMSAAO322
BENZENE	ND	5	UG/L		VOMSAAO322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAAO322
BROMOFORM	ND	6	UG/L		VOMSAAO322
BROMOMETHANE	ND	10.	UG/L		VOMSAAO322
CARBON TETRACHLORIDE	ND	6	UG/L		VOMSAAO322
CHLOROBENZENE	ND	5	UG/L		VOMSAAO322
CHLOROETHANE	ND	11	UG/L		VOMSAAO322
CHLOROFORM	ND	5	UG/L		VOMSAAO322
CHLOROMETHANE	ND	13	UG/L		VOMSAAO322
CIS-1,3-DICHLOROPROPENE	ND	6	UG/L		VOMSAAO322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAAO322
ETHYLBENZENE	ND	7	UG/L		VOMSAAO322
METHYLENE CHLORIDE	ND	9	UG/L		VOMSAAO322
O-XYLENE	ND	10.	UG/L		VOMSAAO322
TETRACHLOROETHENE	390	6	UG/L		VOMSAAO322
TOLUENE	ND	5	UG/L		VOMSAAO322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAAO322
TRANS-1,3-DICHLOROPROPENE	ND	6	UG/L		VOMSAAO322
TRICHLOROETHENE	190	5	UG/L		VOMSAAO322
TRICHLOROFLUOROMETHANE	ND	11	UG/L		VOMSAAO322
VINYL CHLORIDE	ND	13	UG/L		VOMSAAO322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
VOMSAAO322	Dilution factor 2.0 applied.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW01
Sample Type: WELL
Sample Number: AK6047

ENS: 94-13366
MP: 562941
REV: 00

Sampled: 26-AUG-1994
Received: 27-AUG-1994
Reported: 13-OCT-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	278.38		FT		FDWDTWTC01
GROUNDWATER ELEV.	250.93		FT MSL		FDWGWELWDT
PH FIELD	7.36		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	524		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEGREES CELSIUS	20.4		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	335.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAAO322
1,1,1-TRICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1-DICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1-DICHLOROETHENE	6	5	UG/L		VOMSAAO322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAAO322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
2-BUTANONE	ND	50.	UG/L		VOMSAAO322
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	VOMSAAO322
4-METHYL-2-PENTANONE	ND	10.	UG/L		VOMSAAO322
ACETONE	ND	34	UG/L		VOMSAAO322
BENZENE	ND	5	UG/L		VOMSAAO322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAAO322
BROMOFORM	ND	5	UG/L		VOMSAAO322
BROMOMETHANE	ND	10.	UG/L		VOMSAAO322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAAO322
CHLOROBENZENE	ND	5	UG/L		VOMSAAO322
CHLOROETHANE	ND	10.	UG/L		VOMSAAO322
CHLOROFORM	ND	5	UG/L		VOMSAAO322
CHLOROMETHANE	ND	10.	UG/L		VOMSAAO322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAAO322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAAO322
ETHYLBENZENE	ND	5	UG/L		VOMSAAO322
METHYLENE CHLORIDE	ND	5	UG/L		VOMSAAO322
O-XYLENE	ND	10.	UG/L		VOMSAAO322
TETRACHLOROETHENE	65	5	UG/L		VOMSAAO322
TOLUENE	ND	5	UG/L		VOMSAAO322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAAO322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAAO322
TRICHLOROETHENE	18	5	UG/L		VOMSAAO322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAAO322
VINYL CHLORIDE	ND	10.	UG/L		VOMSAAO322

NA = Not Analyzed **ND = Not Detected** **TBK = Trip Blank**

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW02
Sample Type: WELL
Sample Number: AK6044

ENS: 94-13366
MP: 562941
REV: 00

Sampled: 26-AUG-1994
Received: 27-AUG-1994
Reported: 13-OCT-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	274.24		FT		FDWDTWTC01
GROUNDWATER ELEV.	251.41		FT MSL		FDWGWELWDT
PH FIELD	7.43		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	543		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEGREES CELSIUS	19.4		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	328.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAAO322
1,1,1-TRICHLOROETHANE	51	6	UG/L		VOMSAAO322
1,1,2,2-TETRACHLOROETHANE	ND	10.	UG/L		VOMSAAO322
1,1,2-TRICHLOROETHANE	ND	6	UG/L		VOMSAAO322
1,1-DICHLOROETHANE	ND	10.	UG/L		VOMSAAO322
1,1-DICHLOROETHENE	78	10.	UG/L		VOMSAAO322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAAO322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
2-BUTANONE	ND	100	UG/L		VOMSAAO322
2-CHLOROETHYLVINYL ETHER	ND	40.	UG/L	ST	VOMSAAO322
4-METHYL-2-PENTANONE	ND	19	UG/L		VOMSAAO322
ACETONE	ND	68	UG/L		VOMSAAO322
BENZENE	ND	5	UG/L		VOMSAAO322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAAO322
BROMOFORM	ND	6	UG/L		VOMSAAO322
BROMOMETHANE	ND	10.	UG/L		VOMSAAO322
CARBON TETRACHLORIDE	ND	6	UG/L		VOMSAAO322
CHLOROBENZENE	ND	5	UG/L		VOMSAAO322
CHLOROETHANE	ND	11	UG/L		VOMSAAO322
CHLOROFORM	ND	5	UG/L		VOMSAAO322
CHLOROMETHANE	ND	13	UG/L		VOMSAAO322
CIS-1,3-DICHLOROPROPENE	ND	6	UG/L		VOMSAAO322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAAO322
ETHYLBENZENE	ND	7	UG/L		VOMSAAO322
METHYLENE CHLORIDE	ND	9	UG/L		VOMSAAO322
O-XYLENE	ND	10.	UG/L		VOMSAAO322
TETRACHLOROETHENE	450	6	UG/L		VOMSAAO322
TOLUENE	ND	5	UG/L		VOMSAAO322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAAO322
TRANS-1,3-DICHLOROPROPENE	ND	6	UG/L		VOMSAAO322
TRICHLOROETHENE	210	5	UG/L		VOMSAAO322
TRICHLOROFLUOROMETHANE	ND	11	UG/L		VOMSAAO322
VINYL CHLORIDE	ND	13	UG/L		VOMSAAO322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
VOMSAAO322	Dilution factor 2.0 applied.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW03
Sample Type: WELL
Sample Number: AK6048

ENS: 94-13366
MP: 562941
REV: 00

Sampled: 26-AUG-1994
Received: 27-AUG-1994
Reported: 13-OCT-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	268.15		FT		FDWDTWTC01
GROUNDWATER ELEV.	250.89		FT MSL		FDWGWELWDT
PH FIELD	6.90		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	604		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEGREES CELSIUS	20.0		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	319.50		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAAO322
1,1,1-TRICHLOROETHANE	8	5	UG/L		VOMSAAO322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1-DICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,1-DICHLOROETHENE	14	5	UG/L		VOMSAAO322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAAO322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAAO322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
2-BUTANONE	ND	50.	UG/L		VOMSAAO322
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	VOMSAAO322
4-METHYL-2-PENTANONE	ND	10.	UG/L		VOMSAAO322
ACETONE	ND	34	UG/L		VOMSAAO322
BENZENE	ND	5	UG/L		VOMSAAO322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAAO322
BROMOFORM	ND	5	UG/L		VOMSAAO322
BROMOMETHANE	ND	10.	UG/L		VOMSAAO322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAAO322
CHLOROBENZENE	ND	5	UG/L		VOMSAAO322
CHLOROETHANE	ND	10.	UG/L		VOMSAAO322
CHLOROFORM	ND	5	UG/L		VOMSAAO322
CHLOROMETHANE	ND	10.	UG/L		VOMSAAO322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAAO322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAAO322
ETHYLBENZENE	ND	5	UG/L		VOMSAAO322
METHYLENE CHLORIDE	ND	5	UG/L		VOMSAAO322
O-XYLENE	ND	10.	UG/L		VOMSAAO322
TETRACHLOROETHENE	62	5	UG/L		VOMSAAO322
TOLUENE	ND	5	UG/L		VOMSAAO322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAAO322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAAO322
TRICHLOROETHENE	35	5	UG/L		VOMSAAO322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAAO322
VINYL CHLORIDE	ND	10.	UG/L		VOMSAAO322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW04
Sample Type: WELL
Sample Number: AK6046

ENS: 94-13366
MP: 562941
REV: 00

Sampled: 26-AUG-1994
Received: 27-AUG-1994
Reported: 13-OCT-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	269.80		FT		FDWDTWTC01
GROUNDWATER ELEV.	250.68		FT MSL		FDWGWELWDT
PH FIELD	7.82		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	486		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEGREES CELSIUS	19.5		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	318.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAA0322
1,1,1-TRICHLOROETHANE	29	5	UG/L		VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHENE	46	5	UG/L		VOMSAA0322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,2-DICHLOROETHANE	7	5	UG/L		VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAA0322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
2-BUTANONE	ND	50.	UG/L		VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	VOMSAA0322
4-METHYL-2-PENTANONE	ND	10.	UG/L		VOMSAA0322
ACETONE	ND	34	UG/L		VOMSAA0322
BENZENE	ND	5	UG/L		VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAA0322
BROMOFORM	ND	5	UG/L		VOMSAA0322
BROMOMETHANE	ND	10.	UG/L		VOMSAA0322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAA0322
CHLOROBENZENE	ND	5	UG/L		VOMSAA0322
CHLOROETHANE	ND	10.	UG/L		VOMSAA0322
CHLOROFORM	ND	5	UG/L		VOMSAA0322
CHLOROMETHANE	ND	10.	UG/L		VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAA0322
ETHYLBENZENE	ND	5	UG/L		VOMSAA0322
METHYLENE CHLORIDE	ND	5	UG/L		VOMSAA0322
O-XYLENE	ND	10.	UG/L		VOMSAA0322
TETRACHLOROETHENE	250	5	UG/L		VOMSAA0322
TOLUENE	ND	5	UG/L		VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
TRICHLOROETHENE	110	5	UG/L		VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAA0322
VINYL CHLORIDE	ND	10.	UG/L		VOMSAA0322

NA = Not Analyzed **ND** = Not Detected **TBK** = Trip Blank

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW05
Sample Type: WELL
Sample Number: AK6045

ENS: 94-13366
MP: 562941
REV: 00

Sampled: 26-AUG-1994
Received: 27-AUG-1994
Reported: 13-OCT-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	268.83		FT		FDWDTWTC01
GROUNDWATER ELEV.	251.34		FT MSL		FDWGWELWDT
PH FIELD	7.68		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	502		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEGREES CELSIUS	19.6		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	330.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAAO322
1,1,1-TRICHLOROETHANE	22	6	UG/L		VOMSAAO322
1,1,2,2-TETRACHLOROETHANE	ND	10.	UG/L		VOMSAAO322
1,1,2-TRICHLOROETHANE	ND	6	UG/L		VOMSAAO322
1,1-DICHLOROETHANE	ND	10.	UG/L		VOMSAAO322
1,1-DICHLOROETHENE	28	10.	UG/L		VOMSAAO322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,2-DICHLOROETHANE	6	5	UG/L		VOMSAAO322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAAO322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAAO322
2-BUTANONE	ND	100	UG/L		VOMSAAO322
2-CHLOROETHYLVINYL ETHER	ND	40.	UG/L	ST	VOMSAAO322
4-METHYL-2-PENTANONE	ND	19	UG/L		VOMSAAO322
ACETONE	ND	68	UG/L		VOMSAAO322
BENZENE	ND	5	UG/L		VOMSAAO322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAAO322
BROMOFORM	ND	6	UG/L		VOMSAAO322
BROMOMETHANE	ND	10.	UG/L		VOMSAAO322
CARBON TETRACHLORIDE	ND	6	UG/L		VOMSAAO322
CHLOROBENZENE	ND	5	UG/L		VOMSAAO322
CHLOROETHANE	ND	11	UG/L		VOMSAAO322
CHLOROFORM	ND	5	UG/L		VOMSAAO322
CHLOROMETHANE	ND	13	UG/L		VOMSAAO322
CIS-1,3-DICHLOROPROPENE	ND	6	UG/L		VOMSAAO322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAAO322
ETHYLBENZENE	ND	7	UG/L		VOMSAAO322
METHYLENE CHLORIDE	ND	9	UG/L		VOMSAAO322
O-XYLENE	ND	10.	UG/L		VOMSAAO322
TETRACHLOROETHENE	360	6	UG/L		VOMSAAO322
TOLUENE	ND	5	UG/L		VOMSAAO322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAAO322
TRANS-1,3-DICHLOROPROPENE	ND	6	UG/L		VOMSAAO322
TRICHLOROETHENE	78	5	UG/L		VOMSAAO322
TRICHLOROFLUOROMETHANE	ND	11	UG/L		VOMSAAO322
VINYL CHLORIDE	ND	13	UG/L		VOMSAAO322

NA = Not Analyzed **ND = Not Detected** **TBK = Trip Blank**

Item	Additional Comment Explanations (NQ/DL)
VOMSAAO322	Dilution factor 2.0 applied.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

C L I E N T R E P O R T

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: TBK-01FB
Sample Type: WELL
Sample Number: AK6042

ENS: 94-13366
MP: 562941
REV: 00

Sampled: 26-AUG-1994
Received: 27-AUG-1994
Reported: 13-OCT-1994

Analyte	Result	P Q L	Units	Comments	Method
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		VOMSAA0322
1,1,1-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,1-DICHLOROETHENE	ND	5	UG/L		VOMSAA0322
1,2-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,2-DICHLOROETHANE	ND	5	UG/L		VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L		VOMSAA0322
1,3-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
1,4-DICHLOROBENZENE	ND	10.	UG/L		VOMSAA0322
2-BUTANONE	ND	50.	UG/L		VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	VOMSAA0322
4-METHYL-2-PENTANONE	ND	10.	UG/L		VOMSAA0322
ACETONE	ND	34	UG/L		VOMSAA0322
BENZENE	ND	5	UG/L		VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L		VOMSAA0322
BROMOFORM	ND	5	UG/L		VOMSAA0322
BROMOMETHANE	ND	10.	UG/L		VOMSAA0322
CARBON TETRACHLORIDE	ND	5	UG/L		VOMSAA0322
CHLOROBENZENE	ND	5	UG/L		VOMSAA0322
CHLOROETHANE	ND	10.	UG/L		VOMSAA0322
CHLOROFORM	ND	5	UG/L		VOMSAA0322
CHLOROMETHANE	ND	10.	UG/L		VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L		VOMSAA0322
ETHYLBENZENE	ND	5	UG/L		VOMSAA0322
METHYLENE CHLORIDE	ND	5	UG/L		VOMSAA0322
O-XYLENE	ND	10.	UG/L		VOMSAA0322
TETRACHLOROETHENE	ND	5	UG/L		VOMSAA0322
TOLUENE	ND	5	UG/L		VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		VOMSAA0322
TRICHLOROETHENE	ND	5	UG/L		VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		VOMSAA0322
VINYL CHLORIDE	ND	10.	UG/L		VOMSAA0322

NA = Not Analyzed **ND = Not Detected** **TBK = Trip Blank**

Subcontract To:

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2191
Date Sealed 9 4 0 8 1 9 (YY / MM / DD)
Seal # 76356
By: RS

SITE/FACILITY # [redacted] SITE NAME: O.S.C.O.

Sample Point: W 0 1 F B (Source Code)

BAR CODE

SAMPLE DATE: 9 4 0 8 2 6 (YY / MM / DD)

SAMPLE TIME: 1 5 : 1 0 (2400 HR.) MATRIX CODE: W

Water (W) Soil (S) Leachate (C) Other (X)

Source Codes:
Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generation Pt. (G) Other (X) Specify

ENS # 94-13366

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
AK6042-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
✓ AK6042-B	01	G	HCL 4C	VOMSAA0322	Y N	EML	TBK
					Y N		A2 BRKN
					Y N		130 OBL
					Y N		CNW
					Y N		8-27-94
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) Matt Katen Date: 8/25/94 Time: 08:00 (2400 HR.)
Signature: Matt Katen Seal #: 76356 Intact: yes

I have received these materials in good condition from the above person.

2. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

I have received these materials in good condition from the above person.

3. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 2191 Sealed By: Matt Katen (Print) Date: 8/26/94 Time: 16:00 (2400 HR.)
Signature: Matt Katen Seal #: 77321 Intact: yes

LAB USE ONLY
Opened By: (Signature) Date: 8/27/94 Time: 10 : 20 (2400 HR.)
AquaPak™/Sub. Contr. # 2191 Temp.°C 3 Seal # 77321 Intact. Y
REGION

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AY6042

Sample Point: W01FB (Source Code)

FIELD INFORMATION FORM

PURGING INFORMATION

PURGE DATE (YY MM DD) | START PURGE (2400 Hr Clock) | ELAPSED HRS | WATER VOL. IN CASING (Gallons) | ACTUAL VOLUME PURGED (Gallons)

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated | Y | | N | (circle one)

Sampling Equipment ..... Dedicated | Y | | N | (circle one)

Purging Device		A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- Field Blank (PURGING OTHER (SPECIFY))
Sampling Device		B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- (SAMPLING OTHER (SPECIFY))
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material		A-Teflon	C-Polypropylene	E-Polyethylene	X- (PURGING OTHER (SPECIFY))
Sampling Material		B-Stainless Steel	D-PVC		X- (SAMPLING OTHER (SPECIFY))
Tubing-Purging		A-Teflon	D-Polypropylene	F-Silicon	X- (PURGING OTHER (SPECIFY))
Tubing-Sampling		B-Tygon C-Rope X- (SPECIFY)	E-Polyethylene	G-Combination teflon/ Polypropylene	X- (SAMPLING OTHER (SPECIFY))
Filtering Devices 0.45 μ:		A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	(ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	(ft)	Depth to water From land surface	(ft)
Groundwater Elevation	(ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	(ft)	Stickup	(ft)

	ph	spec. cond.	Sample Temp.
1st	(STD)	Field Blank μm/cm at 25° C	(° C)
2nd	(STD)	μm/cm at 25° C	(other parameter) value units
3rd	(STD)	μm/cm at 25° C	(other parameter) value units
4th	(STD)	μm/cm at 25° C	(other parameter) value units

FIELD COMMENTS

Sample Appearance: Clear (if applicable) Odor: None Color: Colorless Turbidity: Clear

Weather Conditions: Wind Speed 0-5 mph Direction E Precipitation Y/N Outlook Clear/Sunny

Specific Comments:

Field Blank collected at MW02

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

8/26/94 (Date) Matt Kater (Signature) Employer: RUST E&I

EML FF-2A 4/90

REGION

Subcontract To: [redacted]

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2191
Date Sealed 94 / 09 / 19 (YY / MM / DD)
Seal # 76356
By: RJG

SITE/FACILITY # 942 SITE NAME: O.S.C.D

Sample Point: ~~X~~ DUP (Source Code)

B A R C O D E

SAMPLE DATE: - 94 98 26 (YY / MM / DD)

SAMPLE TIME: 15:15 (2400 HR.) MATRIX CODE: W

Water ..... (W) Leachate ..... (C)
Soil ..... (S) Other ..... (X)

Source Codes:

Well ..... (W) Leachate System .. (C) Pretreatment Facility ... (P) River/Stream/Brook .. (R) Soil ..... (S) Generation Pt. .... (G)
Dewatering/Pressure Relief .... (D) Gas Condensate ... (M) Influent ..... (U) Lake or Ocean ..... (L) Bottom Sediment ... (B) Other ..... (X)
Surface Water Impoundment ... (I) Air ..... (A) Effluent ..... (T) Outfall ..... (O) Noise ..... (N) Specify _____

ENS # 94-13366

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y — N	FIELD COMMENTS	E.M.L. COMMENTS
~~AK6043-A~~	~~04~~	~~G~~	~~HCL 4C~~	~~VOMSAA0322~~	Y / N	EML	
~~AK6043-B~~	~~01~~	~~G~~	~~HCL 4C~~	~~VOMSAA0322~~	Y / N	~~EML~~	~~TBK~~
					Y / N		CANCEL
					Y / N		RJG 8/19/94
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) Matt Katen Date: 8/25/94 Time: 08:00 (2400 HR.)
Signature: Matt Katen Seal #: 76356 Intact: yes

I have received these materials in good condition from the above person.

2. Name: _____ Signature: _____
Date: / / Time: : (2400 HR.) Remarks: _____

I have received these materials in good condition from the above person.

3. Name: _____ Signature: _____
Date: / / Time: : (2400 HR.) Remarks: _____

4. AquaPak™/Sub Contr. # 2191 Sealed By: Matt Katen (Print) Date: 8/26/94 Time: 16:00 (2400 HR.)
Signature: Matt Katen Seal #: 77321 Intact: YES

LAB USE ONLY
Opened By: (Signature) [signature] Date: 8/27/94 Time: 10:20 (2400 HR.)
AquaPak™/Sub. Contr. # 2191 Temp.°C 3 (REGION) Seal # 77321 Intact. Y

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AK6043

FIELD INFORMATION FORM

Sample Point: X DUP (Source Code)

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
940826	14.48	0.3	54.8	168.0

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated (Y) N (circle one) Sampling Equipment ..... Dedicated (Y) N (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	A/B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A/B	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	E	A-Teflon *	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	N/A	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	525.65 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	274.24 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	251.41 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	328.60 (ft)	Stickup	(ft)

SEAL

	ph		spec. cond.		
1st	7.43 (STD)	1st	542 μm/cm at 25° C	Sample Temp.	19.4 (° C)
2nd	(STD)	2nd	μm/cm at 25° C	(other parameter) value units	
3rd	(STD)	3rd	μm/cm at 25° C	(other parameter) value units	
4th	(STD)	4th	μm/cm at 25° C	(other parameter) value units	

FIELD COMMENTS

Sample Appearance: Clear (if applicable) Odor: none Color: colorless Turbidity: Clear

Weather Conditions: Wind Speed 0 - 5 Direction E Precipitation Y/N Outlook Fair/hot

Specific Comments:* Well depth obtained from SSG W.M.P.
Purge volume = (328 TD - 274.24 DTW) * 1.02 × 3 = 164.5
Hydac pH, Temp, cond meter used
Temp measured in °F and converted to °C
Duplicate taken at MW02

* I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

8/26/94 (Date) Matt Kuter (Signature) Employer: RUST E&I

EML FF-2A 4/90

REGION

Subcontract To: [redacted]

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2072
Date Sealed 9 4 0 8 1 4 (YY / MM / DD)
Seal # 76754
By: RJ

SITE/FACILITY # 5421 SITE NAME: O.S.C.O

Sample Point: W M W 0 1 (Source Code)

B A R C O D E

SAMPLE DATE: - 9 4 0 8 2 6 (YY / MM / DD)

SAMPLE TIME: 1 1 : 2 0 (2400 HR.) MATRIX CODE: W

Water ..... (W) Leachate ..... (C)
Soil ..... (S) Other ..... (X)

Source Codes:

Well ..... (W) Leachate System .. (C) Pretreatment Facility ... (P) River/Stream/Brook .. (R) Soil ..... (S) Generation Pt. .... (G)
Dewatering/Pressure Relief .... (D) Gas Condensate ... (M) Influent ..... (U) Lake or Ocean ..... (L) Bottom Sediment ... (B) Other ..... (X)
Surface Water Impoundment ... (I) Air ..... (A) Effluent ..... (T) Outfall ..... (O) Noise ..... (N) Specify _____

ENS # 94-13366

AquaPak™ CONTENT

	SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y — N	FIELD COMMENTS	E.M.L. COMMENTS
1234	AK6047-A	04	G	HCL 4C	VOMSAAD322	Y / N	EML	
0	AK6047-B	01	G	HCL 4C	VOMSAAD322	Y / N	EML	TBK
						Y / N		BO BBL
						Y / N		6 6 MM
						Y / N		8-27-94
						Y / N		NJ
						Y / N		
						Y / N		
						Y / N		
						Y / N		
						Y / N		
						Y / N		
						Y / N		
						Y / N		
						Y / N		
						Y / N		
						Y / N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) Matt Katen Date: 8/25/94 Time: 07:50 (2400 HR.)
Signature: Matt Katen Seal #: MK 76754 ~~20~~ Intact: YES

I have received these materials in good condition from the above person.

2. Name: _____ Signature: _____
Date: / / Time: : (2400 HR.) Remarks: _____

I have received these materials in good condition from the above person.

3. Name: _____ Signature: _____
Date: / / Time: : (2400 HR.) Remarks: _____

4. AquaPak™/Sub Contr. # 2072 Sealed By: Matt Katen (Print) Date: 8/26/94 Time: 16:15 (2400 HR.)
Signature: Matt Katen Seal #: 77310 Intact: YES

LAB USE ONLY
Opened By: (Signature) [signature] Date: 8/27/94 Time: ~~16~~ 10:08 ~~15~~ (2400 HR.)
AquaPak™/Sub. Contr. # 2072 Temp.°C 1 REGION Seal # 77310 Intact. Y

EML.FF-1A 12/90

WMX Environmental Monitoring Laboratories, Inc.

Site # 5672

Bottle Set: AK6047

Sample Point: WMW01 (Source Code)

FIELD INFORMATION FORM

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
940826	1605	03	57.8	174.0

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated (Y) | N | (circle one) Sampling Equipment ..... Dedicated (Y) | N | (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	A/B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A/B	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	F	A-Teflon	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	N/A	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	529.31 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	278.38 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	250.93 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	335.00 (ft)	Stickup	(ft)

	ph	spec. cond. (μm/cm at 25° C)	
1st	7.36 (STD)	5214	Sample Temp. 20.4 (° C)
2nd	(STD)		(other parameter) value units
3rd	(STD)		(other parameter) value units
4th	(STD)		(other parameter) value units

FIELD COMMENTS

Sample Appearance: Cloudy (if applicable) Odor: none Color: orange Turbidity: slight

Weather Conditions: Wind Speed 0-5 Direction SE Precipitation Y/N (N) Outlook Fair & hot

Specific Comments: * Well depth obtained from SSGW MP.
Purge Volume = (335 TD − 278.38 DTW) x 1.02 x 3 = 173.3
Hydac pH, Temp, cond meter used
Temp measured in °F and converted to °C

* I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

/ / (Date) (Signature) Employer: RUST E&I

EML FF-2A 4/90

REGION

Subcontract To:

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2027
Date Sealed 9 4 0 8 1 9 (YY / MM / DD)
Seal # 76729
By: RJW

SITE/FACILITY # 582 SITE NAME: O.S.C.O

Sample Point: W M W 0 2 (Source Code)

B A R C O D E

SAMPLE DATE: 9 4 0 8 2 6 (YY / MM / DD)

SAMPLE TIME: 1 5 : 1 5 (2400 HR.) MATRIX CODE: W

Water (W) Soil (S) Leachate (C) Other (X)

Source Codes:
Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generation Pt. (G) Other (X) Specify

ENS # 94-13366

AquaPak™ CONTENT

	SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y — N	FIELD COMMENTS	E.M.L. COMMENTS
1234	AK6044-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
1234	AK6044-B	01	G	HCL 4C	VOMSAA0322	Y N	EML	TBK
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) Matt Katen Date: 8/24/94 Time: 12:20 (2400 HR.)
Signature: Matt Katen Seal #: 76729 Intact: yes

I have received these materials in good condition from the above person.

2. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

I have received these materials in good condition from the above person.

3. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 2027 Sealed By: Matt Katen (Print) Date: 8/26/94 Time: : (2400 HR.)
Signature: Matt Katen Seal #: 77246 Intact:

LAB USE ONLY
Opened By: (Signature) Date: 8/27/94 Time: 10:30 (2400 HR.)
AquaPak™/Sub. Contr. # 2027 Temp.°C 5 Seal # 77246 Intact. Y
REGION

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AK6044

Sample Point: W MW02 (Source Code)

FIELD INFORMATION FORM

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
940826	1448	0.3	54.8	168.0

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated (Y) | N | (circle one) Sampling Equipment ..... Dedicated (Y) | N | (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	A/B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A/B	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	E	A-Teflon	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	N/A	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	5525.65 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	274.24 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	251.41 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth*	328.00 (ft)	Stickup	(ft)

	ph		spec. cond.				
1st	7.43 (STD)	1st	543 μm/cm at 25° C	Sample Temp.	19.4 (° C)		
2nd	(STD)	2nd	μm/cm at 25° C	(other parameter)	value	units	
3rd	(STD)	3rd	μm/cm at 25° C	(other parameter)	value	units	
4th	(STD)	4th	μm/cm at 25° C	(other parameter)	value	units	

FIELD COMMENTS

Sample Appearance: CLEAR (if applicable) Odor: NONE Color: COLORLESS Turbidity: CLEAR

Weather Conditions: Wind Speed 0-5 Direction E Precipitation Y/(N) Outlook FAIR / HOT

Specific Comments: * Well depth obtained from SSC W.M.P

PURGE VOLUME = (328 + D - 274.24 DTW) x 1.02 x 3 = 164.5

Hydric pH, Temp, Cond meter used

Temp measured in °F and converted to °C

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

8/26/94 (Date) Matt Katera (Signature) Employer: RUST E&I

EML FF-2A 4/90

REGION

Subcontract To:

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2072
Date Sealed 9 4 0 8 1 9 (YY / MM / DD)
Seal # 76754
By: RJG

AK6048

SITE/FACILITY # 542 SITE NAME: O.S.C.O

Sample Point: W M W 0 3 (Source Code)

B A R C O D E

SAMPLE DATE: 9 4 0 8 2 6 (YY / MM / DD)

SAMPLE TIME: 0 9 : 0 5 (2400 HR.) MATRIX CODE: W

Water (W) Soil (S) Leachate (C) Other (X)

Source Codes:
Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generation Pt. (G) Other (X) Specify

ENS # 94-13366

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
1234 AK6048-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
~~AK6048-B~~	~~01~~	~~G~~	~~HCL 4C~~	~~VOMSAA0322~~	~~Y N~~	~~EML~~	~~TBK~~
					Y N		CANCEL
					Y N		RJG 8/19/94
					Y N		20
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) Matt Katen Date: 8/25/94 Time: 07:50 (2400 HR.)
Signature: Matt Katen Seal #: 76754 Intact: YES

I have received these materials in good condition from the above person.

2. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

I have received these materials in good condition from the above person.

3. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 2072 Sealed By: Matt Katen (Print) Date: 8/26/94 Time: 16:15 (2400 HR.)
Signature: Matt Katen Seal #: 007310 Intact: YES

LAB USE ONLY
Opened By: (Signature) Date: 8/27/94 Time: 10:08 (2400 HR.)
AquaPak™/Sub. Contr. # 2072 Temp.°C 1 (REGION) Seal # 77310 Intact. Y

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AK6048

Sample Point: WMW03 (Source Code)

FIELD INFORMATION FORM

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
940826	0815	03	52.4	158.0

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated (Y) | N | (circle one) Sampling Equipment ..... Dedicated (Y) | N | (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	A/B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A/B	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	E	A-Teflon	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	N/A	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	519.04 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	268.15 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	250.89 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	319.50 (ft)	Stickup	(ft)

	ph		spec. cond. (μm/cm at 25° C)		Sample Temp. (° C)
1st	6.90 (STD)	1st	604		20mK 18.0
2nd	(STD)	2nd			(other parameter) / value / units
3rd	(STD)	3rd			(other parameter) / value / units
4th	(STD)	4th			(other parameter) / value / units

FIELD COMMENTS

Sample Appearance: Clear/C (if applicable) Odor: None Color: Colorless Turbidity: Clear

Weather Conditions: Wind Speed 0-5 Direction E Precipitation Y/N Outlook Fair

Specific Comments: Sample Time 09:23, AK6048 Al preservative spilled out.

* Well depth obtained from site specific GW mon. plan

Purge volume (319.5 TD - 268.15 TN) x 1.02 x 3 = 157.1

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

8/26/94 (Date) Matt Kater (Signature) Employer: RUST E+I

EML FF-2A 4/90

REGION

Subcontract To:

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2027
Date Sealed 9 4 0 8 / 19 (YY / MM / DD)
Seal # 76729
By: RSG

SITE/FACILITY # 542 SITE NAME: O.S.C.O

Sample Point: W M W 0 4 (Source Code)

B A R C O D E

SAMPLE DATE: - 9 4 0 8 2 6 (YY / MM / DD)

SAMPLE TIME: 1 2 : 2 3 (2400 HR.) MATRIX CODE: W

Water (W) Soil (S) Leachate (C) Other (X)

Source Codes:
Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generation Pt. (G) Other (X) Specify

ENS # 94-13366

AquaPak™ CONTENT

	SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
1234	AK6048-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
	~~AK6046-D~~	~~01~~	~~G~~	~~HCL 4C~~	~~VOMSAA0322~~	~~Y N~~	EML	TBK
						Y N		CMLL
						Y N		RSG 9/19/94
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		
						Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) Matt Katen Date: 8/24/94 Time: 12:20 (2400 HR.)
Signature: Matt Katen Seal #: 76729 Intact: YES

I have received these materials in good condition from the above person.

2. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

I have received these materials in good condition from the above person.

3. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 2027 Sealed By: Matt Katen (Print) Date: 08/26/94 Time: 16:15 (2400 HR.)
Signature: Matt Katen Seal #: 77246 Intact: YES

LAB USE ONLY
Opened By: (Signature) Date: 8/27/94 Time: 10:30 (2400 HR.)
AquaPak™/Sub. Contr. # 2027 Temp.°C 5 REGION Seal # 77246 Intact. Y

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AK6046

Sample Point: WMW04 (Source Code)

FIELD INFORMATION FORM

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
940826	1135	03	492	1500

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated |Y| |N| (circle one) Sampling Equipment ..... Dedicated |Y| |N| (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	B/A	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A/B	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	E	A-Teflon	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	N/A	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	520.48 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	269.80 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	250.68 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth X	318.00 (ft)	Stickup	(ft)

	ph	spec. cond. (μm/cm at 25° C)	
1st	7.82 (STD)	4860	Sample Temp. 19.5 (° C)
2nd	(STD)		(other parameter) / value / units
3rd	(STD)		(other parameter) / value / units
4th	(STD)		(other parameter) / value / units

FIELD COMMENTS

Sample Appearance: Clear (if applicable) Odor: None Color: Colorless Turbidity: Clear

Weather Conditions: Wind Speed 05 Direction E Precipitation Y/N Outlook Fair

Specific Comments: X Well depth obtained from S.S.G.W.M.P.

Purge Volume = (318.0 T.D. − 269.8 DTW) 1.02 x 3

= 48.2 x 1.02 x 3 = 147.5 gallons

Hydac pH, Temp, Cond meter used

Temp measured in °F and converted to °C

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

8/26/94 (Date) Matt Katen (Signature) Employer: RUST E+I

EML FF-2A 4/90

REGION

Subcontract To: _____

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2027
Date Sealed 9 1 0 8 1 1 (YY / MM / DD)
Seal # 76729
By: RSG

SITE/FACILITY # 582 SITE NAME: O.S.C.O

Sample Point: W M W 0 5 (Source Code)

BARCODE

SAMPLE DATE: 9 4 0 8 2 6 (YY / MM / DD)

SAMPLE TIME: 1 3 : 2 3 (2400 HR.)

MATRIX CODE: W

Water (W) Soil (S) Leachate (C) Other (X)

Source Codes:

Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generation Pt. (G) Other (X) Specify _____

ENS # 94-13366

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y — N	FIELD COMMENTS	E.M.L. COMMENTS
1234 AK6045-A	04	G	HCL 4C	VOMSAA0322	Y N	EML	
AK6045-B	01	G	HCL 4C	VOMSAA0322	Y N	EML	TBK
					Y N		CANCEL
					Y N		RSG 8/19/94
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) Matt Katen Date: 8/24/94 Time: 12 : 20 (2400 HR.)
   Signature: Matt Katen Seal #: 76729 Intact: Yes

   I have received these materials in good condition from the above person.

2. Name: _____ Signature: _____
   Date: / / Time: : (2400 HR.) Remarks: _____

   I have received these materials in good condition from the above person.

3. Name: _____ Signature: _____
   Date: / / Time: : (2400 HR.) Remarks: _____

4. AquaPak™/Sub Contr. # 2027 Sealed By: Matt Katen (Print) Date: 08/26/94 Time: 16 : 15 (2400 HR.)
   Signature: Matt Katen Seal #: 77246 Intact: YES

LAB USE ONLY
Opened By: (Signature) _____ Date: 8/27/94 Time: 10 : 30 (2400 HR.)
AquaPak™/Sub. Contr. # 2027 Temp.°C 5 REGION Seal # 77246 Intact. Y

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AK6045

FIELD INFORMATION FORM

Sample Point: W MW05 (Source Code)

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
940826	12.31	.3	62.4	187.2

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated (Y) (circle one) | N | Sampling Equipment ..... Dedicated (Y) (circle one) | N |

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	A/B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A/B	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	E	A-Teflon	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling	A	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	N/A	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	MK ~~330.00~~ 519.67 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	268.83 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	MK ~~519.34~~ 251.34 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth *	330.00 (ft)	Stickup	(ft)

	ph		spec. cond.		
1st	7.68 (STD)	1st	502 μm/cm at 25° C	Sample Temp.	19.6 (° C)
2nd	(STD)	2nd	μm/cm at 25° C	(other parameter) value units	
3rd	(STD)	3rd	μm/cm at 25° C	(other parameter) value units	
4th	(STD)	4th	μm/cm at 25° C	(other parameter) value units	

FIELD COMMENTS

Sample Appearance: Clear (if applicable) Odor: None Color: Colorless Turbidity: Clear

Weather Conditions: Wind Speed 0-5 Direction E Precipitation Y/N Outlook Fair/Hot

Specific Comments: *Well depth obtained from SSGWMP.
Purge Volume = (330 TD − 268.83 DTW) × 1.02 × 3 = 187.2
Hydac pH, Temp, Cond meter used.
Temp measured in °F and converted to °C

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

8/26/94 (Date) Matt Katen (Signature) Employer: RUST E + I

EML FF-2A 4/90

REGION

WMX Environmental Monitoring Laboratories, Inc.

Analytical Report Transmittal Memorandum

OCT 1994
RECEIVED
Western Region
Environmental
Mgt. Dept.
C.W.M.I.

Date: October 6, 1994

To: Client(s) - see below

From: Diana Strode

Subject: CWMI-AZUSA 94-13736

Please find enclosed the current Client Report, Field Information Forms, and Field Chain-of-Custody Records for the recently completed event at CWMI-AZUSA.

The data has been thoroughly reviewed and compared to historical data. We have tried to provide a report that is complete and of known and documented quality. Please take a moment to review the enclosed report to insure it meets your expectations.

If you have any questions, don't hesitate to call Joe Rentz at (708)208-3100.

Report Distribution:

Name	Report Type
Marc Yalom*	ALL

* *Program Manager*

Mail Code: 2

Enclosed are the analytical results for samples received from your facility. The results in the Client Report are for a single ENS (Event Notification System) number only. The sampling event at your facility may include multiple ENS numbers. A separate Client Report will be generated for each one.

It is the goal of WMX Environmental Monitoring Laboratories Inc. to provide analytical data in a timely fashion, formatted in a way that our clients will find most useful.

If you have any questions concerning the form or content of this report, please contact the WMX EML Customer Operations Department:

Main Number (708) 208-3100
FAX Number (708) 208-1175

Note: Two designations may appear in the results column of your Client Report: NA or ND.

The designation NA (for "Not Analyzed") is used to identify analytes which were requested in the monitoring program, but for which no suitable testing methodology exists. NA may also indicate a dry well, broken sample bottle, insufficient sample volume, or other condition which precludes analysis for a sample.

The designation ND (for "Not Detected") is used to indicate that the analyte of interest was not found at or above the concentration listed under the EMLRL (EML Reporting Limit) heading.

Unless otherwise indicated, all analytes meet the requirements of holding time as specified in the method.

Deborah C. Hockman, Ph.D.

Deborah C. Hockman, Ph.D.
President
WMX Environmental Monitoring Laboratories, Inc.

DATA QUALIFIER COMMENT CODE DEFINITIONS

AR: Acid surrogate recoveries did not meet the acceptance criteria of the method. Oxidative degradation due to sample matrix is suggested.

BB: Broken bottle.

BL: The method blank concentrations associated with this analyte did not meet the acceptance criteria of the method.

CX: The concentration of this compound exceeded the calibration used for this analysis. The concentration reported is estimated.

CU: Co-elution with another compound interferes with the quantitation of this compound. The concentration reported is estimated.

DL: The sample was diluted during analysis. Reporting limits have been adjusted where necessary.

DP: Aliquots or spiked aliquots of this sample were analyzed in duplicate. The relative percent difference between the two results did not meet the acceptance criteria of the method.

DW: Dry Well.

HS: Headspace in sample exceeded laboratory control limit. The reported results of the analysis may be less than actual value.

IS: The internal standard recoveries associated with this analysis did not meet the acceptance criteria of the method.

IV: The bottle did not contain enough sample to perform the analysis.

MP: 3-methylphenol and 4-methylphenol co-elute under the analytical conditions of the method, and cannot be differentiated solely on the basis of their mass spectra. The concentrations reported may be either or both isomers.

MX: This sample was used as a matrix spike. The percent recovery did not meet the acceptance criteria of the method. The analysis of a quality control standard showed the analytical system was in control. The result reported may therefore be affected by matrix interferences.

NN: N-nitrosodiphenylamine cannot be distinguished from diphenylamine using gas chromatography. The concentration: reported may be either or both compounds.

NQ: No standard qualifier code is in use for this qualificatio: See the associated comment.

NS: There was not enough sample to repeat this analysis.

P: (Wisconsin only) Concentration found between the method detection limit and the reporting limit indicates the presence of a compound.

PL: This result may be a product of contamination from phthalat plasticizers, which are a common lab contaminant.

PX: This sample required preservation in the field to a pH of less than 2. The pH was checked before analysis and did nc have a pH of less than 2.

PY: This sample required preservation in the field to a pH of 4 to 5. The pH was checked before analysis and did not have pH of 4 to 5.

PZ: This sample required preservation in the field to a pH of 1 or greater. The pH was checked before analysis and did not have a pH of 12 or greater.

QX: This sample was used as a matrix spike. The percent recovery did not meet the acceptance criteria of the method The analysis of a quality control standard showed the analytical system was out-of-control. The analytical resul for this parameter in the unspiked sample is suspect and ma not be reported for regulatory compliance purposes.

SB: The analysis of this sample was performed by an approved subcontract laboratory.

ST: This compound is not stable in acidic water.

SU: The analysis of the surrogate with this sample did not meet the acceptance criteria of the method.

TX: The analysis for this parameter was conducted after the holding time specified in the method.

UN: This compound is not stable under the conditions of the analysis.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW02
Sample Type: WELL
Sample Number: AK7921

ENS: 94-13736
MP: 562942
REV: 00

Sampled: 26-AUG-1994
Received: 30-SEP-1994
Reported: 4-OCT-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	274.24		FT		FDWDTWTC01
GROUNDWATER ELEV.	251.41		FT MSL		FDWGWELWDT
PH FIELD	7.43		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	543		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEGREES CELSIUS	19.4		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	328.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	5	UG/L	NQ,SB	VOMSAA0322
1,1,1-TRICHLOROETHANE	59	5	UG/L	SB	VOMSAA0322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L	SB	VOMSAA0322
1,1,2-TRICHLOROETHANE	ND	5	UG/L	SB	VOMSAA0322
1,1-DICHLOROETHANE	ND	5	UG/L	SB	VOMSAA0322
1,1-DICHLOROETHENE	71	5	UG/L	SB	VOMSAA0322
1,2-DICHLOROBENZENE	ND	5	UG/L	SB	VOMSAA0322
1,2-DICHLOROETHANE	ND	5	UG/L	SB	VOMSAA0322
1,2-DICHLOROPROPANE	ND	5	UG/L	SB	VOMSAA0322
1,3-DICHLOROBENZENE	ND	5	UG/L	SB	VOMSAA0322
1,4-DICHLOROBENZENE	ND	5	UG/L	SB	VOMSAA0322
2-BUTANONE	ND	10.	UG/L	SB	VOMSAA0322
2-CHLOROETHYLVINYL ETHER	ND	10.	UG/L	SB	VOMSAA0322
4-METHYL-2-PENTANONE	ND	10.	UG/L	SB	VOMSAA0322
ACETONE	ND	10.	UG/L	SB	VOMSAA0322
BENZENE	ND	5	UG/L	SB	VOMSAA0322
BROMODICHLOROMETHANE	ND	5	UG/L	SB	VOMSAA0322
BROMOFORM	ND	5	UG/L	SB	VOMSAA0322
BROMOMETHANE	ND	10.	UG/L	SB	VOMSAA0322
CARBON TETRACHLORIDE	ND	5	UG/L	SB	VOMSAA0322
CHLOROBENZENE	ND	5	UG/L	SB	VOMSAA0322
CHLOROETHANE	ND	10.	UG/L	SB	VOMSAA0322
CHLOROFORM	ND	5	UG/L	SB	VOMSAA0322
CHLOROMETHANE	ND	10.	UG/L	SB	VOMSAA0322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L	SB	VOMSAA0322
DIBROMOCHLOROMETHANE	ND	5	UG/L	SB	VOMSAA0322
ETHYLBENZENE	ND	5	UG/L	SB	VOMSAA0322
METHYLENE CHLORIDE	ND	5	UG/L	SB	VOMSAA0322
O-XYLENE	ND	5	UG/L	SB	VOMSAA0322
TETRACHLOROETHENE	420	25	UG/L	DL,NQ,SB	VOMSAA0322
TOLUENE	ND	5	UG/L	SB	VOMSAA0322
TRANS-1,2-DICHLOROETHENE	ND	5	UG/L	SB	VOMSAA0322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L	SB	VOMSAA0322
TRICHLOROETHENE	180	5	UG/L	SB	VOMSAA0322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L	SB	VOMSAA0322
VINYL CHLORIDE	ND	10.	UG/L	NQ,SB	VOMSAA0322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
VOMSAA0322	GULF COAST
(M [illegible] P)-XYLENE	M-,P-, AND O-XYLENE COULD NOT BE SEPARATED; RESULT WAS REPORTED AS TOTAL XYLENE.
TETRACHLOROETHENE	CONCENTRATION EXCEEDED THE INSTRUMENT CALIBRATION AND SAMPLE WAS DILUTED.
VINYL CHLORIDE	M,P, AND O-XYLENE COULD NOT BE SEPARATED AND RESULT WAS REPORTED AS TOTAL XYLENE.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 — CWMI-AZUSA
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: TBK-MW02
Sample Type: WELL
Sample Number: AK7921

ENS: 94-13736
MP: 562942
REV: 00

Sampled: 26-AUG-1994
Received: 30-SEP-1994
Reported: 4-OCT-1994

Analyte	Result	P Q L	Units	Comments	Method
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	5	UG/L	NQ,SB	VOMSAAO322
1,1,1-TRICHLOROETHANE	ND	5	UG/L	SB	VOMSAAO322
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L	SB	VOMSAAO322
1,1,2-TRICHLOROETHANE	ND	5	UG/L	SB	VOMSAAO322
1,1-DICHLOROETHANE	ND	5	UG/L	SB	VOMSAAO322
1,1-DICHLOROETHENE	ND	5	UG/L	SB	VOMSAAO322
1,2-DICHLOROBENZENE	ND	5	UG/L	SB	VOMSAAO322
1,2-DICHLOROETHANE	ND	5	UG/L	SB	VOMSAAO322
1,2-DICHLOROPROPANE	ND	5	UG/L	SB	VOMSAAO322
1,3-DICHLOROBENZENE	ND	5	UG/L	SB	VOMSAAO322
1,4-DICHLOROBENZENE	ND	5	UG/L	SB	VOMSAAO322
2-BUTANONE	ND	10.	UG/L	SB	VOMSAAO322
2-CHLOROETHYLVINYL ETHER	ND	10.	UG/L	SB	VOMSAAO322
4-METHYL-2-PENTANONE	ND	10.	UG/L	SB	VOMSAAO322
ACETONE	ND	10.	UG/L	SB	VOMSAAO322
BENZENE	ND	5	UG/L	SB	VOMSAAO322
BROMODICHLOROMETHANE	ND	5	UG/L	SB	VOMSAAO322
BROMOFORM	ND	5	UG/L	SB	VOMSAAO322
BROMOMETHANE	ND	10.	UG/L	SB	VOMSAAO322
CARBON TETRACHLORIDE	ND	5	UG/L	SB	VOMSAAO322
CHLOROBENZENE	ND	5	UG/L	SB	VOMSAAO322
CHLOROETHANE	ND	10.	UG/L	SB	VOMSAAO322
CHLOROFORM	ND	5	UG/L	SB	VOMSAAO322
CHLOROMETHANE	ND	10.	UG/L	SB	VOMSAAO322
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L	SB	VOMSAAO322
DIBROMOCHLOROMETHANE	ND	5	UG/L	SB	VOMSAAO322
ETHYLBENZENE	ND	5	UG/L	SB	VOMSAAO322
METHYLENE CHLORIDE	ND	5	UG/L	SB	VOMSAAO322
O-XYLENE	ND	5	UG/L	SB	VOMSAAO322
TETRACHLOROETHENE	ND	5	UG/L	SB	VOMSAAO322
TOLUENE	ND	5	UG/L	SB	VOMSAAO322
TRANS-1,2-DICHLOROETHENE	ND	5	UG/L	SB	VOMSAAO322
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L	SB	VOMSAAO322
TRICHLOROETHENE	ND	5	UG/L	SB	VOMSAAO322
TRICHLOROFLUOROMETHANE	ND	10.	UG/L	SB	VOMSAAO322
VINYL CHLORIDE	ND	10.	UG/L	SB	VOMSAAO322

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
VOMSAAO322 (M [illegible] P)-XYLENE	GULF COAST M-.P- AN 0- XYLENE COULD NOT BE SEPARATED AND RESULT WAS REPORTED AS TOTAL XYLENE.

Subcontract To: GULF COAST [redacted]

WMX Environmental Mon. ing Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

[redacted] Seal #: 76526 By: [redacted]

SITE/FACILITY # [redacted] SITE NAME: D.S.C.D

Sample Point: W M W 0 2 (Source Code)

Please call ASAP - need report to GO

SAMPLE DATE: 9 4 0 8 2 6 (YY / MM / DD)

SAMPLE TIME: 1 5 : 1 1 5 (2400 HR.)

MATRIX CODE: W

Water (W) Leachate (C) Soil (S) Other (X)

Source Codes:

Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generated Product (G) Other (X) Specify

ENS # 94-13736

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	LAB COMMENTS
	SHIP	ALL	BOTTLES LISTED BELOW TO GULF		N	COAST	
34 AK7921-A	04	G	HCL 4C	VOMSAA0322	Y		
0 AK7921-B	01	G	HCL 4C	VOMSAA0322	Y	TBK	
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) Matt Kater Date: 8/25/94 Time: 8:10 (2400 HR.)
   Signature: Matt Kater Seal #: 76526 Intact: yes

   I have received these materials in good condition from the above person.

2. Name: Signature:
   Date: / / Time: : (2400 HR.) Remarks:

   I have received these materials in good condition from the above person.

3. Name: Signature:
   Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 2062 Sealed By: Matt Kater (Print) Date: 8/26/94 Time: 17:00 (2400 HR.)
   Signature: Matt Kater Seal #: 0077062 Intact: YES

LAB USE ONLY
Opened By: (Signature) [illegible] Date: 8/29/94 Time: 08:07 (2400 HR.)
AquaPak™/Sub. Contr. # Temp. °C 5.0°C Seal # 0077062 Intact Y

EML FF-1A 12/92

ATTACHMENT 2
GROUNDWATER DATA DISKETTE

Printed on recycled paper

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

extra

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500
FAX: (213) 266-7600

August 10, 1994

Mr. Wayne Praskins
Superfund Project Manager
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street (H-6-4)
San Francisco, CA 94105

WELL INVESTIGATION PROGRAM - REVIEW OF SUBSURFACE VOLATILE ORGANIC COMPOUND MIGRATION STUDY FOR OSCO PROPERTY LOCATED IN AZUSA, CALIFORNIA (File No. 108.0314)

We have received and reviewed the June 8, 1994 Subsurface Volatile Organic Compound (VOC) Migration Study Report, prepared by Meredith/Boli & Associates, Inc (M/B&A) on behalf of Oil & Solvent Process Company (OSCO). Based on review of the subject document, the following comments are provided:

GENERAL COMMENTS TO THE APPROACH

1. In General:

The purpose of the subject study is to predict possible future impacts on groundwater due to volatile organic compound (VOC) migration from vadose zone, and to determine the need for vadose zone remediation based on fate and transport analyses.

In order to provide adequate bases for suggestions and comments on this subject study, we conducted the fate and transport modeling independently using the similar methodology adopted by M/B&A with our own interpretations and criteria. Since tetrachloroethene (PCE) is the predominant contaminant observed in both vadose zone and on-site groundwater, our simulation was performed for PCE only.

Based on our review and extensive modeling simulation, we feel that this study cannot lead to the conclusions that there are no future threat to groundwater and no need for remedial action as indicated by M/B&A in the report. We recommend that our comments and suggestions as specified in this letter be incorporated in the study.

2. VLEACH Version:

A one dimensional vadose zone transport model (VLEACH version 1.02) was used in this study to estimate the continuous transport of VOCs from vadose zone to groundwater. We have

repeated the modeling simulation for PCE using the latest version (2.1) of the VLEACH and Mixing models with the same input data set provided by M/B&A.

The modeling results indicate that a maximum PCE concentration of 2.89 μg/l is found in groundwater within 1000-year period rather than 0.6 μg/l as described in the report. Therefore, we recommend that the latest version of the VLEACH model be used in this study.

3. Model Validation:

Validation of models in the laboratory or special field conditions are necessary to demonstrate model's capabilities for conditions for which they are designed and built. Without validation, model simulation is essentially computerized theory based on the interaction between chemical and soil environment. Pertinent model validation information, including results and references, should be provided in the final report.

4. Model Calibration:

Model calibrations based on available on-site data are necessary before models are used to predict future distributions. We understand calibration is not always possible as adequate data regarding initial conditions may not exist. However, calibration is recommended whenever sufficient data are available.

SPECIFIC COMMENTS ON MODEL'S PARAMETERS AND ASSUMPTIONS

Due to the uncertainties associated with vadose-zone and groundwater fate and transport modeling, a conservative approach shall be taken in this study. With respect to the adequacy of the assumptions and input parameters used in the study, we have reviewed the model assumptions, equations, and input data, and provide the following comments.

1. Bulk Density in Equilibrium Equation:

The unit of total soil concentrations, that are converted from soil gas data according to the equilibrium equation in the subject report, is μg/l. The input soil concentrations required by VLEACH model are in terms of μg/kg. Bulk density (1.73 g/cm^3) should be used to convert soil concentrations from μg/l to μg/kg for model inputs.

2. Total Gas Concentrations in VLEACH Model:

Observed maximum soil gas concentrations, including those from confirmatory and duplicate samples, during 1993 soil gas survey should be used to derive total soil concentrations for model input. For example, 43,000 $\mu g/l$ instead of 16,000 $\mu g/l$ should be used for PCE at vapor monitoring well B-4.

According to the shallow soil gas survey results (Phase I-IA Soil Gas Investigation, Western Technologies, 1990), PCE concentrations measured at five locations inside polygon A6 range from 70 to 5100 $\mu g/l$. This concentration range is closer to the PCE concentration range (from 980 to 1000 $\mu g/l$) observed at vapor monitoring well B-8/B-8R than to that (43 $\mu g/l$) at B-2. It is recommended that total concentrations based on soil gas concentrations at B8/B8R be used as input data for the shallow layer (0-50 ft) of Polygon A6.

3. Total Organic Contents in VLEACH Model:

Because VLEACH model takes formatted input file, one digit shift in the input data file for Polygon A2 led to a total organic contents (f_{oc}) value of 1.0005 during modeling and this subsequently produced underestimated results. The f_{oc} value should be corrected to its designed value of 0.0005.

4. Length of Source in Mixing Model:

Since VOC sources are distributed over the site, contaminants from locations near the boundary along the prevailing groundwater flow direction have shorter travelling distance than those away from it. Theoretically, travelling distances for substances from different areas within the site range from zero to the length of the site. Therefore, the length scale used in penetration depth calculation should be less than the length of the site. We recommend to use half of the length of the site for calculation.

5. Vertical Dispersivity in Mixing Model:

Recent field work (*e.g.* LeBanc, *et al.*, 1991; Gelhar *et al.*, 1992; Jensen and Bitsch, 1993) has demonstrated that vertical dispersivity (α_z) can be much smaller than longitudinal and transversal horizontal dispersivities (α_L and α_T). The value of α_z is estimated to be only 1/900 to 1/300 of α_L. Following the one-tenth rule α_L = 1/10L, where L is the distance traveled, α_z is estimated to be 1/9,000 to 1/3,000 of L. Therefore, the value of 1/100L used in the subject report is considered too high. To be on the conservative side, we recommend that a value smaller than 1/1,000L be used in calculating penetration depth.

6. Lower Boundary Assumption in VLEACH Model:

One of the assumptions adopted in this study is that the water table is impermeable to gas diffusion at the lower boundary and, therefore, all contaminant mass loading into the groundwater is due to the process of liquid advection. This assumption neglects the transfer of the gaseous mass from vadose zone to groundwater.

In our understanding, one of the main reasons using VLEACH model is that it is capable of predicting the vapor phase transport of contaminants in the vadose zone downward to groundwater. Specially, gas diffusion, instead of liquid advection, may act as the dominant transport mechanism that leads contaminants into groundwater for the areas with the low recharge rate (e.g., paved area or areas inside the building). Based on our modeling simulation which incorporates gaseous diffusion into groundwater, the resulting maximum concentrations of PCE are found at least ten times higher than those without gas diffusion.

In addition, it has been observed that vapor transport from vadose zone can cause shallow groundwater contamination. The resulting groundwater contamination plumes can have high dissolved chemical concentrations, although they tend to be very thin in vertical extent and occur only close to the water table.

Furthermore, if equilibrium conditions exist at the soil vapor and groundwater interface, according to Henry's Law, only about 4 μg/l of PCE vapor concentration at depth immediately above groundwater table would be in equilibrium with groundwater containing 5 μg/l PCE (MCL). Based on OSCO's modeling results, 1,900 μg/l of the PCE vapor concentration at depth immediately above groundwater table within polygon A3 in 1,000 years, theoretically may lead to 2,400 μg/l of dissolved PCE below groundwater table. Though the transport phenomena and interaction between vadose zone and groundwater can be very complex and equilibrium condition may not exist, we still feel that the process of the gas diffusion into groundwater can be an important transport mechanism and cannot be simply ignored.

Based on the above considerations, we believe that this assumption (groundwater table is impermeable to gas diffusion) will result in underestimating the maximum loading of contaminants over time and subsequently lower the estimated maximum concentration of contaminants in groundwater. Therefore, we recommend that the water table be assumed permeable to gas diffusion at the lower boundary (i.e., using CGW=0 instead of CGW=-1).

RESULTS OF INDEPENDENT FATE AND TRANSPORT MODELING

1. Input Parameters:

As mentioned above, we have performed similar fate and transport modeling using PCE as an example. Input parameters for VLEACH and mixing models are the same as described in the subject report except for those parameters and assumptions discussed in the previous section. In addition, a time step of 0.1 year was used during the simulation.

2. Model Outcomes:

Based on our results of combined VLEACH/Mixing simulations for PCE, approximately 940 $\mu g/l$ of PCE will be found in the groundwater after 1 year of simulation. Please note that the predicted PCE concentrations decrease with time, therefore, the maximum PCE concentration are higher than 940 $\mu g/l$. This result shows that the MCL (5/μg) of PCE will be exceeded in the underlying groundwater if remedial action in the vadose zone is not pursued. Additionally, this modeled groundwater concentration of PCE is higher than those observed in upgradient wells.

CLOSURE

1. Conclusion:

Based on our modeling simulation using the same methodology as adopted by M/B&A with modified assumptions and input parameters, we believe that the existing contaminated condition at OSCO facility will pose a future threat to groundwater quality beneath the site, and therefore corrective actions to protect groundwater quality are deemed necessary. We also recommend that the above-mentioned comments be incorporated into the fate and transport modeling if it is used to establish soil cleanup levels.

2. Performance Measurement:

We will consider the cleanup level established by fate and transport analyses as a preliminary one which may be used as a baseline concentration to conduct feasibility study, design remediation system, and/or estimate system operation and maintenance costs.

In addition to applying the preliminary cleanup level during soil remediation, the performance measurement criteria established by this Regional Board staff is recommended to be reviewed and followed. We feel that the performance measurement is an extremely useful and practical approach to

determine whether the site can be successfully closed or not. A copy of the cleanup performance measures for no further action is enclosed.

3. Review Processes:

We would like to continue participating in the review processes for this study with EPA and Department of Toxic Substance Control. We would appreciate that copies of all correspondents and/or reports regarding to this study are forwarded to us.

If you have any questions about this matter, please feel free to call me at (213) 266-7545 or Dr. Rueen Fang Wang at (213) 266-7533.

Sincerely,

WAYNE V. CHIOU, P.E.
Associate Water Resource
Control Engineer

RUEEN FANG WANG, Ph.D., P.E.
Environmental Specialist III

cc: Mary Blevins, U.S. EPA - Region IX
Andy Bajwa, Cal-EPA - DTSC (Region 3)
Craig Christmann, Cal-EPA - DTSC (Region 3)

Enclosed: Cleanup Performance Measures

CLEANUP PERFORMANCE MEASURES === "NO FURTHER ACTION"

1. REDUCTION OR CONSTRICTION OF FINAL VOC SPATIAL PATTERN ISOCONCENTRATION LINES AS COMPARED TO BASELINE.

2. AN OVERALL REDUCTION IN VOC AMPLITUDE AT ALL POINTS BEING MONITORED AND IN THE PATTERNS AS A WHOLE.

3. REBOUND TESTING TO ASYMPTOTIC APPROACH.

4. SOIL MATRIX SAMPLING AT "HOT SPOTS" WITHIN ANY REMAINING ISOCONS TARGETED TO FINE-GRAINED HORIZONS IN THE VADOSE ZONE CONFIRMATION TEST.

5. A VALID RISK ASSESSMENT/CHEMICAL TRANSPORT MODELING TO DEMONSTRATE THAT ANY RESIDUAL POLLUTANTS LEFT IN PLACE DOES NOT POSE FURTHER THREAT TO GROUND WATER.

Chemical Waste Management, Inc.

4227 Technology Drive
Fremont, California 94538-6337
510/651-2964

RECEIVED
20

June 13, 1994

Mr. Dennis Dickerson
Regional Administrator
California Environmental Protection Agency
Department of Toxic Substances Control
1011 North Grandview Avenue
Glendale, California 91201

One Copy
Via Certified Mail
P 244 216 507

Mr. Jeffrey Zelikson
Regional Administrator
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, California 94105

One Copy
Via Certified Mail
P 244 216 508

Subject: Subsurface VOC Vapor Migration Study Report
Oil & Solvent Process Company, Azusa, California, CAD 008302903

Gentlemen:

Chemical Waste Management, Inc., is pleased to present the attached Subsurface Volatile Organic Compound (VOC) Migration Study report for the Oil & Solvent Process Co. (OSCO), Azusa, California. The study was prepared by our consultant, Meredith/Boli & Associates of Los Angeles. The work was performed according to the Subsurface VOC Migration Study Workplan, dated August 19, 1993, as approved by your agencies. Using conservative assumptions and conditions, the study shows that volatile organic chemicals in the vadose zone at OSCO do not pose a present or future threat to groundwater quality beneath or downgradient of the facility.

The VOC migration study was initiated after the final phase (Groundwater Investigation) of the OSCO RCRA Facility Investigation (RFI). The study was performed to help determine if chemical contaminants in soil could pose a threat to groundwater quality. The study was not required by California or federal regulations, nor by OSCO's hazardous waste facility permits.

The RFI was conducted in a phased "surface-down" approach, beginning with near surface soil investigation, progressing to a deep soil study, and culminating in the installation of five groundwater monitoring wells at the facility. The RFI concluded with a comprehensive description and analysis of site and regional groundwater quality and flow conditions. The RFI data indicated that although some soil contamination has occurred, contaminant concentrations generally decrease with depth. Also, groundwater is contaminated from upgradient sources which are part of the San Gabriel Valley Superfund site before it arrives

at the OSCO facility.

The VOC migration model predicts that ketones should be detected at the highest concentrations in groundwater monitoring samples. However, there have been no such detections, thus demonstrating that the model assumptions and calculations for ketones, and therefore the other VOCs modeled, are conservative and compounding.

Further investigations and remedial actions related to soil contamination are unwarranted based on the following:

- The general decrease of soil contamination concentrations with depth, as demonstrated in RFI Phase IIb (Deep Soil Investigation);
- The vapor migration model predictions that show VOC concentrations (other than the methyl ethyl ketone; MEK) will be below MCLs and health based water quality criteria;
- The non-detection of ketones (including MEK) in OSCO and local groundwater wells when the conservative VOC vapor migration model predicts their presence; and
- The facility, which is subject to RCRA closure requirements, has a paved ground surface which alleviates the contaminant migration force otherwise caused by infiltrating surface water.

Remediation of groundwater contamination is addressed regionally by the recent San Gabriel Valley Superfund site - Baldwin Park Operable Unit Record of Decision. OSCO will continue its quarterly groundwater sampling & analyses and monthly water level monitoring program. Therefore specific facility-focused groundwater remediation under OSCO's RCRA permit is not warranted. With that element, and the VOC vapor migration model demonstration/interpretation that soil contamination poses no threat to groundwater, we request that USEPA/DTSC provide a letter formally bringing the RFI process to a close at the OSCO facility.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system design to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Printed on recycled paper

If you have any questions, please contact me at (510) 651-2964.

Sincerely,

CHEMICAL WASTE MANAGEMENT, INC.

Marc Yalom, R.G.
Hydrogeologist

/miy

Attachment

cc: Mr. Andy Bajwa, DTSC - Glendale
Ms. Mary Blevins, U.S. EPA - San Francisco
Mr. Wayne Praskins, U.S. EPA - San Francisco
Mr. Arthur Heath, L.A. RWQCB - Monterey Park (2 copies)

Printed on recycled paper

MEREDITH/BOLI & ASSOCIATES, INC.

SCIENTIFIC and REGULATORY CONSULTANTS

6701 Center Drive West, Suite 900
Los Angeles, California 90045-1535
(310) 670-9221

M/B&A Project No. MB-1993-91

SUBSURFACE VOLATILE ORGANIC COMPOUND (VOC) MIGRATION STUDY

Oil & Solvent Process Company
Azusa, California

Prepared for:

CHEMICAL WASTE MANAGEMENT, INC.
4227 Technology Drive
Fremont, California 94538

Submitted to:

US ENVIRONMENTAL PROTECTION AGENCY
Region 9
75 Hawthorne Street
San Francisco, California 94105

and

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
Department of Toxic Substances Control - Region 3
1011 North Grandview Avenue
Glendale, California 91201

8 June 1994

TABLE OF CONTENTS

	Page
LIST OF TABLES	ii
LIST OF FIGURES	iii
LIST OF APPENDIXES	iv
1.0 INTRODUCTION	1
1.1 Purpose and Scope	1
1.2 Vadose Zone Modeling and the RFI Process	1
2.0 SOIL VAPOR MONITOR WELL INSTALLATION AND SAMPLING	2
2.1 Monitor Well Design	2
2.2 Sampling Procedures	2
2.3 Analytical Methods	3
2.4 QA/QC Procedures	4
2.5 Analytical Results	4
3.0 VOC MIGRATION ASSESSMENT	6
3.1 Vadose Zone Total VOC Concentrations	6
3.1.1 Calculation of Total Soil VOC Concentrations	6
3.1.2 Distribution of VOC Concentrations in the Vadose Zone	7
3.1.3 Equilibrium-Partitioning Modeling Considerations	8
3.2 Vadose Zone Leaching Model	8
3.3 Groundwater/Recharge Mixing Model	11
3.4 Results and Discussion	12
3.4.1 Presentation of the Modeling Results	12
3.4.2 Sensitivity Analysis	12
3.4.3 Discussion of the Modeling Results	13
4.0 CONCLUSIONS AND RECOMMENDATIONS	15
5.0 REFERENCES	17

LIST OF TABLES

Table 1 -- Construction Details for Soil Vapor Monitor Wells

Table 2 -- Purge Test Results for August 1991 and August 1993 Soil Vapor Sampling Events

Table 3 -- Soil Vapor Concentrations for VOCs Common to the August 1991 and August 1993 Sampling Event

Table 4 -- Additional VOCs Detected in the August 1993 Soil Vapor Sampling Event

Table 5 -- Total Soil VOC Concentrations Calculated from Soil Vapor Data

Table 6 -- Comparison of Measured and Calculated Soil VOC Concentrations

Table 7 -- Designation of Polygons and Depth Intervals Based on Soil Vapor Probe Locations

Table 8 -- Input Parameters and Assumptions for VLEACH Model

Table 9 -- Physical Properties of Site Soil

Table 10 -- Chemical Properties of VOCs

Table 11 -- Input Parameters and Assumptions for the Recharge Calculations (HELP Model)

Table 12 -- Input Parameters and Assumptions for the Groundwater Mixing Model

Table 13 -- Modeled Groundwater VOC Concentrations Compared to Regulatory Levels for Chemicals in Water

Table 14 -- Sensitivity Analysis for Equilibrium-Partitioning Model Input Parameters

Table 15 -- Sensitivity Analysis for VLEACH Model Input Parameters

Table 16 -- Sensitivity Analysis for Groundwater Mixing Model Input Parameters

LIST OF FIGURES

Figure 1 -- Site Location Map

Figure 2 -- Soil Vapor Monitor Well Locations

Figure 3 -- Vertical Distribution of Soil Vapor Probes

Figure 4 -- Typical Soil Vapor Monitor Well Completion Diagram

Figure 5 -- Polygon Boundaries Used for VLEACH Model

Figure 6 -- Modeled PCE and TCE Groundwater Concentrations

Figure 7 -- Modeled 1,1,1-TCA and 1,1-DCE Groundwater Concentrations

Figure 8 -- Modeled Trichlorofluoromethane and MIBK Groundwater Concentrations

Figure 9 -- Modeled MEK and Acetone Groundwater Concentrations

Figure 10 -- Modeled Benzene and Toluene Groundwater Concentrations

Figure 11 -- Modeled Xylenes Groundwater Concentrations

Figure 12 -- Modeled Ethylbenzene Groundwater Concentrations

LIST OF APPENDIXES

Appendix A -- InterPhase's Procedures for Conducting Soil Gas Investigations

Appendix B -- Analytical Results for August 1993 Soil Vapor Sampling

Appendix C -- Spreadsheet Calculations for Total Soil VOC Concentrations

Appendix D -- Soil Properties Data for the OSCO Site

Appendix E -- HELP Model Results

Appendix F -- VLEACH Model Results

Appendix G -- Summers Groundwater Mixing Model Results

1.0 INTRODUCTION

The Oil & Solvent Process Company (OSCO) facility, located in Azusa, California, provides recycling services involving the transportation, storage, and processing of solvent wastes and products (see Figure 1). Because volatile organic compounds (VOCs) that potentially may pose a threat to human health or the environment have been discovered in site soil and local/regional groundwater (the San Gabriel Basin aquifer is a Superfund site), OSCO was directed by the US Environmental Protection Agency (USEPA) and the California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC) to perform soil matrix, soil vapor, and groundwater testing. These environmental monitoring activities have been completed in the form of a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI). All RFI activities performed to date at the site (exclusive of continuing groundwater monitoring) are summarized in the OSCO *RCRA Facility Investigation Summary Report* (M/B&A, 1993a).

1.1 PURPOSE AND SCOPE

This Subsurface VOC Migration Study (SVMS) was prepared for the purpose of interpreting the soil vapor VOC concentration distributions that were observed during the deep soil investigation (Phase IIb of the RFI; M/B&A, 1991) and subsequent soil vapor monitoring. The decision to use soil vapor data rather than soil matrix data for the SVMS was based on the assumption that the former data are more conservative indicators of actual site conditions.[1] In this study, information concerning the potential threat to groundwater posed by VOCs in the vadose zone at the OSCO facility has been developed using computer modeling techniques. The results of the SVMS are being submitted to USEPA and DTSC as an addendum to the OSCO RFI. OSCO has undertaken this study voluntarily to further understand the significance of site contaminant conditions; it was not performed in response to any regulatory requirements or permit conditions.

1.2 VADOSE ZONE MODELING AND THE RFI PROCESS

The purpose of an RFI is to characterize the nature, extent, and rate of migration of hazardous wastes or constituents released at RCRA-permitted facilities, and to determine whether corrective measures may be necessary (USEPA, 1989a). Characterization of the nature and extent of VOC distributions at the OSCO facility was accomplished during Phases I, IIa, IIb, and III of the RFI. The SVMS modeling efforts presented herein attempt to characterize the movement of VOCs in the subsurface environment, particularly with respect to the potential migration of VOCs to groundwater.

CWM submitted a workplan to USEPA on 19 August 1993 that outlined the objectives and investigation approach to be used in this SVMS (M/B&A, 1993c). After discussions with USEPA (via conference calls on 28 September and 5 October 1993), M/B&A submitted clarifications to USEPA on 12 October 1993 and 13 December 1993. Final approval to proceed with the SVMS was granted by DTSC (in writing) on 9 November 1993 and by USEPA (verbally) on 27 January 1994.

---

[1] Soil matrix measurements at the OSCO facility are believed to underestimate subsurface VOC concentrations due to the difficulty in obtaining undisturbed soil samples during the deep soil (Phase IIb) boring investigation. Conversely, soil vapor measurements probably overestimate subsurface VOC soil concentrations, because of the relatively high mobility of VOCs in the vapor phase at this site and the conservative nature of the theoretical equilibrium-partitioning calculations used for this study. This issue is discussed further in Section 3.1 herein.

2.0 SOIL VAPOR MONITOR WELL INSTALLATION AND SAMPLING

Nine soil borings containing a total of 17 vapor monitor probes were installed at the OSCO facility during Phase IIb of the RFI (M/B&A, 1991). Soil vapor samples were collected and analyzed from each probe during August 1991, approximately 3 to 4 months after probe installation. Two years later, during August 1993, the probes were resampled in preparation for the performance of this SVMS. By the time of the second sampling event, the California Regional Water Quality Control Board -- Los Angeles Region (RWQCB) had established formal guidelines for conducting soil gas investigations, which were followed during the August 1993 sampling event (RWQCB, 1992). The soil vapor monitor well design and results from the two sampling events are summarized in the following sections.

2.1 MONITOR WELL DESIGN

During Phase IIb of the RFI, each of nine deep soil borings were completed with one to three soil vapor probes. The borings, probe depths, and number of probes at each location are listed in Table 1; their areal and vertical locations at the OSCO facility are shown on Figures 2 and 3, respectively. From bottom to top, the probes were constructed with 1) a 1-inch diameter, 5-foot long stainless steel well screen (0.02-inch slots), 2) a 5-foot long stainless steel blank section, and 3) a 1-inch diameter Schedule 80 PVC riser, which extends to the ground surface. A typical completion diagram for a two-probe boring is provided as Figure 4; as-built completion diagrams and specifications for all nine borings are provided in Appendix D of the RFI Phase IIb report (M/B&A, 1991). One probe each was installed in Borings B-2 and B-8, while Boring B-8R was fitted with three vapor probes. The remaining borings (i.e., B-1, B-2R, B-3, B-4, B-5, and B-6) were completed with two probes each.

The soil vapor probes were constructed within the dual tube drive casing drill apparatus. After the probe screen and blank casing were positioned at the desired depth, a sandpack (#3 sand) was set around the screen interval. The drive casing was withdrawn incrementally from the borehole as sandpack, bentonite, and grout materials were placed in the boring.

The screens placed in borings fitted with multiple probes were separated by a 6- to 8-foot layer of hydrated bentonite pellets topped by a layer of variable thickness containing a mixture of #3 graded sand and 10 to 15% hydrated Enviroplug. The upper portions of the borings were sealed with a volclay grout and a concrete surface seal to provide a barrier to the downward movement of surface liquids. A traffic-rated locking well box was installed over the well head of each boring. The well box was raised higher than the surrounding grade to minimize the opportunity for surface water infiltration.

2.2 SAMPLING PROCEDURES

The August 1991 soil vapor sampling event was performed prior to the development of formal RWQCB Well Inspection Program (WIP) protocol for conducting soil gas investigations (RWQCB, 1992). Consequently, the sampling procedures that were used differed from the approach that was followed during the August 1993 sampling event, which adhered to extant RWQCB guidelines. Perhaps most significantly, the optimal monitor well purge volume was determined differently for the two sampling events.

During the 1991 event, the optimal purge volume for sampling was determined by performing a time-step test at the two probes in Boring 4. Soil vapor from each probe was extracted at a constant rate for approximately 1 hour, during which time samples were collected at approximately 15-minute intervals. Initial concentrations of VOCs were found to increase markedly with time before stabilizing about 10 to

15 minutes into the test. Based on these results, each of the remaining probes was sampled after the probe had been purged for a period of 10 to 15 minutes.

During the 1993 sampling event, the optimal purge volume was established by collecting and analyzing samples after one, two, and three air volumes had been extracted from the probe. The purge tests were conducted at three locations deemed to be representative of site lithologic variations and probe depths -- the probe at Boring 8 and the two probes at Boring 2R. The results of the purge tests indicated that VOC concentrations generally increased between the first and third probe volume, with the highest concentration recorded after the extraction of three probe volumes in most instances. Accordingly, optimal purge conditions were established at three probe volumes for all sample locations.

Summaries of purge test results for both sampling events are provided in Table 2. Based on field observations, the sampling protocol for the 1991 event resulted in the removal of a substantially higher volume of soil vapor prior to sampling than did the 1993 event. The effect of this difference in purge techniques on soil vapor concentrations is not known, given the other variables inherent in soil vapor sampling (e.g., sample collection techniques; see below). However, because smaller volumes of soil vapor were extracted during the 1993 sampling event, results from this sampling event probably are more representative of soil vapor VOC concentrations in the immediate vicinity of the probes.

Sample collection apparatus and techniques used during the two sampling events also were different. In both instances, soil vapor was extracted under vacuum using a high volume air pump connected to the PVC riser at the wellhead box. The connection was made by the use of reducing bushings and valves, and flow and pressure conditions were monitored by the use of in-line gauges. However, during the 1991 event, samples were collected under positive pressure on the exhaust side of the pump, whereas samples were collected upstream from the pump under ambient pressure conditions (after the pump had been shut off) during the 1993 event. Again, the latter protocol is consistent with current RWQCB guidance for soil vapor sampling.

Vapor samples during both sampling events were collected by inserting the needle of a 10-ml glass, gas-tight syringe through a self-sealing silicon sampling port. After the sample was withdrawn, it was transferred immediately to an on-site mobile laboratory for analysis. Additionally, a single sample was collected during each event and submitted under chain of custody control to an off-site, State-certified laboratory for confirmatory analysis. During the 1991 event, the confirmatory sample was collected using a Tedlar bag; a Summa canister was used as the collection device for the 1993 event.

2.3 ANALYTICAL METHODS

Syringes containing the soil vapor samples were delivered immediately to an on-site laboratory operated by InterPhase (San Diego, California), a RWQCB-approved soil vapor testing company. Using a smaller syringe, the laboratory technician extracted the volumes necessary for either direct injection or dilution then injection into a gas chromatograph (GC). Samples were introduced into the mobile laboratory's GCs in volumes ranging from 20 to 500 ul; aliquots were injected within 15 minutes of collection in order to preserve the integrity of the sample.

The InterPhase mobile laboratory uses Varian 3400 and Hewlett-Packard GCs with combination electron capture (ECD) and photoionization (PID) detectors to analyze for a suite of halogenated and non-halogenated VOCs. During the 1991 sampling event, only seven VOCs/parameters were tested: tetra-chloroethene (PCE), trichloroethene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), C_8 aromatics (xylenes and

ethylbenzene), toluene, acetone, and methyl ethyl ketone (MEK). The 1993 sampling event included a total of 27 VOCs, including halogenated compounds, aromatics, and ketones.

The confirmatory samples for each event were analyzed by Performance Analytical, Inc. (Canoga Park, California) using USEPA Method TO-14, as described in the *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air* (EPA 600/4-84-041). The analyses were performed using a Finnigan Model 4500C gas chromatography/mass spectrometry (GC/MS) system incorporating a direct cryogenic trapping technique. A total of 42 VOCs was included in the TO-14 analysis.

2.4 QA/QC PROCEDURES

The integrity of field samples was maintained by the implementation of quality assurance/quality control (QA/QC) procedures. Sampling syringes were decontaminated prior to reuse, either by detergent/solvent washing or dry heating. Sampling equipment was constructed from chemically nonreactive materials (e.g., glass, Teflon, etc.) and soil vapor samples did not contact potentially sorbing materials, thus minimizing sample loss and cross-contamination problems. Current QA/QC procedures for InterPhase's mobile laboratory, which were followed during the 1993 sampling event, are as follows:

- A three-point initial instrumentation calibration is performed prior to and during the field investigation. External standards are either commercially-prepared USEPA chemical standards or mixtures of commercially-prepared gases
- Daily initial and continuing one-point calibration checks and QC recovery checks are performed during the investigation
- Blank samples (from a contaminant-free inert gas source) and ambient air samples are collected at the beginning and end of daily sampling operations
- Detector response to analytes is documented over a 10- to 50-fold range in mass or concentration and compared to the theoretical responses in order to check the linearity of the detector response to analytes
- Septa on the GC column injectors are replaced daily to minimize the possibility of carrier gas leaks.

A more detailed description of the sampling and analytical methods followed during the 1993 event are provided in Appendix A. QA/QC results for this sampling event are provided with the InterPhase laboratory report in Appendix B.

The off-site laboratory, Performance Analytical, Inc., maintains internal documentation of the QA/QC procedures that are followed routinely for air sample analyses. For the OSCO confirmatory samples, method blank analyses were performed concurrently with the sample analyses.

2.5 ANALYTICAL RESULTS

Because the sampling and analytical protocol used for the two sampling events varied somewhat, soil vapor analytical results may not be as comparable as preferred or equally representative of site conditions. Moreover, the two-year interval between sampling events complicates direct comparisons

between the two data sets. Concentrations for the seven VOCs/parameters common to both sampling events are summarized in Table 3. During the 1993 event, four additional VOCs not analyzed for in the 1991 event were detected (i.e., trichlorofluoromethane (CFC-11), 1,1-dichloroethene (1,1-DCE), benzene, and methyl isobutyl ketone (MIBK)). These analytical results are summarized in Table 4. Copies of laboratory results for the 1991 event were included in the *RCRA Facility Investigation (Phase IIb) -- Deep Soil Sampling Program* report (M/B&A, 1991). Laboratory reports for the 1993 event are included in Appendix B hereto.

After reviewing the two sets of soil vapor data, M/B&A decided that the August 1993 data were more appropriate for purposes of this SVMS for the following reasons:

- The 1993 VOC concentrations are similar to corresponding 1991 results and, for most VOCs, are generally higher (see Table 3 herein). Use of higher VOC concentrations adds a degree of conservativism to the modeling effort

- Because the 1993 results are more current, the theoretical modeling performed for this study provides a better estimate of present and predicted threat to groundwater

- The 1993 sampling was performed in accordance with current RWQCB guidelines for soil gas investigations, making the data more acceptable from a regulatory standpoint

- Additional parameters were analyzed during the 1993 event, allowing a more detailed evaluation of site vadose zone contaminants and their possible relationship to groundwater quality.

The August 1993 data, therefore, were used as input to the VOC contaminant migration modeling described in Section 3.0 herein.

M/B&A also evaluated the suitability of incorporating data from the 1989 RFI-Phase I shallow soil gas investigation performed at the OSCO facility (WTI, 1990). The shallow soil vapor sampling consisted of collecting soil vapor from depths of 2.5 to 5 feet bgs at 76 roughly equidistant site locations. Analytical results indicated that PCE, TCE, and 1,1,1-TCA were present in shallow soil at the OSCO facility at average concentrations of 306 ug/l, 13 ug/l, and 141 ug/l, respectively. These average VOC concentrations are appreciably lower than the deeper zone soil vapor concentrations (see Table 3 herein), probably because 1) the average values include data from non-source (i.e., background) locations and 2) VOC loss to the atmosphere via volatilization is greater from the near surface soil than from deeper soil zones.

The shallow soil vapor data could have been used to refine the modeling performed for this study by allowing additional, more detailed characterization of VOC concentrations in the very shallow vadose zone (i.e., 0 to 10 feet bgs). However, M/B&A elected not to use the data because of concerns regarding its age and representativeness vis-a-vis the more recent data sets. Because the average VOC concentrations in the shallow soil data are considerably lower than the concentrations that were selected to represent the uppermost shallow soil horizon (i.e., the shallow probe data from the 1993 event), their use for the present modeling effort would have resulted in a lower estimated threat to groundwater. The decision to exclude the data, therefore, is considered to be a conservative one.

3.0 VOC MIGRATION ASSESSMENT

During the past several years, increasing attention has been placed on the development of methodologies to assess the groundwater threat posed by sites where chemicals are present in the vadose zone. Modeling chemical transport in one or more physical phases using numerical algorithms is one approach that has garnered regulatory acceptance. Numerous computer codes now are available for modeling chemical transport in the vadose zone; however, the processes modeled and the complexity of the numerical representations differ from model to model.

For the OSCO facility, M/B&A elected to model potential VOC transport to groundwater based on measurements of soil vapor concentrations in the vadose zone. The modeling approach relied on three sequential steps: 1) establishing initial total soil VOC concentration distributions using existing site soil vapor data; 2) estimating the VOC mass expected to enter groundwater during specified time intervals using a computer model to simulate vadose zone transport; and 3) converting the VOC mass flux predictions to groundwater concentration estimates using a groundwater mixing model. Each of these modeling steps relies on several conservative assumptions, and results in overall VOC concentrations that may significantly overestimate actual facility conditions.

3.1 VADOSE ZONE TOTAL VOC CONCENTRATIONS

3.1.1 Calculation of Total Soil VOC Concentrations

For modeling purposes, the initial VOC presence in soil is represented using total soil VOC concentrations.[2] M/B&A developed total soil VOC concentrations for the OSCO facility using soil vapor results from the August 1993 sampling event (see Section 2.0 herein). The measured gas phase concentrations were translated into total soil VOC concentrations using the following equilibrium partitioning-based[3] equation (Rosenbloom, et al., 1993):

$$C_t = C_g[(K_d\rho_b + \theta_w)/K_h + (\theta_t - \theta_w)]$$

where;

C_t = Total VOC soil concentration

C_g = Soil vapor concentration

K_d = Soil-water partition coefficient

ρ_b = Soil bulk density

K_h = Henry's Law constant

---

[2] Total soil VOC concentrations comprise the sum of VOC masses present in gaseous, liquid, and solid phases for a given amount of soil.

[3] The term "partitioning" refers to the distribution of a chemical between one physical phase (e.g., liquid) and another (e.g., vapor). A chemical introduced into one phase eventually will become present in other, adjacent phases given enough time and assuming it is not degraded. At "equilibrium," the concentrations of the chemical in all phases of a given multi-phase system are stable.

θ_w = Volumetric water content

θ_t = Total porosity.

Calculations of total soil VOC concentrations for the thirteen VOCs detected in soil vapor at the OSCO facility are provided in Appendix C. The results are summarized in Table 5.

The equilibrium-partitioning calculations provide an indirect, theoretical means by which to estimate total soil VOC concentrations at a given location. Alternatively, total soil VOC concentrations can be measured directly by analysis of soil matrix samples. Direct analysis of soil matrix samples generally will provide a more accurate indication of VOC concentrations in the subsurface under most field conditions. However, where coarse grained, dry soils exist, such as at the OSCO facility, the collection of representative soil samples may not be possible. For purposes of this SVMS, M/B&A elected to use total soil VOC concentrations calculated from soil vapor data rather than direct measurements obtained from soil matrix samples. This decision was made for the following reasons:

- From experiences at other sites, USEPA and RWQCB staff have come to believe that soil samples collected from certain geologic formations (e.g., coarse-grained alluvial sediments) do not provide representative data due to loss of VOCs via volatilization during sample collection, handling, and analysis. The RWQCB, especially, has come to rely on soil vapor data as a surrogate for soil matrix data for sites under investigation in the San Fernando and San Gabriel Valleys, as evidenced by its guidance for conducing soil gas investigations (RWQCB, 1992).

- Because of the site geologic conditions, an air percussion drill rig was used during the OSCO facility RFI Phase IIb deep soil investigation. This drilling method requires that air be introduced into the formation under pressure to remove drill cuttings. The air influx likely caused some volatilization and loss of VOCs present in the coarse sediments that characterize this site. Thus, analyses of soil samples collected under these drilling conditions probably underestimate soil VOC concentrations.

As shown in Table 6, the decision to use soil vapor data to estimate total soil VOC concentrations introduces a conservative element to the modeling approach, inasmuch as the theoretically calculated values are substantially higher than soil matrix concentrations measured during Phase IIb of the RFI. In particular, calculated values for ketones (as represented by MEK) are three to five orders of magnitude higher than concentrations detected in soil matrix samples. It should be recognized that the use of soil matrix data in this SVMS would result in modeled groundwater concentrations that are proportionately (and significantly) lower than those estimated herein.

3.1.2 Distribution of VOC Concentrations in the Vadose Zone

The spatial distribution of total soil VOC concentrations in the vadose zone was represented using a conceptual three-dimensional subsurface geometry. Seven subareas of the OSCO facility (see Figure 5), which are referred to as polygons, were identified based on the locations of the soil vapor monitor wells. For each polygon, three depth intervals were established based on the configuration of probes in the monitor wells (see Figure 3). The established polygons, depth intervals, and corresponding soil vapor probe designations are listed in Table 7. Total soil VOC concentrations associated with each soil vapor probe were assigned to the entire polygon area and depth interval. Because the VOC data are derived from suspected source areas (believed to represent the highest VOC concentrations on-site), applying

these maximum VOC concentrations uniformly across the site represents a conservative modeling approach.

3.1.3 Equilibrium-Partitioning Modeling Considerations

Chemical and physical processes generally are understood to limit the progression toward equilibrium partitioning behavior. For the hydrophobic organic chemicals found at the OSCO facility, chemical non-equilibrium does not appear to be a significant issue -- as sorption reactions typically are very rapid. However, physical non-equilibrium processes, such as rate-limited movement of chemicals between soil macropores (where inter-phase partitioning occurs) and soil micropores (which act as dead-ends), likely are significant in the subsurface at the OSCO facility.

Although theoretical physical non-equilibrium models have been proposed by researchers, their practical application toward defining site-specific partitioning kinetics is limited. Hence, M/B&A presents the equilibrium partitioning-based total soil concentration values as a highly conservative upper-bound estimate for actual total soil VOC concentration values at the OSCO facility.

For acetone, MEK, and MIBK, which have low Henry's Law constants and high solubilities, the equilibrium-partitioning model calculations result in total soil concentrations that are several orders of magnitude larger than those calculated for the other VOCs. Although the measured soil vapor concentrations for these ketones are in the same range as those measured for the other VOCs, these compounds' very low Henry's Law constants cause the equilibrium-partitioning model to translate the vapor-phase concentrations into very high aqueous-phase concentrations. When combined with the measured soil vapor concentrations and the calculated solid-phase concentrations, the very high calculated aqueous-phase concentrations result in total soil concentration values that, based on physical non-equilibrium considerations, likely are substantially overestimated.

3.2 VADOSE ZONE LEACHING MODEL

The VLEACH model was selected to estimate VOC transport in the vadose zone. VLEACH is a one-dimensional solute transport model that simulates chemical leaching using the governing equations for liquid-phase advection (i.e., flow), solid-phase sorption, vapor-phase diffusion, and three-phase equilibria (CH2M Hill, 1990). For application at the OSCO facility, the VLEACH model was screened against the specific selection criteria that have been identified by USEPA (1988) to dictate the level of complexity of mathematical models chosen for groundwater-related exposure assessments. Three primary factors are identified in USEPA's selection criteria document.

1) Objectives criteria -- Refer to the level of modeling detail required to meet the objectives of the study. These criteria consider whether project objectives require screening level or detailed evaluation.

2) Technical criteria -- Based on the mathematical model's ability to simulate the site-specific transport and fate phenomena of importance. These criteria relate to characteristics of the site and chemical(s) of interest.

3) Implementation criteria -- Concerned with the ease with which a model can be obtained and its acceptability demonstrated. These criteria relate to documentation, verification, and validation of the model.

In contrast to a screening-level vadose zone transport study, which typically would employ an analytical solution (e.g., USEPA, 1983), the VOC migration study presented herein is considered a more detailed analysis. VLEACH's capability to model the site-observed, spatially-variable VOC distributions, which could not be accomplished using an analytical solution, thus is consistent with the objective of developing a site-specific VOC migration analysis.

The development of models for practical application at VOC-affected sites still is evolving. As the state of knowledge increases, the ability to simulate processes that now are understood only conceptually will improve. An important factor to bear in mind is that the precision of environmental models most often is limited by the precision of the input values. Under these conditions, increasing the complexity of the models does not necessarily increase the precision of the model predictions, and might often decrease it (Cal-EPA, 1993).

Several transport and fate processes are believed to be important in the vadose zone at the OSCO facility, most of which are incorporated into VLEACH. These processes and the corresponding capabilities of the VLEACH computer code are compared below.

- Liquid advection -- This process is modeled by VLEACH as the downward flux of recharging water.

- Gaseous diffusion -- This process is modeled by VLEACH using Fick's Second Law.

- Sorption/desorption -- This process is approximated by VLEACH using an organic carbon-based linear equilibrium sorption model. Mineral sorption, if any, can be expressed in the model when the organic carbon fraction is set at unity.

- Liquid-gas partitioning -- This process is modeled by VLEACH for soil vapor/pore water partitioning in the vadose zone and at the water table using Henry's Law.

- In-situ degradation -- This process is ignored by VLEACH. As a result, conservative predictions of mass loading to groundwater are formed by the model.

- Liquid-phase dispersion -- VLEACH ignores this process. Because the much more effective vapor-phase dispersion transport process is incorporated into VLEACH, Rosenbloom et al. (1993) considered liquid-phase dispersion to be insignificant. Neglecting this process yields conservative predictions of mass loading to groundwater.

- Preferential flow pathways -- VLEACH assumes that soil behaves as a uniform porous medium (i.e., no fractures or preferential flow paths). For the sand and gravel sediments present within the San Gabriel Basin, this is considered a reasonable approximation.

- Vapor-phase advection -- VLEACH ignores the effects of vapor-phase advection from barometric changes, vapor density, and/or volatilization. While theoretical models have been proposed for describing vapor-phase advection [e.g., Mendoza and Frind (1990) and Massman and Farrier (1992)], the development of accurate model input parameters for these processes is not considered practicable at this time.

- Non-aqueous phase liquids (NAPLs) -- VLEACH assumes that free product does not exist. In soil, contaminant concentrations in the percent (%) range generally are indicative of NAPL presence (USEPA, 1992). OSCO investigation efforts have revealed VOC soil concentrations to be very low (in the ug/kg range).

The acceptability of using VLEACH for modeling the threat to groundwater posed by VOC-affected soils in the vadose zone has been established for similar chemicals and site conditions at USEPA Region 9 Superfund sites in Arizona (e.g., Phoenix-Goodyear Airport and North Indian Bend Wash). At these sites, VOC constituents similar to those found at the OSCO facility are present in similar coarse-grained alluvial materials. From an implementability standpoint, VLEACH appears to satisfy the USEPA criterion for demonstrated acceptability. The model has been compared with, and verified against, two other calculation methods (Rosenbloom et al., 1993). Additionally, USEPA Region 9 personnel have promoted VLEACH for use at Superfund sites in the Los Angeles region (Cooper, 1993).

Input parameters for VLEACH model execution were developed using site-specific data. The VLEACH model input parameters, the selected parameter values, and the data sources and/or rationale for their selection are summarized in Table 8. A discussion of how each of the parameters was developed is presented below.

- Simulation time -- A period of 1,000 years was selected so that the maximum rate of VOC release would be identified prior to the end of the simulation period.

- Time step -- A time step of 1 year was selected in conjunction with cell size choices and based on optimization criteria for minimizing numerical dispersion in the mathematical solution.

- Affected area -- The entire OSCO facility, except for the south field (where solvent storage or treatment operations never have occurred), was considered a potential source area for this exercise. This is a conservative assumption in that the measured soil VOC concentrations, which were derived from suspected source areas (where maximum concentrations are expected), are applied uniformly within each subarea of the site.

- Soil properties -- Site-specific values for bulk density, total porosity, and organic carbon content were determined from physical/geotechnical analyses of OSCO facility soil (see Table 9 and Appendix D). For volumetric water content, M/B&A used soil grain size distribution data to calculate the soil water residual saturation, which is a conservative surrogate value.

- Chemical properties -- Values for organic carbon partition coefficients, Henry's Law constants, aqueous solubility, and free air diffusion coefficients were obtained from relevant literature sources (see Table 10). Measured soil vapor concentrations from site monitor well probes were used to develop initial total soil VOC concentrations, as explained in Section 3.1 herein.

- Recharge rate -- The HELP model (USEPA, 1984) was used to calculate a site-specific recharge value for the OSCO facility. The input parameters for this model and rationale for their selection are summarized in Table 11. Sixteen years of climatologic/meteorologic data for Los Angeles are combined in the HELP model with user-specified soil conditions to provide values for annual average precipitation, evapotranspiration, and runoff. The entire VOC-affected area at the OSCO facility was considered to be paved, as it is presently. The HELP model output, which provides the net percolation value (i.e., precipitation - evapotranspiration - runoff), is presented in Appendix E.

- Boundary conditions -- Because the entire VOC-affected area at the OSCO facility was considered to be paved for this exercise, volatilization of VOCs to the atmosphere was not considered (i.e., the ground surface was considered impermeable to gas diffusion). For the lower boundary condition, the water table similarly was considered impermeable to gas diffusion.

3.3 GROUNDWATER/RECHARGE MIXING MODEL

The VOC mass expected to enter groundwater during specified time increments (i.e., time steps) is predicted for each polygon (and the site as a whole) when the VLEACH model is executed. Resultant groundwater concentrations can be calculated using a separate algorithm that combines the VOC mass loading data with a groundwater mixing equation. In this case, the Summers model (USEPA, 1989b) for groundwater mixing was used.

Groundwater concentrations are calculated with the Summers model using a relationship between volumetric groundwater flow, the VOC mass released, and the volume of infiltrating (i.e., recharge) water. For application to VLEACH mass loading outputs, the Summers model is expressed as:

$$C_{gw} = M_r/(V_i + V_{gw})$$

where;

C_{gw} = Groundwater concentration at the downgradient facility boundary

M_r = Mass released to groundwater during the time step. Calculated by VLEACH as the sum of the mass loading from each of the polygons

V_i = Volume of recharge during the time step. Calculated as the recharge (L/T) times the total property area (L^2)

V_{gw} = Volume of groundwater flowing beneath the property during the time step. For each time step, this value is derived using Darcy's Law [Q = (K)(A)(dh/dl)].

Input parameters for Summers model execution were developed using as much site-specific data as possible. The input parameters, selected parameter values, and data sources and/or rationale for their selection are summarized in Table 12. A discussion of how each of the parameters was developed is presented below:

- Mass released to groundwater (M_r) -- The VLEACH model output provides the mass loading to groundwater for user-specified time increments

- Volume of recharge (V_i) -- The recharge volume was calculated, for each time increment, by multiplying the recharge rate (developed using the HELP model) by the total site area

- Volume of groundwater flow (V_{gw}) -- Parameter values used for solving Darcy's equation were developed from local and site-specific hydrogeologic data. Specific data sources are identified below:

  - Hydraulic conductivity (K) was based on the area-wide data provided by CH2M Hill (1988)

- Hydraulic gradient (dh/dl) was based on the average hydraulic gradient value for the OSCO facility reported by M/B&A (1993b)

- Cross-sectional flow area (A) was calculated as the product of the recharge penetration depth [calculated using the method presented by USEPA (1988), as documented in Appendix G herein] and the square root of the total site area.[4]

3.4 RESULTS AND DISCUSSION

3.4.1 Presentation of the Modeling Results

Predicted VOC groundwater concentrations with respect to time for the OSCO facility are depicted on Figures 6 through 12. The VLEACH model output and the Summers model output, from which the figures were derived, are presented in Appendixes F and G, respectively. [Note: Due to its voluminous nature, the output printout for VLEACH has been abbreviated to include only the modeling results. Complete model results (on computer disk) can be provided on request.]

Modeled maximum groundwater VOC concentrations are presented in Table 13, which also lists various measures of groundwater quality for purposes of comparison. The time predicted for the maximum mass loading to groundwater to occur varies from 50 to 900 years.

3.4.2 Sensitivity Analysis

M/B&A performed a sensitivity analysis for the equilibrium-partitioning model presented in Section 3.1 To gauge parameter impact on the model outcome (i.e., total soil concentration), M/B&A successively varied each model parameter by 20% of its expected natural range. The parameters evaluated, their expected natural ranges, and a qualitative description of each parameter's sensitivity are presented in Table 14.

For the VLEACH model, a sensitivity analysis has been performed by USEPA (1993) to evaluate the impact of various input parameters on the groundwater mass loading results. The results of this analysis are summarized in Table 15. The organic carbon partition coefficient, recharge rate, and organic carbon content were found to have a significant impact on the VLEACH mass loading results. Bulk density and volumetric water content were found to have a moderate impact. The remaining parameters were found to have a low impact.

For the groundwater mixing model, M/B&A performed an analysis of sensitivity similar to USEPA's VLEACH analysis. Because the recharge penetration depth calculation (i.e., HELP model) was used in conjunction with the Summers model, it also was included in the analysis. The methodology used to gauge parameter impact was the same as that used for the equilibrium-partitioning model sensitivity analysis described above, except in this case, the impact of varying each parameter on penetration depth and groundwater concentration was evaluated. The parameters evaluated, their expected natural ranges, and a qualitative description of their sensitivity to model outcome are presented in Table 16. It should be

---

[4] The square root of the total site area was used to represent the site width perpendicular to groundwater flow. The shape and orientation of the OSCO facility and up to 180° shifts in groundwater flow direction make it problematic to establish a uniform site width for all flow conditions. Using the square root of the total site area to represent this value provides an average width that is independent of actual groundwater flow direction.

noted that although vertical dispersivity and length of the source were found to have a high sensitivity for the penetration depth outcome, the sensitivity of the penetration depth parameter for the subsequently calculated groundwater concentrations was found to be only moderate.

3.4.3 Discussion of the Modeling Results

The groundwater impact estimates presented herein should not be viewed as an absolute prognostication, but rather as a comparative analytical tool that is based on current scientific understanding and a given set of conservative assumptions. A series of best engineering judgments necessarily must be formed in order to apply the scientific model. M/B&A has fully documented all assumptions and attempted to identify the parameters to which the model outcome are most sensitive. It is necessary to understand that vadose zone transport modeling is a relatively new field and that modeling results may vary from actual site conditions. Despite these limitations, the regulatory community has recognized that the trade-offs between model uncertainty and the practical need for quantitative information can justify the model's use as a decision-making tool.

It also should be recognized that whenever any finite quantity of chemical is introduced to the vadose zone (no matter how small), some mass loading to the groundwater table is predicted by the VLEACH model. In theory, any site modeled using VLEACH will appear to discharge a finite chemical mass to groundwater. A significant challenge, then, is presented to develop a rational approach for interpreting theoretical modeling results in the context of regulatory agency mandates (e.g., the RWQCB's non-degradation policy, USEPA establishment of potentially responsible party (PRP) responsibilities, etc.).

Conservative assumptions are employed in each of the three modeling steps in an effort to off-set the inherent uncertainties. For each step, these elements of conservatism are reviewed below.

1) Vadose Zone Total VOC Concentrations -- The soil vapor-based modeling approach presented herein relies on equilibrium and partitioning relationships which assume that a chemical's concentration in one phase (e.g., soil vapor) is proportional to its concentration in another (e.g., soil-pore water). As discussed in Section 3.1 herein, chemicals may not partition into soil media at concentrations that would be predicted by theoretical equilibrium partitioning relationships.

2) Vadose Zone Leaching Model -- Several conservative assumptions are inherent in the VLEACH modeling exercise. They include:

   - The VLEACH model is one-dimensional and, therefore, will ignore attenuation due to the lateral spreading of VOCs that percolate in the vadose zone
   - Liquid-phase dispersion and in-situ degradation processes are ignored
   - Recharge was calculated assuming that the paved surface at the OSCO facility behaves as a compacted sand-clay mixture, which likely is substantially more permeable than the asphalt/concrete material actually in place
   - By design, field data from the soil vapor probes represent the highest VOC concentrations believed to be present at the property. For modeling purposes, these maximum concentrations were assumed to exist uniformly throughout the entire

property. In fact, VOC concentrations at most locations undoubtedly are much lower than the values assumed herein.

3) Groundwater Mixing Model -- Groundwater VOC concentrations predicted using the Summers model represent the concentration calculated for the downgradient edge/boundary of the site. As groundwater moves away from the site in the downgradient direction, it mixes and dilutes further as a result of hydrodynamic dispersion processes. The effective mixing depth and width values become greater than those used to calculate the groundwater VOC concentration, and consequently the actual concentration during the mixing timestep is overestimated.

4.0 CONCLUSIONS AND RECOMMENDATIONS

This SVMS was designed and executed to support RFI activities at the OSCO facility. Its primary purpose was to establish whether or not VOC concentrations in vadose zone soil pose a potential existing or future threat to groundwater quality beneath the site. If such a threat were demonstrated, appropriate corrective measures would be studied for potential implementation in response. Any proposed remediation efforts would be evaluated in the context of site involvement as a Potentially Responsible Party (PRP) in the San Gabriel Superfund matter.

Previous investigations at the OSCO facility have shown VOCs to be present in the vadose zone to depths up to 190 feet below ground surface (bgs). The VOCs are believed to exist in three primary physical phases: 1) as components of soil vapor, 2) dissolved in interstitial soil pore water, and 3) adsorbed onto the surface of soil particles. Models that commonly are used to estimate VOC transport and movement in the subsurface require knowledge of the total concentration and distribution of VOCs in all three physical phases combined. This information either can be acquired directly, by collecting and analyzing representative soil samples (known as a "soil matrix samples"), or can be calculated theoretically using equilibrium-partitioning equations that consider the VOC concentration in one or more of its physical states, the physical properties of the soil, and the chemical properties of the VOC.

For reasons explained elsewhere in this report (see Section 3.1 herein), M/B&A elected to estimate total soil VOC concentrations in OSCO facility soil by applying equilibrium-partitioning equations to soil vapor data collected from seventeen deep soil vapor probes. These theoretical values were input into the VLEACH computer model to simulate VOC movement in the vadose zone under a given set of site conditions and assumptions. As a last step, groundwater concentrations that theoretically would result from the downward migration of VOCs were modeled using a groundwater mixing equation.

As shown in Table 13 herein, maximum groundwater VOC concentrations modeled in this manner are all below State and Federal Maximum Contaminant Levels (MCLs) and other health-based water quality criteria, with one exception. The maximum modeled concentration of MEK (1,736 ug/l at 600 years) is higher than the NAS's suggested "no-adverse response level" (SNARL) of 200 ug/l. This finding is not considered significant because: 1) the model assumptions and calculations are conservative and compounding, which results in a substantial overestimation of the threat posed to groundwater (see Section 3.4.3 herein for a discussion of the conservative nature of the various modeling steps), 2) ketones have a high affinity for the aqueous phase, which results in total soil concentrations that may be unrealistically high when modeled using theoretical equilibrium-partitioning calculations, and 3) MEK, a relatively soluble VOC with a low-affinity for the solid phase, has never been detected in groundwater at the OSCO facility and local wells in more than 14 years of groundwater monitoring.

Modeled groundwater concentrations for VOCs other than ketones are well below regional background levels measured in upgradient monitor wells. For example, concentrations of PCE and TCE in groundwater that flows beneath the site from upgradient sources are on the order of hundreds of ug/l, as determined from regional groundwater analyses (M/B&A, 1993b; 1993d). Maximum modeled concentrations of PCE (0.6 ug/l) and TCE (0.09 ug/l) are insignificant with respect to these observed background values.

Evaluation of measured and predicted concentrations of ketones sheds light on the dynamics of VOC subsurface transport at the OSCO facility. Ketones have been detected in deep soil borings at concentrations as high as 6,600 ug/kg (i.e., acetone at 99 feet bgs in Boring 4) and are present at relatively deep locations (e.g., 137 feet bgs in Boring 1; see M/B&A, 1991). Moreover, equilibrium-

partitioning calculations performed using deep soil vapor concentration data suggest that ketone total soil concentrations may be orders of magnitude higher than the soil matrix data would indicate (although, as explained previously, total soil concentrations calculated in this manner probably are overestimated). Ketones are considered highly mobile due to their high solubilities and low soil-water partition coefficients. Thus, if VOCs present in site soil were being transported to groundwater via surface water infiltration and recharge, it is expected that ketones would be detected in site/local wells at relatively high concentrations. Because they have not been detected, M/B&A believes that significant surface water recharge through the OSCO facility has not/is not occurring and that the rate of infiltration/recharge predicted by the HELP model (for the simulated paved surface) overestimates actual field conditions. In the absence of artificial recharge sources, and assuming that the competent barrier to surface water infiltration (i.e., pavement) is maintained at the OSCO facility, empirical and theoretical evidence indicates that the VOCs essentially are trapped in the vadose zone and will not enter groundwater at significant concentrations.

On the basis of these findings and conclusions, M/B&A does not believe that the OSCO facility poses a present or future threat to groundwater quality beneath the site. Accordingly, site-specific corrective measures to protect groundwater quality are neither warranted nor recommended.

5.0 REFERENCES

California Environmental Protection Agency (Cal-EPA). 1993. *CalTOX, A Multimedia Total-Exposure Model for Hazardous Waste Sites*, Prepared by Lawrence Livermore National Laboratories, June 1993.

CH2M Hill. 1988. *Draft San Gabriel Supplemental Sampling Program Report, San Gabriel Basin, Los Angeles, California*. Prepared for USEPA Region 9, Project WA 105.91L27.1, 19 May 1986 (revised May 1988).

CH2M Hill. 1990. VLEACH -- *A One-Dimensional Finite Difference Vadose Zone Leaching Model*, Prepared for USEPA, August 1990.

Cooper, C. 1993. *USEPA Use of Soil Gas Data at Arizona Superfund Sites*, Presented at the Los Angeles Regional Water Quality Control Board Well Investigation Program Soil Gas Seminar, 26 May 1993, City of Commerce.

Environmental Systems & Technologies (ES&T). 1990. *SOILPROP -- A Program to Estimate Unsaturated Soil Hydraulic Properties from Particle Size Distribution Data*. Blacksburg, Virginia.

Massman, J. and D.F. Farrier. 1992. *Effects of Atmospheric Pressures on Gas Transport in the Vadose Zone*, Water Resources Research, 28(3) pp. 777-791.

Mendoza, C.A. and E.O. Frind. 1990. *Advective-Dispersive Transport of Dense Organic Vapors in the Unsaturated Zone: I Model Development*, Water Resources Research, 26(3) pp. 379-387.

Meredith/Boli & Associates (M/B&A). 1991. *RCRA Facility Investigation (Phase IIb) -- Deep Soil Sampling Program, Oil & Solvent Process Company, Azusa, California (two volumes)*, Submitted to USEPA and DTSC, Project No. MB-1990-211, 18 November 1991.

M/B&A. 1993a. *RCRA Facility Investigation Summary Report, Oil & Solvent Process Company, Azusa, California*, Project No. MB-1991-169, 11 January 1993.

M/B&A. 1993b. *RCRA Facility Investigation (Phase III) -- Groundwater Investigation, Oil & Solvent Company, Azusa, California (two volumes)*, Submitted to USEPA and DTSC, Project No. MB-1991-169, 11 January 1993.

M/B&A. 1993c. *Subsurface VOC Migration Study Workplan, OSCO Facility, Azusa, California*, Submitted to USEPA and DTSC, Project No. MB-1993-91, 19 August 1993.

M/B&A. 1993d. *Groundwater Monitoring Program Status Report*, Project No. MB-1993-2, 1 December 1993.

Regional Water Quality Control Board (RWQCB) -- Los Angeles Region. 1992. *Work Plan Requirements for Active Soil Gas Investigation Well Investigation Program (WIP)*, Revised 5 November 1992.

Rosenbloom, J., P. Mock, P. Lawson, J. Brown, and H.J. Turin. 1993. *Application of VLEACH to Vadose Zone Transport of VOCs at an Arizona Superfund Site*, Groundwater Monitoring Review, Summer 1993. pp. 159-169.

Shen, T. 1981. *Estimating Hazardous Air Emissions from Disposal Sites*, Pollution Engineering, 13(8) pp. 31-34.

Sims, R.C., J.L. Sims, and S.G. Hansen. 1991. *Soil Transport and Fate Database 2.0 and Model Management System*, USEPA, Robert S. Kerr Environmental Research Laboratory, Ada, Oklahoma.

Smith-Emery Company. 1989. *Report of Geotechnical Investigation: Proposed Locker Room and Pipe Support Rack*. Prepared for Oil & Solvent Process Company, SECo File No. 19232.

US Environmental Protection Agency (USEPA). 1983. *Rapid Assessment of Potential Ground-Water Contamination Under Emergency Response Conditions*, Office of Health and Environmental Assessment, EPA/600/8-83-030, November 1983.

USEPA. 1984. *The Hydrogeologic Evaluation of Landfill Performance (HELP) Model (Version 1.0)*, USEPA Office of Solid Waste and Emergency Response, EPA/530-SW-84-009.

USEPA. 1988. *Selection Criteria for Mathematical Models Used in Exposure Assessments: Groundwater Models*, Office of Health and Environmental Assessment, EPA/600/8-88/075, May 1988.

USEPA. 1989a. *RCRA Facility Investigation (RFI) Guidance; Interim Final*. Office of Solid Waste. EPA/530-SW-89-031, May 1989.

USEPA. 1989b. *Determining Soil Response Action Levels Based on Potential Contaminant Migration to Groundwater*. EPA/540/2-89/057. USEPA/OERR, Washington, D.C.

USEPA. 1992. *Dense Nonaqueous Phase Liquids -- A Workshop Summary*. Dallas, Texas. 16-18 April 1991, EPA/600/R-92/030.

USEPA. 1993. *VLEACH -- A One-Dimensional Finite Difference Vadose Zone Leaching Model (Version 2.0)*, Prepared by USEPA Center for Subsurface Modeling Support, Robert S. Kerr Environmental Research Laboratory, Ada, Oklahoma.

Western Technologies, Inc. (WTI). 1990. *Phase I-1A Soil Gas Investigation, OSCO Facility, Azusa, California*, Job No. 219-9J-005, 19 January 1990.

TABLES

TABLE 1

Construction Details for Soil Vapor Monitor Wells

Oil & Solvent Process Company
Azusa, California

Well/Boring	Total Depth (ft bgs)	Number of Probes	Probe Depth Interval(s) (ft bgs)
B-1	140	2	66-71 131-136
B-2	43	1	17-22
B-2R	174	2	66-71 157-162
B-3	106.5	2	63-68 99-104
B-4	186.5	2	70-75 170-175
B-5	166.5	2	62-67 155-160
B-6	197	2	65-70 185-190
B-8	57.5	1	36-41
B-8R	122.5	3	40-45 67-72 106-111

TABLE 2

Purge Test Results for August 1991 and
August 1993 Soil Vapor Sampling Events

Oil & Solvent Process Company
Azusa, California

August 1991							
Well/ Boring	Probe Depth (ft bgs)	Sample Time (minutes)	Concentration (ug/l)				
			PCE	TCE	1,1,1-TCA	MEK	Toluene
B-4	75	2	898	213	409	<60	1,148
		17	5,731	229	1,494	12,879	498
		38	7,596	305	1,826	20,666	NA
		58	7,596	294	1,438	29,950	NA
B-4	175	1	4	1	2	<60	<0.38
		15	1,174	147	194	<60	31
		30	1,519	218	343	<60	31
		49	1,381	185	282	<60	23
		64	1,312	169	293	<60	15

August 1993							
Well/ Boring	Probe Depth (ft bgs)	Probe Volume	Concentration (ug/l)				
			PCE	TCE	1,1,1-TCA	MEK	Toluene
B-2R	71	1	0.38	0.055	0.16	<5	2.9
		2	130	26	120	690	1,100
		3	180	34	160	1,100	2,300
B-2R	162	1	2.4	0.45	1.5	<5	916
		2	100	20	53	160	75
		3	270	44	91	390	49
B-8	41	1	570	<100	<10	<5	<1
		2	990	<100	250	32	<10
		3	980	<100	190	29	<10

NA = Not analyzed.
PCE = Tetrachloroethene.
TCE = Trichloroethene.
1,1,1-TCA = 1,1,1-Trichloroethane.
MEK = Methyl ethyl ketone.

TABLE 3

Soil Vapor Concentrations for VOCs
Common to the August 1991 and August 1993 Sampling Events
(ug/l)

Oil & Solvent Process Company
Azusa, California

Well/ Boring	Probe Depth (ft bgs)	PCE		TCE		1,1,1-TCA		Acetone		MEK		Toluene		Xylenes/Ethylbenzene	
		8/91	8/93	8/91	8/93	8/91	8/93	8/91	8/93	8/91	8/93	8/91	8/93	8/91	8/93
B-1	71	2,210	8,600	1,798	260	5,532	820	917	<5	1,557	370	536	44	485	121
B-1(C)	71	19,000	--	820	--	3,300	--	NA	--	NA	--	760	--	1,170	--
B-1	136	117	740	71	31	260	520	28,952	1,400	38,935	1,300	287	480	441	567
B-2	22	90	43	38	7.3	177	49	48	<5	<60	210	157	130	631	1,770
B-2(D)	22	--	43	--	5.7	--	39	--	<5	--	200	--	150	--	3,400
B-2R	71	69	180	5	34	83	160	386	290	<60	1,100	15	2,300	<0.44	7,200
B-2R	162	69	270	11	44	44	91	188	120	<60	390	8	49	9	25
B-3	68	387	110	11	<10	509	19	<48	<5	<60	<5	<0.38	<10	NA	<10
B-3	104	276	0.55	44	<0.1	470	0.27	<48	<5	<60	<5	<0.38	<1	NA	<1
B-4	75	5,731	16,000	229	93	1,494	850	4,343	850	12,879	430	498	520	626	2,500
B-4(C)	75	--	43,000	--	170	--	2,100	--	<200	--	<200	--	860	--	4,570
B-4	175	1,174	2,100	147	280	194	370	<48	230	<60	460	31	<10	26	<10
B-5	67	152	780	5	17	260	120	<48	50	<60	18	<0.38	<10	NA	<10
B-5	160	145	620	114	230	194	110	<48	190	<60	39	<0.38	<10	NA	<10

TABLE 3

Soil Vapor Concentrations for VOCs
Common to the August 1991 and August 1993 Sampling Events
(ug/l)

Oil & Solvent Process Company
Azusa, California
(concluded)

Well/ Boring	Probe Depth (ft bgs)	PCE		TCE		1,1,1-TCA		Acetone		MEK		Toluene		Xylenes/Ethylbenzene	
		8/91	8/93	8/91	8/93	8/91	8/93	8/91	8/93	8/91	8/93	8/91	8/93	8/91	8/93
B-6	70	2,072	7,200	104	110	4,205	550	<48	91	<60	45	<0.38	<10	<0.44	<10
B-6	190	2,002	10,000	1,471	<1,000	3,485	1,400	<48	180	<60	310	<0.38	<10	<0.44	<10
B-8	41	566	980	76	<100	188	190	<48	46	<60	29	4	<10	<0.44	<10
B-8R	45	1,036	1,000	49	<100	194	230	<48	51	<60	41	8	<10	NA	<10
B-8R	72	4,972	6,700	158	140	349	290	<48	43	<60	180	4	<10	NA	<10
B-8R	111	1,933	1,400	142	<100	288	240	<48	220	<60	170	<0.38	<10	<0.44	<10

"--" = Not sampled.
NA = Not analyzed.
(C) = Confirmatory sample.
(D) = Duplicate sample.
PCE = Tetrachloroethene.
TCE = Trichloroethene.
1,1,1-TCA = 1,1,1-Trichloroethane.
MEK = Methyl ethyl ketone.

TABLE 4

Additional VOCs Detected in the
August 1993 Soil Vapor Sampling Event

Oil & Solvent Process Company
Azusa, California

Well/ Boring	Probe Depth (ft bgs)	Concentration (ug/l)			
		CFC-11	1,1-DCE	Benzene	MIBK
B-1	71	28	27	<10	<5
B-1	136	19	2,800	<10	260
B-2	22	61	<10	<10	<5
B-2(D)	22	49	<10	<10	<5
B-2R	71	16	630	<10	200
B-2R	162	6.1	130	<10	45
B-3	68	2.4	<10	<10	<5
B-3	104	0.32	<1	<1	<5
B-4	75	14	750	22	100
B-4(C)	75	<100	<100	<100	<200
B-4	175	16	140	<10	<5
B-5	67	5.4	30	<10	<5
B-5	160	9.7	230	<10	<5
B-6	70	5.3	31	<10	<5
B-6	190	440	110	<10	<5
B-8	41	18	22	<10	<5
B-8R	45	18	34	<10	<5
B-8R	72	9.8	22	<10	<5
B-8R	111	26	180	<10	<5

(C) = Confirmatory sample.
(D) = Duplicate sample.
CFC-11 = Trichlorofluoromethane.
1,1-DCE = 1,1-Dichloroethene.
MIBK = Methyl isobutyl ketone.

TABLE 5

Total Soil VOC Concentrations Calculated from Soil Vapor Data
(ug/kg)

Oil & Solvent Process Company
Azusa, California

Well/ Boring	Probe Depth (ft bgs)	PCE	TCE	1,1,1-TCA	1,1-DCE	CFC-11	Toluene	Ethyl-benzene	*m,p*-Xylene	*o*-Xylene	Benzene	Acetone	MEK	MIBK
B-1	71	11,198	329	715	9	107	99	15	144	288	8	16,612	2,023,729	14,580
B-1	136	964	39	453	971	73	1,079	224	931	762	8	9,302,955	7,110,400	1,516,287
B-2	22	56	9	43	2	234	292	552	3,004	2,454	8	16,612	1,148,603	14,580
B-2R	71	234	43	139	219	61	5,168	3,483	13,218	6,770	8	1,927,041	6,016,492	1,166,375
B-2R	162	352	56	79	45	23	110	15	45	21	8	797,396	2,133,120	262,434
B-3	68	143	6	17	2	9	11	15	15	21	8	16,612	13,674	14,580
B-3	104	1	0	0	0	1	1	1	2	2	1	16,612	13,674	14,580
B-4	75	20,833	118	741	260	54	1,168	1,364	4,206	2,666	34	5,648,223	2,351,901	583,187
B-4	175	2,734	354	322	49	61	11	15	15	21	8	1,528,343	2,515,988	14,580
B-5	67	1,016	21	105	10	21	11	15	15	21	8	332,248	9,8452	14,580
B-5	160	807	291	96	80	37	11	15	15	21	8	1,262,544	213,312	14,580
B-6	70	9,375	139	479	11	20	11	15	15	21	8	604,692	246,129	14,580
B-6	190	13,020	632	1,220	38	1,686	11	15	15	21	8	1,196,094	1,695,557	14,580
B-8	41	1,276	63	166	8	69	11	15	15	21	8	305,669	158,617	14,580
B-8R	45	1,302	63	200	12	69	11	15	15	21	8	338,893	224,251	14,580
B-8R	72	8,724	177	253	8	38	11	15	15	21	8	285,734	984,517	14,580
B-8R	111	1,823	63	209	62	100	11	15	15	21	8	1,461,893	929,822	14,580

TABLE 6

Comparison of Maximum Measured
and Theoretically Calculated Total
Soil Concentrations for Selected VOCs
(ug/kg)

Oil & Solvent Process Company
Azusa, California

Well/ Boring	PCE		1,1,1-TCA		Toluene		MEK	
	Measured[a]	Calculated[b]	Measured[a]	Calculated[b]	Measured[a]	Calculated[b]	Measured[a]	Calculated[b]
B-1	<25	11,198	21	715	22	1,079	720	7.1×10^6
B-2	40	56	<500	43	<500	292	NA	1.1×10^6
B-2R	470	352	8	139	300	5,168	NA	6.0×10^6
B-3	<5	143	<5	17	<5	11	NA	1.4×10^4
B-4	150	20,833	23	741	39	1,168	5,100	2.5×10^6
B-5	6	1,016	<5	105	6	11	<10	2.1×10^5
B-6	32	13,020	<5	1,220	<5	11	<30	1.7×10^6
B-8	<5	1,276	<5	166	<5	11	NA	1.6×10^5
B-8R	33	8,724	<5	253	<5	11	NA	9.8×10^5

[a] Maximum measured concentrations represent the maximum concentration of the VOC detected in soil samples collected from a given boring (M/B&A, 1991). The soil sample may or may not have been collected near the location of a soil vapor probe.

[b] Maximum calculated concentrations represent the maximum total soil VOC concentration calculated from soil vapor data collected from each monitor well (see Table 5 herein).

NA = Not analyzed.
PCE = Tetrachloroethene.
1,1,1-TCA = 1,1,1-Trichloroethane.
MEK = Methyl ethyl ketone.

TABLE 7

Designation of Polygons and Depth Intervals
Based on Soil Vapor Probe Locations

Oil & Solvent Process Company
Azusa, California

Interval[a]	Polygon[b]	Well/Boring	Probe Depth Interval (ft bgs)
Shallow (0 - 50 ft)	A3/A6/A7	B2	17-22
	A1/A2/A4/A5	B8/B8R[c]	36-41/40-45
Medium (50 - 100 ft)	A6	B1	66-71
	A7	B2R	66-71
	A4	B3	63-68
	A2	B4	70-75
	A1	B5	62-67
	A3	B6	65-70
	A5	B8R	67-72
Deep (100 - 200 ft)	A6	B1	131-136
	A7	B2R	157-162
	A4	B3	99-104
	A2	B4	170-175
	A1	B5	155-160
	A3	B6	185-190
	A5	B8R	106-111

[a] See Figure 3 herein.
[b] See Figure 5 herein.
[c] Average of soil vapor measurements obtained from these two wells.

TABLE 8

Input Parameters and Assumptions for VLEACH Model

Oil & Solvent Process Company
Azusa, California

Input Parameter	Model Input Value	Rationale/Source
Simulation time	1,000 years	Need for identification of mass loading maxima
Time step	1 year	Selected based on computational efficiency
Affected area(s)		
• Polygon A1	34,398 ft^2	See Figure 5
• Polygon A2	36,511 ft^2	See Figure 5
• Polygon A3	30,663 ft^2	See Figure 5
• Polygon A4	30,221 ft^2	See Figure 5
• Polygon A5	33,661 ft^2	See Figure 5
• Polygon A6	15,725 ft^2	See Figure 5
• Polygon A7	15,725 ft^2	See Figure 5
• Total area	237,887 ft^2	See Figure 5
Total soil VOC concentrations (ug/kg)	See Table 5	Based on equilibrium-partitioning model using August 1993 soil vapor sampling results
Depth to water table	200 feet	Historical water elevations at site groundwater monitor wells
Soil properties:		
• bulk density (g/ml)	See Table 9	See Table 9
• total effective porosity	See Table 9	See Table 9
• volumetric water content	See Table 9	See Table 9
• organic carbon content (f_{oc})	See Table 9	See Table 9
Chemical properties:		
• organic carbon partition coefficient (K_{oc}) (ml/g)	See Table 10	See Table 10
• Henry's Law constant (K_h)	See Table 10	See Table 10
• aqueous solubility (mg/l)	See Table 10	See Table 10
• free air diffusion coefficient (m^2/day)	See Table 10	See Table 10

TABLE 8

Input Parameters and Assumptions for VLEACH Model

Oil & Solvent Process Company
Azusa, California
(concluded)

Input Parameter	Model Input Value	Rationale/Source
Recharge conditions:		
• rate (ft/yr)	0.0467	Recharge = Precipitation - Evapotranspiration - Runoff; OSCO recharge value calculated using the HELP model (see Table 11)
• initial (recharge) water concentrations (mg/l)	Zero for all chemicals	Assume infiltrating water is contaminant-free
Boundary conditions:		
• atmospheric concentration (ug/l)	Not applicable	Assume paved surface impermeable to gas diffusion
• water table concentration with respect to gas diffusion (ug/l)	Not applicable	Assume water table impermeable to gas diffusion

TABLE 9

Physical Properties of Site Soil

Oil & Solvent Process Company
Azusa, California

Soil Properties	Modeled Value	Rationale/Source
Bulk density, ρ_b (g/ml)	1.73	Geotechnical analysis of OSCO soils; average value reported for six samples collected by Smith-Emery Company (1989)
Total effective porosity, θ_t (unitless)	0.55	Geotechnical analysis of OSCO soils; average value reported for six samples collected by Smith-Emery Company (1989)
Volumetric water content, θ_w (unitless)	0.251	The SOILPROP computer program (ES&T, 1990) was used to calculate the residual water saturation, which is a conservative estimate for volumetric water content. Grain size distribution data reported by M/B&A (1991) for OSCO Boring No. B6-86 was used as input to the SOILPROP program. Other parameters used as input to SOILPROP included bulk density (1.73 g/ml) and total porosity (0.55).
Organic carbon content, f_{oc} (unitless)	0.0005	One-half the Total Organic Carbon (TOC) laboratory detection limit reported by M/B&A (1991) for three OSCO soil samples (Boring Nos./ depths B5-65, B6-86, and B6-97). Although organic carbon was not detected in site soil, mineral sorption is expected to be significant at OSCO. The modeled value is conservative (versus zero organic carbon) in that it significantly increases the equilibrium partitioning-based initial total soil VOC concentrations.

[Note: The soil-water partition coefficient (K_d) was derived using the relationship $K_d = f_{oc} * K_{oc}$. Values for K_{oc} can be found in Table 10 herein.]

TABLE 10

Chemical Properties of VOCs

Oil & Solvent Process Company
Azusa, California

Chemical Name	Organic Carbon Partition Coefficient (K_{oc})[a]	Henry's Law Constant (K_h)[b]	Aqueous Solubility (mg/l)[b]	Air Diffusion Coefficient (m^2/day)[c]
Acetone	14.79	0.0000397	1,000,000	0.9443
Benzene	64.56	0.245	178	0.7978
1,1-Dichloroethene	64.56	6.40	400	0.7435
Ethylbenzene	676.08	0.321	152	0.6108
Methyl ethyl ketone	4.47	0.0000466	353,000	0.8195
Methyl isobutyl ketone	23.99	0.0000466	19,000	0.8195
Tetrachloroethene	660.69	0.820	150	0.6784
Toluene	257.04	0.243	512	0.7172
1,1,1-Trichloroethane	151.36	0.667	950	0.7298
Trichloroethene	125.89	0.373	1,000	0.7435
Trichlorofluoromethane	159.00	0.11	1100	0.7196
m,p-Xylenes	691.83	0.314	146	0.6563
o-Xylene	691.83	0.216	213	0.6563

[a] Source: USEPA (1993)
[b] Source: Sims et al. (1991)
[c] Source: Shen (1981)

TABLE 11

Input Parameters and Assumptions for the Recharge Calculations (HELP Model)

Oil & Solvent Process Company
Azusa, California

Input Parameter	Model Input Value	Rationale/Source
Site Surface Area (ft^2)	237,887	See Figure 5
Vegetative Cover	none	Site surface is paved
Surface Features		
Layer 1: Asphalt		
Thickness (in)	2	Approximate thickness of asphalt pavement
Hydraulic properties		
• porosity (unitless)	0.3325	All hydraulic properties for asphalt layer are based on typical values provided in the HELP model database for a compacted sand-clay mixture (USCS Classification "SC")
• field capacity (unitless)	0.2173	
• wilting point (unitless)	0.1361	
• initial soil water content (unitless)	0.2443	
• saturated hydraulic conductivity (cm/sec)	6×10^{-6}	
Layer 2: Base Layer		
Thickness (in)	58	Balance thickness for a 60-inch surface layer (below 60 inches, evapotranspiration is negligible)
Hydraulic properties		
• porosity (unitless)	0.4370	All hydraulic properties for base layer are based on typical values provided in the HELP model database for a well-graded sand (USCS Classification "SW")
• field capacity (unitless)	0.0624	
• wilting point (unitless)	0.0245	
• initial soil water content (unitless)	0.0624	
• saturated hydraulic conductivity (cm/sec)	5.8×10^{-3}	
Climatological Data	provided in HELP model database	Data for Los Angeles, California (1974 - 1989)
Rainfall Data	provided in HELP model database	Data for Los Angeles, California (1974 - 1989)

TABLE 12

Input Parameters and Assumptions for
the Groundwater Mixing Model

Oil & Solvent Process Company
Azusa, California

Input Parameter	Model Input Value	Rationale/Source
Penetration Depth Calculation:		
Vertical dispersivity, d (ft)	4.88	Value set at 1/10 the estimated longitudinal dispersivity, which, in turn, is set at 1/10 the length of the source (i.e., d = 1/100 the travel distance across the site)
Length of source, L (ft)	487.7	This value is set at the square root of the total site area. Because groundwater flow directions at the OSCO site vary by as much as 180°, the actual site length with respect to groundwater flow is variable. Using the square root of the total site area to represent the site length provides an average parameter value.
Thickness of aquifer, D (ft)	900	Estimated thickness of saturated alluvial sediments in the vicinity of the OSCO site (M/B&A, 1993b)
Aquifer seepage velocity, V (ft/yr)	560	Average aquifer linear velocity for groundwater beneath the OSCO site calculated by M/B&A (1993b); the hydrogeologic parameters K, n, and dh/dl presented herein, as well as a consideration for the overall groundwater flow direction, were used to develop this value.
Recharge rate, I (ft/yr)	0.0467	Recharge = Precipitation - Evapotranspiration - Runoff; OSCO recharge value calculated using the HELP model (see Table 11)
Effective porosity, n (unitless)	0.1	Use estimate of specific yield for OSCO site vicinity provided by CH2M Hill (1988)
Groundwater Mixing Calculation:		
Recharge rate, R (ft/yr)	0.0467	Recharge = Precipitation - Evapotranspiration - Runoff; OSCO recharge value calculated using the HELP model (see Table 11)
Site surface area, A (ft^2)	237,887	See Figure 5
Width of source, W (ft)	487.7	This value is set at the square root of the total site area.
Penetration depth, P (ft)	69.4	Based on the recharge penetration depth calculation method presented by USEPA (1988), with the above values used as input parameters.
Aquifer hydraulic conductivity, K (ft/day)	250	Use estimate of aquifer hydraulic conductivity for OSCO site vicinity provided by CH2M Hill (1988)
Aquifer hydraulic gradient, dh/dl (ft/ft)	0.0045	Average hydraulic gradient for the OSCO site reported by M/B&A (1993b)

TABLE 13

Modeled Groundwater VOC Concentrations Compared to Regulatory Levels for Chemicals in Water (ug/l)

Oil & Solvent Process Company
Azusa, California

Chemical	SVMS Modeling Results[a]	California Maximum Contaminant Level (MCL)	Federal Maximum Contaminant Level (MCL)	Other Health-Based Benchmarks
Acetone	1,478	--	--	4,000[b]
Benzene	0.004	1	5	0.66[c]/5[b]
1,1-Dichloroethene	0.01	6	7	0.033[c]/7[b]
Ethylbenzene	0.08	680	700	700[d]
Methyl ethyl ketone	1,736	--	--	200[d]
Methyl isobutyl ketone	242	--	--	--
Tetrachloroethene	0.6	5	5	0.8[c]/6.9[b]
Toluene	0.19	--	1,000	340[d]
Trichloroethene	0.09	5	5	1.5[e]/5[b]
Trichlorofluoromethane	0.16	150	--	2,000[d]/0.19[c]
1,1,1-Trichloroethane	0.13	200	200	17[e]/200[b]
m, p-Xylenes	0.32	1,750	10,000	10,000[d]
o-Xylene	0.20	1,750	10,000	10,000[d]

[a] Maximum modeled concentration.
[b] USEPA guidance concentration -- "Corrective Action for Solid Waste Management Units at Hazardous Waste Management Facilities." Proposed rule. Federal Register 55 (30798). 27 July 1990.
[c] One-in-a-million incremental cancer risk estimate (USEPA National Ambient Water Quality Criteria).
[d] USEPA or National Academy of Sciences (NAS) health advisory/suggested no-adverse response level (SNARL).
[e] One-in-a-million incremental cancer risk estimate (NAS).

TABLE 14

Sensitivity Analysis for Equilibrium-Partitioning Model Input Parameters

Oil & Solvent Process Company
Azusa, California

Model Input Parameter	Parameter Range	Parameter Sensitivity[a]
Organic carbon content (unitless)	0.001 - 0.05	High
Organic carbon partition coefficient (ml/g)	50 - 700	High
Henry's Law constant (unitless)	0.1 - 7.0	Moderate
Bulk density (g/ml)	1.0 - 3.0	Low
Total effective porosity (unitless)	0.10 - 0.55	Low
Volumetric water content (unitless)	0.10 - 0.55	Low

[a] Parameter sensitivity descriptions were developed roughly as follows:

High = Variation in parameter input value (by 20% of parameter range) results in an outcome variation greater than two orders of magnitude.

Moderate = Variation in parameter input value (by 20% of parameter range) results in an outcome variation between one and two orders of magnitude.

Low = Variation in parameter input value (by 20% of parameter range) results in an outcome variation less than one order of magnitude.

TABLE 15

Sensitivity Analysis for VLEACH
Model Input Parameters

Oil & Solvent Process Company
Azusa, California

Model Input Parameter	Parameter Sensitivity
Organic carbon partition coefficient	High
Henry's Law constant	Low
Aqueous solubility	Low
Free air diffusion coefficient	Low
Recharge rate	High
Bulk density	Moderate
Porosity	Low
Volumetric water content	Moderate
Organic carbon content	High

Source: USEPA, 1993

TABLE 16

Sensitivity Analysis for
Groundwater Mixing Model Input Parameters

Oil & Solvent Process Company
Azusa, California

Model Input Parameter	Parameter Range	Parameter Sensitivity[a]
Penetration Depth Calculation:		
Vertical dispersivity (ft)	0.5 - 5.5	High
Length of source (ft)	50 - 550	High
Thickness of aquifer (ft)	350 - 2000	Low
Aquifer seepage velocity (ft/yr)	50 - 500	Low
Recharge rate (ft/yr)	0.005 - 1.5	Low
Porosity (unitless)	0.10 - 0.55	Low
Groundwater Mixing Calculation:		
Recharge rate (ft/yr)	0.005 - 1.5	Low
Width of source (ft)	50 - 550	High
Penetration depth (ft)	15 - 60	Moderate
Aquifer hydraulic conductivity (ft/day)	27 - 670	Moderate
Aquifer hydraulic gradient (ft/ft)	0.001 - 0.01	Moderate

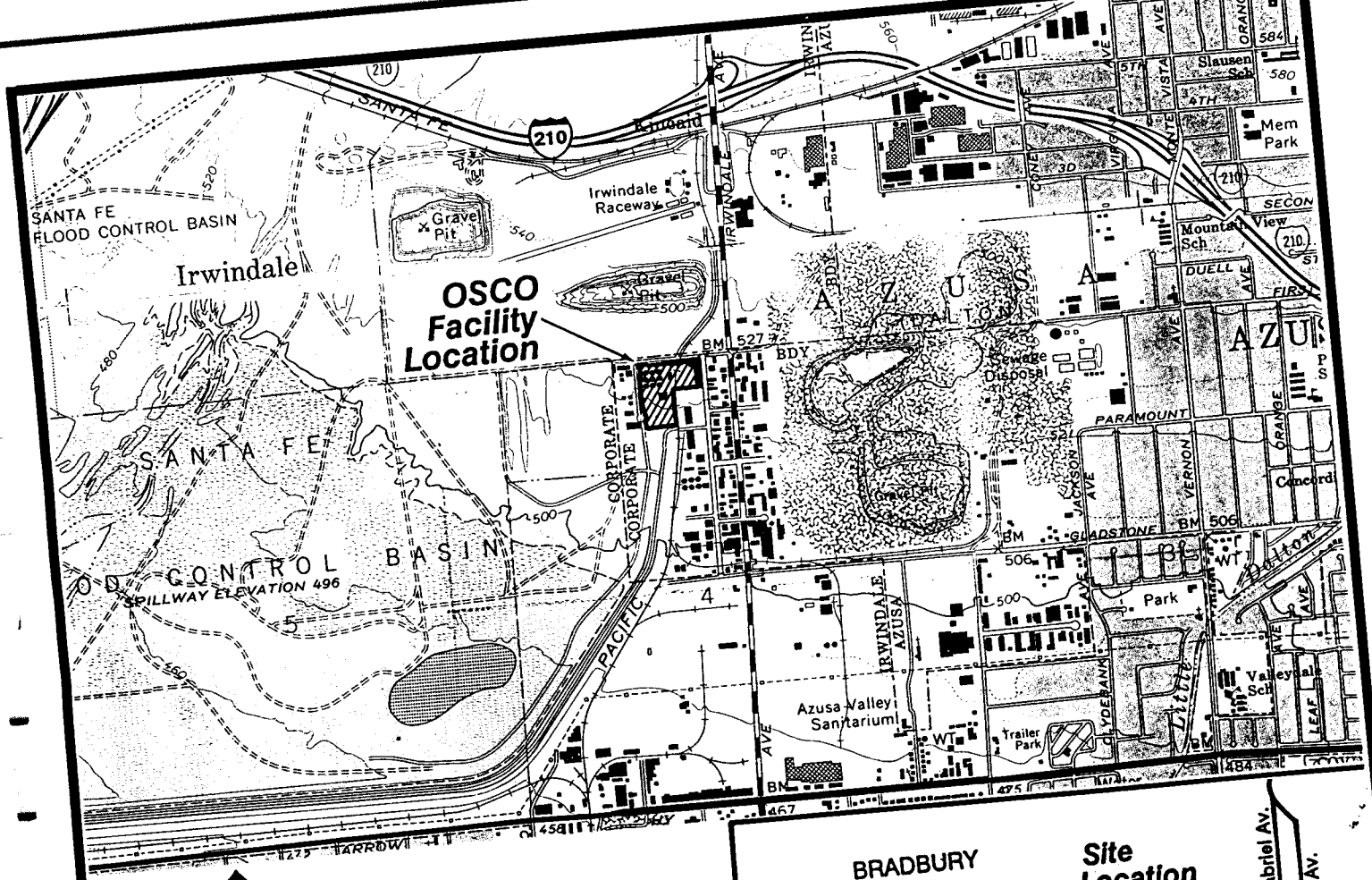
[a] Parameter sensitivity descriptions were developed roughly as follows:

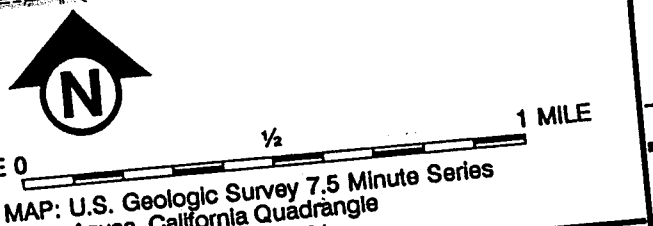
High = Variation in parameter input value (by 20% of parameter range) results in an outcome variation greater than two orders of magnitude.

Moderate = Variation in parameter input value (by 20% of parameter range) results in an outcome variation between one and two orders of magnitude.

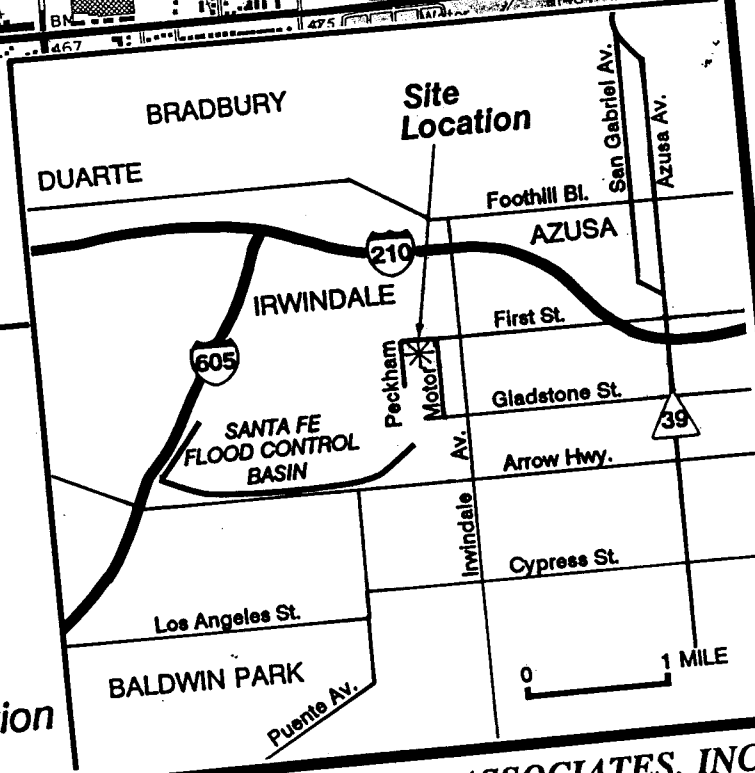
Low = Variation in parameter input value (by 20% of parameter range) results in an outcome variation less than one order of magnitude.

FIGURES





BASE MAP: U.S. Geologic Survey 7.5 Minute Series
Azusa, California Quadrangle
1964, photorevised 1981.



MEREDITH/BOLI & ASSOCIATES, INC

OIL & SOLVENT PROCESS COMPANY

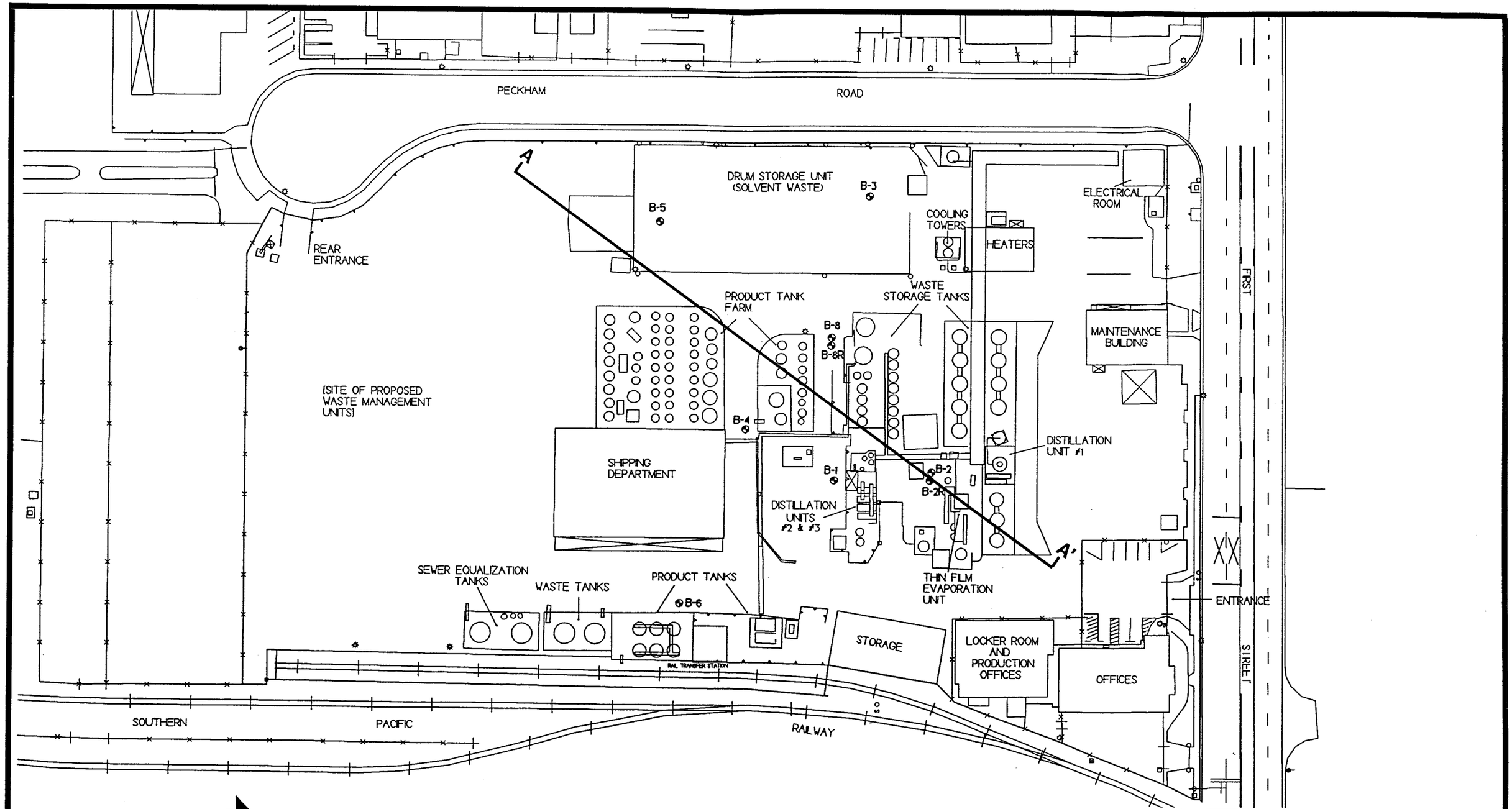
FIGUR

1

SITE LOCATION MAP

1993-

2/2/



B-1 ⊕ Soil Vapor Monitor Well

APPROXIMATE SCALE 0 100 FEET

A A' Line of Cross-Section (see Figure 3 for detail)

MEREDITH/BOLI & ASSOCIATES, INC.

OIL & SOLVENT PROCESS COMPANY

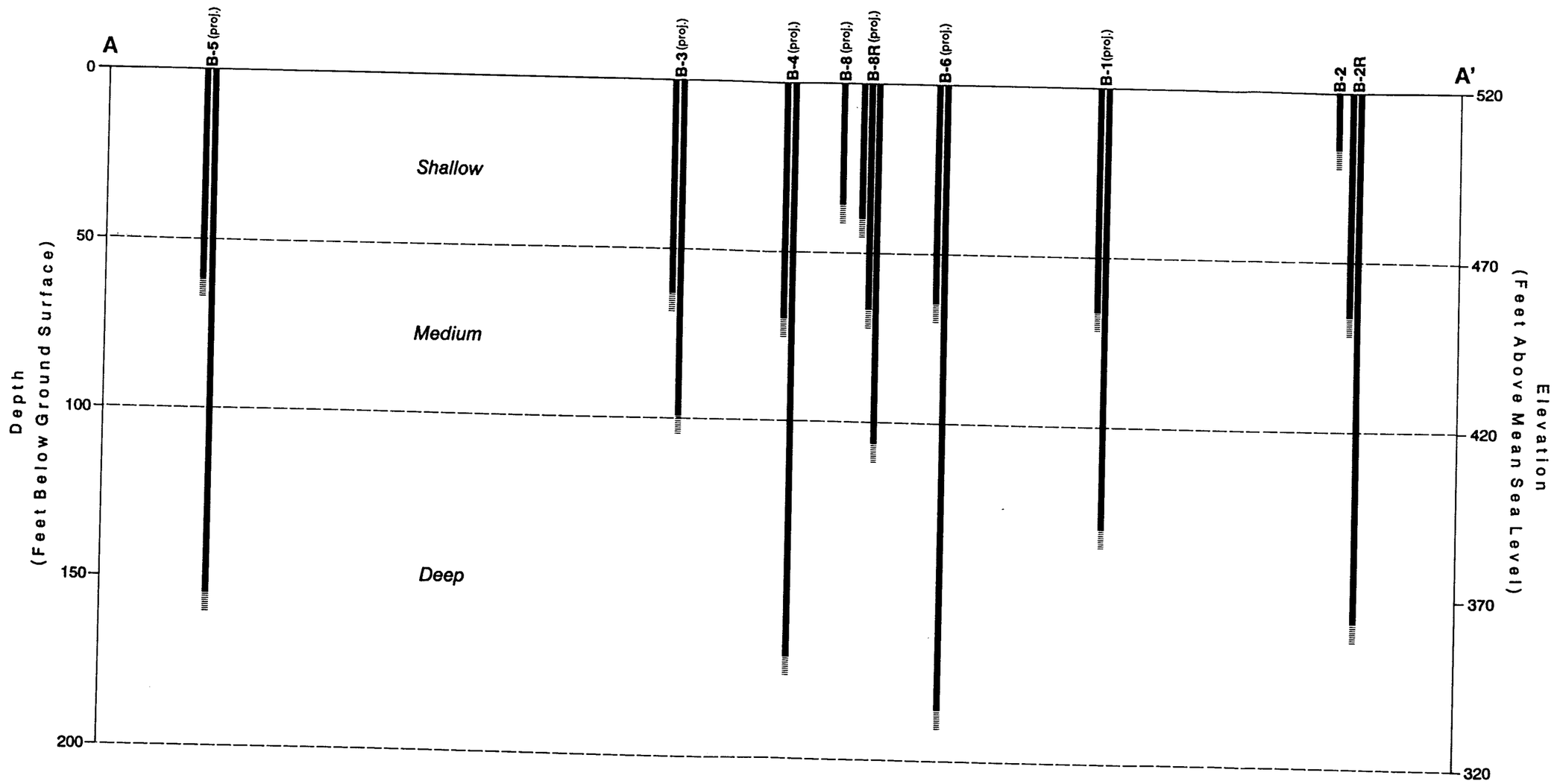
SOIL VAPOR MONITOR WELL LOCATIONS

FIGURE

2

1993-91

2/2/94



LEGEND

B-3 ← Boring/Well Identification

← PVC Riser

← Soil Vapor Probe

MEREDITH/BOLI & ASSOCIATES, INC.

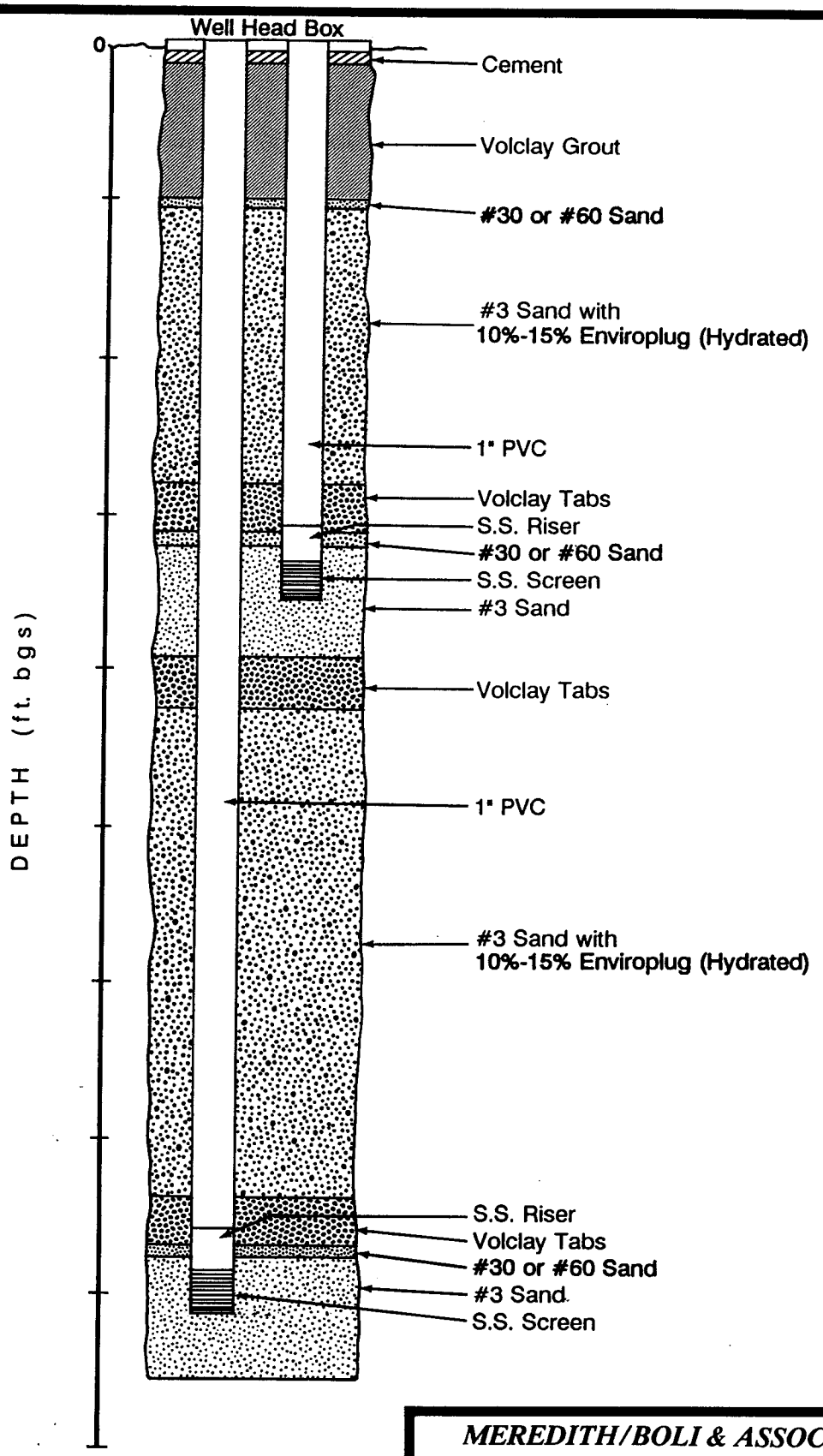
OIL & SOLVENT PROCESS COMPANY

VERTICAL DISTRIBUTION OF SOIL VAPOR PROBES

FIGURE 3

1993-91

2/2/94



MEREDITH/BOLI & ASSOCIATES, INC.

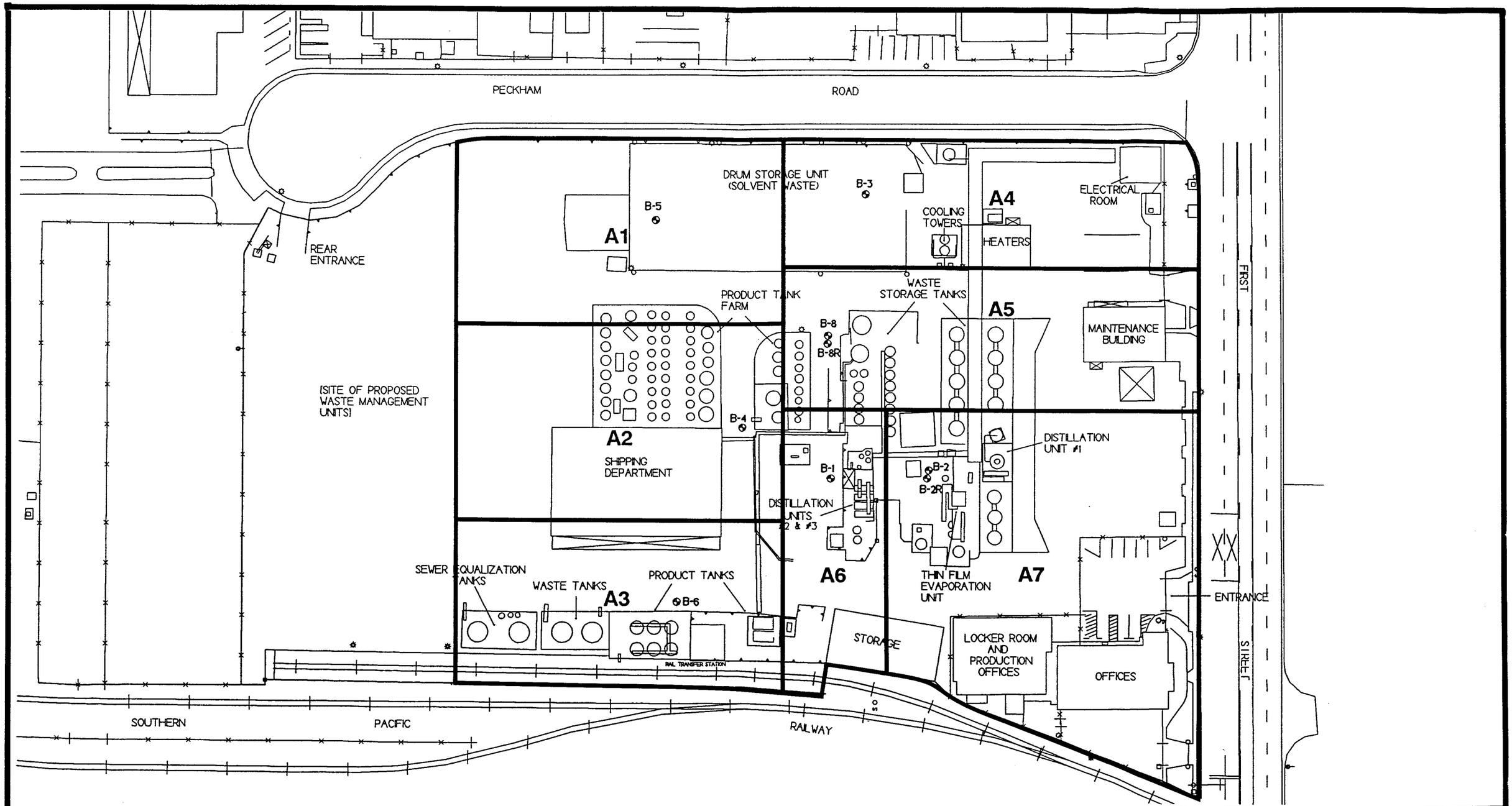
OIL & SOLVENT PROCESS COMPANY

TYPICAL SOIL VAPOR MONITOR WELL COMPLETION DIAGRAM

FIGURE

4

1993-91



LEGEND

A1 Polygon Designation and Boundary

B-1 Soil Vapor Monitor Well

APPROXIMATE SCALE 0 — 100 FEET

MEREDITH/BOLI & ASSOCIATES, INC.

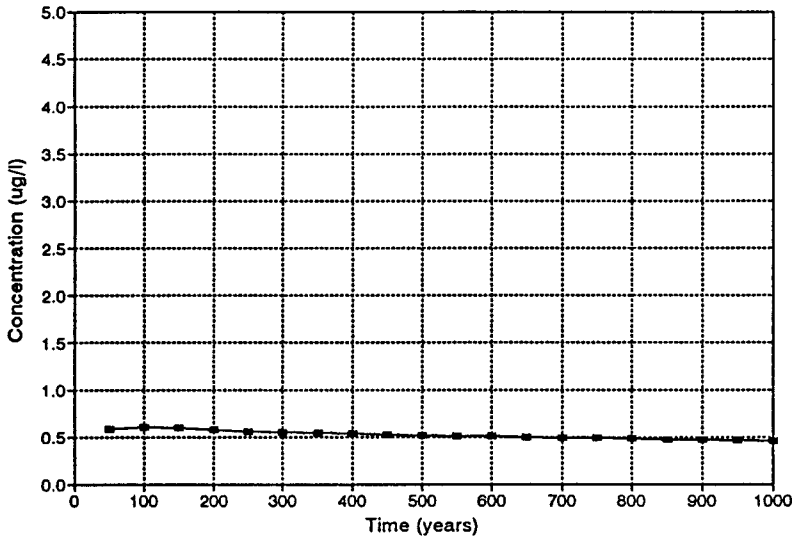
OIL & SOLVENT PROCESS COMPANY

POLYGON BOUNDARIES USED FOR VLEACH MODEL

FIGURE 5

1993-91

2/2/94

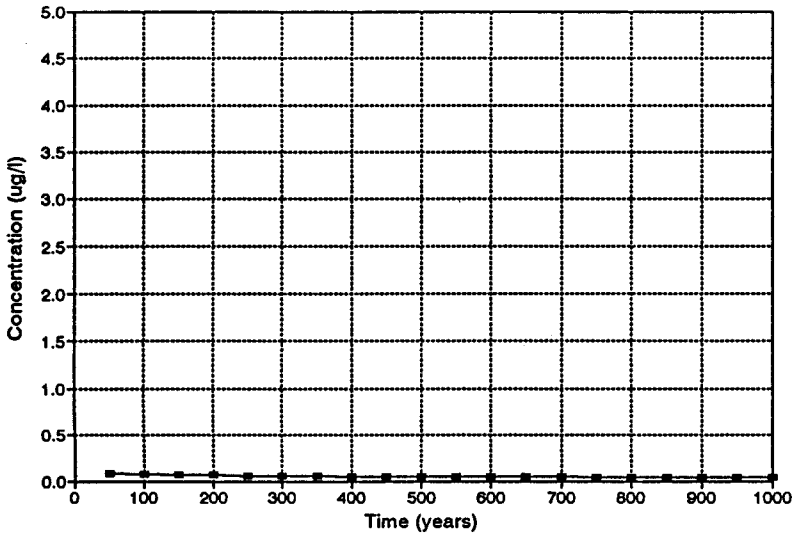


MAXIMUM MODELED CONCENTRATION = 0.6 ug/l

TIME = 100 years

STATE MCL = 5 ug/l

a) TETRACHLOROETHENE



MAXIMUM MODELED CONCENTRATION = 0.09 ug/l

TIME = 50 years

STATE MCL = 5 ug/l

b) TRICHLOROETHENE

MEREDITH/BOLI & ASSOCIATES, INC.

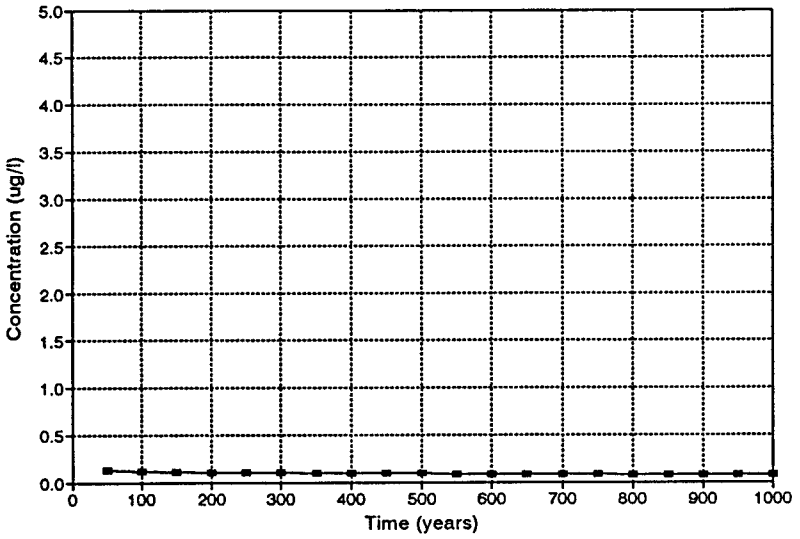
OIL & SOLVENT PROCESS COMPANY

MODELED PCE AND TCE GROUNDWATER CONCENTRATIONS

FIGURE 6

1993-91

2/9/94

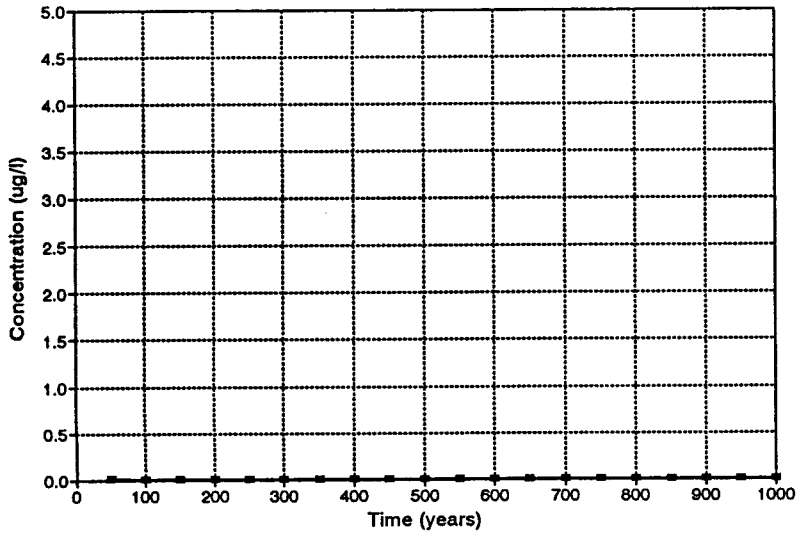


MAXIMUM MODELED CONCENTRATION = 0.13 ug/l

TIME = 50 years

STATE MCL = 200 ug/l

a) 1,1,1-TRICHLOROETHANE



MAXIMUM MODELED CONCENTRATION = 0.01 ug/l

TIME = 50 years

STATE MCL = 6 ug/l

b) 1,1-DICHLOROETHENE

MEREDITH/BOLI & ASSOCIATES, INC.

OIL & SOLVENT PROCESS COMPANY

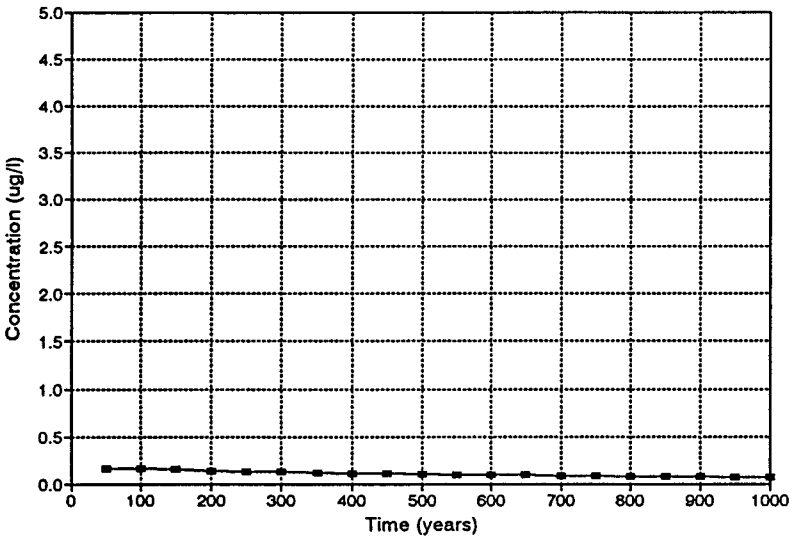
MODELED 1,1,1-TCA AND 1,1-DCE GROUNDWATER CONCENTATIONS

FIGURE

7

1993-91

2/9/94

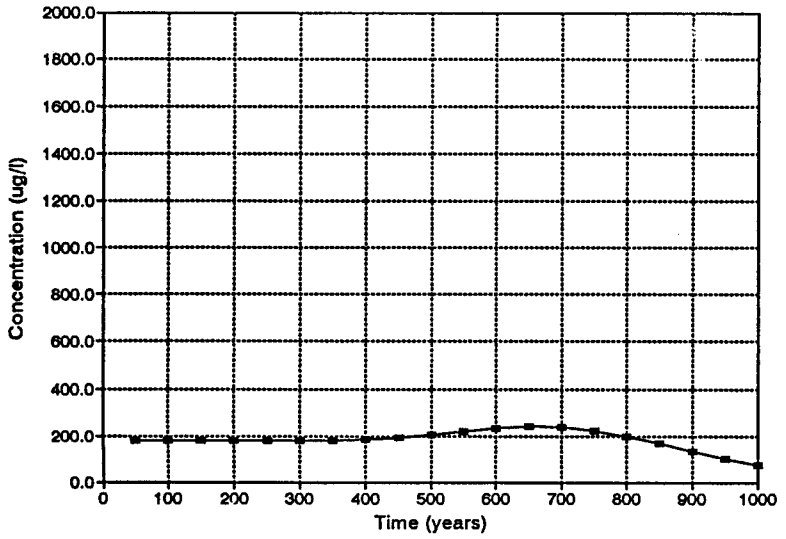


MAXIMUM MODELED CONCENTRATION = 0.16 ug/l

TIME = 50 years

STATE MCL = 150 ug/l

a) TRICHLOROFLUOROMETHANE



MAXIMUM MODELED CONCENTRATION = 242 ug/l

TIME = 650 years

STATE MCL = Not established

b) METHYL ISOBUTYL KETONE

MEREDITH/BOLI & ASSOCIATES, INC.

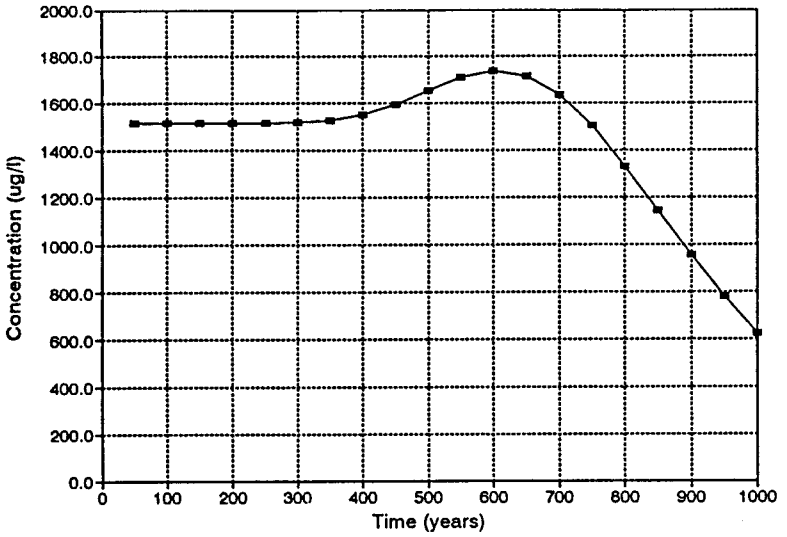
OIL & SOLVENT PROCESS COMPANY

MODELED TRICHLOROFLUOROMETHANE AND MIBK GROUNDWATER CONCENTRATIONS

FIGURE 8

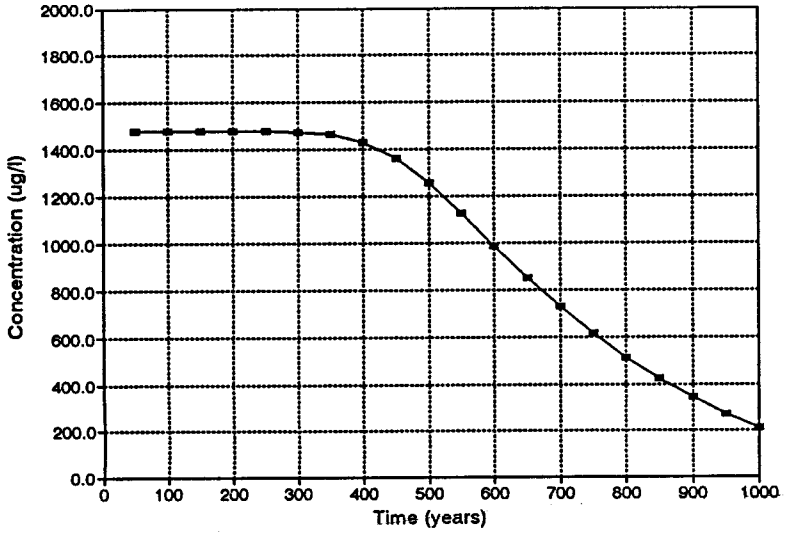
1993-91

2/9/94



a) METHYL ETHYL KETONE

MAXIMUM MODELED CONCENTRATION	=	1,736 ug/l
TIME	=	600 years
STATE MCL	=	Not Established



b) ACETONE

MAXIMUM MODELED CONCENTRATION	=	1,478 ug/l
TIME	=	50 years
STATE MCL	=	Not Established

MEREDITH/BOLI & ASSOCIATES, INC.

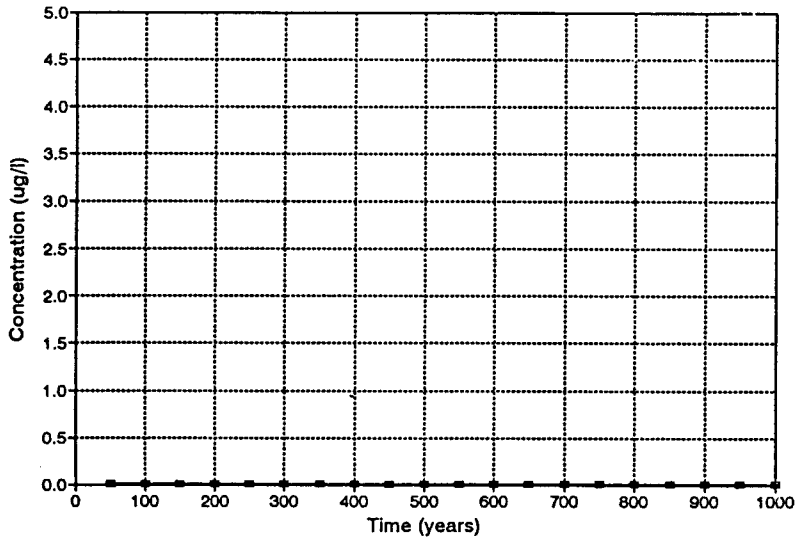
OIL & SOLVENT PROCESS COMPANY

MODELED MEK AND ACETONE GROUNDWATER CONCENTATIONS

FIGURE 9

1993-91

2/9/94

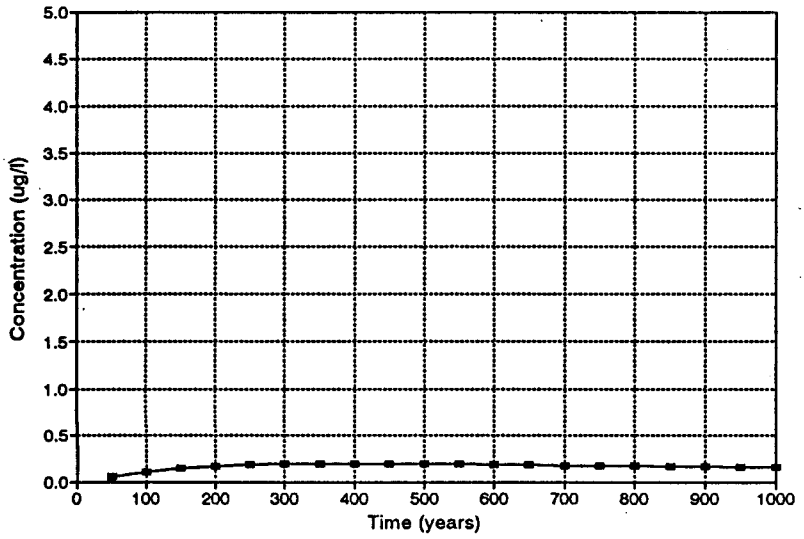


MAXIMUM MODELED CONCENTRATION = 0.004 ug/l

TIME = 100 years

STATE MCL = 1 ug/l

a) BENZENE



MAXIMUM MODELED CONCENTRATION = 0.19 ug/l

TIME = 500 years

FEDERAL MCL = 1,000 ug/l

b) TOLUENE

MEREDITH/BOLI & ASSOCIATES, INC.

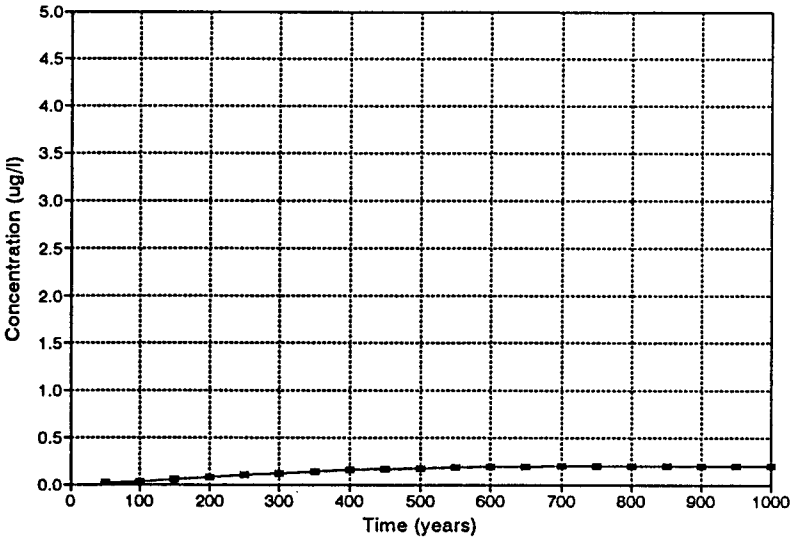
OIL & SOLVENT PROCESS COMPANY

MODELED BENZENE AND TOLUENE GROUNDWATER CONCENTATIONS

FIGURE 10

1993-91

2/9/94

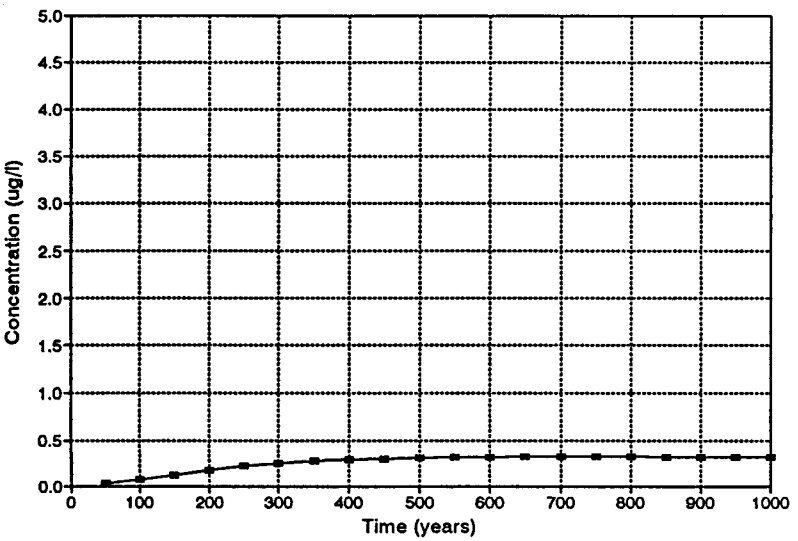


MAXIMUM MODELED CONCENTRATION = 0.20 ug/l

TIME = 900 years

STATE MCL = 1,750 ug/l

a) o-XYLENE



MAXIMUM MODELED CONCENTRATION = 0.32 ug/l

TIME = 900 years

STATE MCL = 1,750 years

b) m,p-XYLENES

MEREDITH/BOLI & ASSOCIATES, INC.

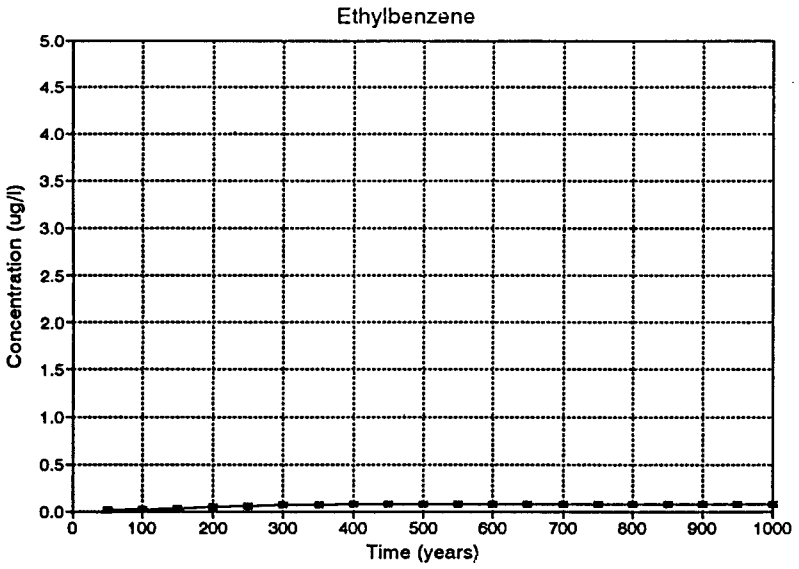
OIL & SOLVENT PROCESS COMPANY

MODELED XYLENES GROUNDWATER CONCENTATIONS

FIGURE **11**

1993-91

2/9/94



MAXIMUM MODELED CONCENTRATION = 0.08 ug/l

TIME = 700 years

STATE MCL = 680 ug/l

a) ETHYLBENZENE

MEREDITH/BOLI & ASSOCIATES, INC.

OIL & SOLVENT PROCESS COMPANY

MODELED ETHYLBENZENE GROUNDWATER CONCENTATIONS

FIGURE 12

1993-91

2/9/94

APPENDIX A

INTERPHASE'S PROCEDURES FOR CONDUCTING SOIL GAS INVESTIGATIONS

PROCEDURES FOR CONDUCTING SOIL GAS INVESTIGATIONS

Introduction

This document was prepared specifically to address the requirements of California regulatory agencies (e.g., Regional Water Quality Control Board, Department of Health Services) for conducting soil gas investigations.

Equipment/Instrumentation

InterPhase operates a mobile sampling and analytical van which is capable of collecting soil, soil gas and ambient air samples. Real-time chemical analyses of soil gas, water and air samples are performed for indicator compounds (analytes) selected for each project site. The InterPhase van operates under the supervision of a degreed project chemist. Field equipment and sampling systems used by InterPhase are as follows:

* Modified one-ton Ford E350 van;
* Two gasoline-powered AC generators;
*Van-mounted hydraulic driving/hammering system designed to drill through pavement and install or remove sampling probes;
* 100 feet of percussion drill steel in 3-foot probe sections;
* Dedicated 1-inch diameter (O.D.) stainless steel tubes for collecting soil samples over specified depth intervals;
* Tubing, pumps, vials and centrifuges for collecting and preparing surface or ground water samples;
* Oilless air pump and evacuation chamber for collecting exact volumes of soil gas at atmospheric pressure;

Analytical instrumentation and chemical supplies include the following:

* Varian 3400, Hewlett-Packard 5890 and SRI 8610 gas chromatographs;
* 386 PC-based data management and GC integration systems;
* A combination of ECD (electron capture), ELCD (electrolytic conductivity or Hall), FID (flame ionization), PID (photoionization), and TCD (thermal conductivity) detectors;
* UHP grade compressed analytical gases (nitrogen, helium, hydrogen);
* Analytical vapor and water standards for priority pollutants, gaseous hydrocarbons and fixed/biogenic gases;
* High resolution megabore, capillary, and packed gas chromatographic columns;
* Fittings, tools, plumbing and syringes required for normal GC operation.

In the unlikely event that chromatograph sensitivity is affected by electrical surges or vibration, resulting changes are immediately observed by continuously monitoring the baseline voltage for all detectors. It should be noted that the analytical instruments are powered by a generator system which is completely separate from that running either the hydraulic/pneumatic equipment or the motor vehicle.

Sampling Procedures

Soil gas samples are collected at designated depths by connecting a length of silicone tubing to a steel sampling cap. A vacuum of 22 to 24 inches of mercury is applied to the probe and the resistance to flow is measured via a two-stage gauging system. At that point, a predetermined volume of soil gas, proportional to the volume of the sampling probe (depth), is evacuated while recording the time required for the system to return to ambient pressure. This procedure permits an estimate of the relative soil air permeability and prevents the collection of soil gas samples under vacuum pressure. In addition, purging the sampling probe approximately 1.5 volumes permits the removal of air in the system with a minimal disturbance of soil gas around the probe tip. Unlike groundwater sampling, purging of a soil gas probe is designed to remove only the ambient air in the system.

A minimum sampling depth of 3 to 5 feet below ground surface (bgs) is recommended in areas where bare soil is the surface cover in an effort to minimize sample dilution with atmospheric air. Soil gas samples may be collected at depths less than 3 feet bgs to assess the accumulation of vapors under a surface cover such as asphalt or concrete. Comparing contaminant concentrations and fixed/biogenic gas composition as a function of purge volume may be performed at the beginning of a survey. Purge volume experiments may be conducted in an area where subsurface contamination is expected to be greatest and are designed to assess optimal purge times and potential sample dilution with atmospheric air.

As the pressure within the sampling system reaches atmospheric, a 10 cc vapor sample is collected in a glass syringe by inserting the needle through the length of the sampling cap. Soil gas samples never contact potentially sorbing materials such as the pump diaphragm or soft tubing. Pre-cleaned lengths of drill steel are used for each sample location in order to minimize the possibility of cross-contamination among sampling locations. Sections of drill steel are reused only if GC analyses indicate that no residual contamination is detected after purging with compressed air or nitrogen. Dedicated drive points are used for both single and multi-depth sampling applications.

Two ambient air samples are collected over the course of each day and analyzed for background concentrations of the target compounds. All components of the sampling system are checked for contamination prior to sampling at the beginning of the day by drawing atmospheric air or nitrogen gas through the system, subjecting it to GC analysis, and comparing the resulting chromatogram with that of ambient air or UHP nitrogen. Syringes are randomly checked for contamination twice a day, once in the morning and once in the afternoon. Steel sampling components are always cleaned using steam or pressurized water and detergent (Alconox) at the conclusion of each day and can be

cleaned immediately after use with a portable sprayer, if required by health and safety procedures. Probes are dried with a purified air from an oilless compressor.

As part of the sampling procedure, probe locations are recorded on the field sampling sheets. In addition, field data forms (and chain-of-custody forms, if necessary) are used to record observations regarding vapor sampling and probe installation. These field data forms may include, but are not limited to, sample identification, maximum vacuum pressures, flow rate, time required for the sampling system to reach atmospheric pressure, sampling depth, time of sample collection and analysis, volume of soil gas extracted, and observations of soil characteristics.

Duplicate soil vapor samples are collected by connecting dedicated sections of polyethylene tubing to a low-volume vacuum pump and filling a Tedlar bag or evacuated cylinder. The pump is purged between sample locations and is checked for residual VOC contamination either by on-site GC analysis or by collecting field "blanks" which are submitted to a laboratory. Gas containers are normally transferred under chain-of-custody procedures to a commercial laboratory where they are analyzed according to the specified methods. The percentage of duplicates submitted for laboratory analysis is dependent on project objectives and regulatory specifications. InterPhase recommends that duplicates be collected at 5% of the sampling points.

InterPhase scientists have conducted field experiments to estimate the capture zone around the end of the soil gas sampling probe in order to demonstrate that vapor samples are not diluted with atmospheric air. Capture zone estimates were calculated for sandy soils and for silty or clayey soils as follows:

Sampling Depth: 6 feet
Volume of sampling probe: 115 cm^3/3-foot probe length
Purge Volume: 500 cm^3 (Approximately 2 probe volumes)
Air porosity of sandy soils: 30% = 0.3
Air porosity of silt or clay soils: 20% = 0.2
Volume of soil gas collected from sandy materials:
500 cm^3/0.3 = 1,666 cm^3
Volume of soil gas collected from silty or clayey materials:
500 cm^3/0.2 = 2,500 cm^3

Assuming isotropic vapor flow, the volume of soil gas collected may be described as a sphere with the origin at the tip of the soil gas probe. Therefore,

$$(4/3)(pi)(r^3) = 1{,}666\ cm^3\ \text{(sand)}$$
$$r = 7.35\ cm$$

$$(4/3)(pi)(r^3) = 2{,}500\ cm^3\ \text{(silt/clay)}$$
$$r = 8.41\ cm.$$

The purge volume of 500 cm^3 ensures that two volumes of the sampling probe are evacuated (2 probe lengths x 115 cm^3 = 230 cm^3). The calculated radius of influence is substantially less than the distance to ground surface (182.9 cm), thus minimizing the potential for sample dilution with atmospheric air.

Preliminary Subsurface Assessment

Based on the prior history of each specific project site, soil gas probes are normally sampled on a 20 to 50 foot grid in areas of suspected contamination and on an 80 to 100 foot grid in areas that are considered to be "background". Sampling on a different grid spacing may be conducted if required by project specifications. In areas where previous soil gas sampling has identified elevated VOC concentrations, high resolution and/or multi-depth sampling may be conducted in order to assess the contaminant source and the lateral or vertical extent of vapor contamination.

Analytical Procedures

The 10 cc soil gas samples are subsampled and analyzed within 15 minutes of collection in order to preserve the integrity of the vapor sample. Duplicates may be analyzed approximately every twenty samples by gas chromatography for documentation of reproducibility.

Analytes are identified by their respective elution times through the selected columns and detectors. Retention or elution times are compared with external standards injected in a gaseous, organic, or aqueous phase. Analyte separation for compounds detected by the FID (e.g. petroleum hydrocarbons and ketones) is performed using a 30 m x 0.53 mm DB-WAX or DB23 megabore capillary column (J&W Scientific). Analyte separation for compounds detected by the ECD (e.g. halogenated aliphatics) is performed by using a 30 m x 0.53 mm DB-624 megabore capillary column (J&W Scientific). Confirmatory analysis for ECD analytes are performed on a DB-WAX column, while confirmatory analysis for FID analytes are performed on a DB-624 column. Identification of vinyl chloride and alkyl benzenes may be performed using the aforementioned capillary columns and a PID. Analyte separation for compounds detected by the TCD is performed by using either a molecular sieve or CTR-1 2 m stainless steel packed columns (Alltech Associates), ranging in diameter from 0.64 to 0.32 cm. Difficulties associated with peak separation are minimized by the use of low viscosity carrier gases, compound-specific detectors, megabore capillary columns, and method-specific temperature programs.

Analyte concentrations are estimated by comparing the detector response for a known concentration or mass of the external standard with the detector response for the sample. Multi-point calibration curves are computer-generated by plotting the detector response for external standards against a range of analyte concentrations. The detector response is checked periodically during a survey to ensure that the calibration curves are accurate. Analyte detection limits are determined by the response factor for each day.

Although preliminary results are often available in the field, all chromatograms generated during a soil gas survey are subsequently reviewed by another chemist to ensure that computer identification and quantification of analytes are correct. Target analytes are normally selected during the early stages of a soil gas survey; however, "unidentified" peaks which appear during the course of a field investigation may be tentatively identified by reproducing the chromatographic conditions at a later time. Second column confirmation of GC analytes may be performed by InterPhase if target analytes coelute or if stipulated by project objectives.

The following procedures are employed during all soil gas surveys:

* High-volume sampling and subsampling syringes are decontaminated by washing with a mild detergent and drying at a minimum temperature of 90 degrees Celsius;

* Microliter syringes (used for sample injection onto the GC column) are solvent rinsed, purged with an inert gas, and checked for contamination by immediate injection into the appropriate gas chromatograph;

* External standards are either commercially-prepared EPA chemical standards or mixtures of commercially-prepared gases;

* Detector response to analytes is documented over a 10 to 50-fold range in mass or concentration and compared to the theoretical responses in order to check the linearity of the detector response to analytes;

* Septa on the GC column injectors are replaced daily to minimize the possibility of carrier gas leaks (only UHP gases are used for chromatography); and

* All analytical data (e.g., chromatograms, calibration curves, integration reports) are stored on a computer floppy disk, transmitted to the InterPhase office, and reviewed by a second chemist.

Determination of Detection Limits

Limits of detection for quantitative analysis are determined by the following factors:

1) Analytical Method
2) Specific Analyte
3) Instrumentation (detector)
4) Injection Size

An example of calculating the detection limit for a specific analyte is as follows:

A 50 µL injection of a vapor standard containing 1 ppm(v) 1,1,1-TCA may have an area under the peak of 25,000,000 area units. Background noise registered on an ECD detector is normally in the range of 2,500 to 5,000 area units. By definition, the limit of

detection is 10,000 area units, which corresponds to a detection limit of 0.0004 ppm(v) for 1,1,1-TCA.

$$(10{,}000/25{,}000{,}000) * 1 \text{ ppm(v)} = 0.0004 \text{ ppm(v)}$$

If a typical sample injection size of 200 μL is used, the limit of detection for 1,1,1-TCA would be 0.0001 ppm(v).

$$0.0004 \text{ ppm(v)}/4 = 0.0001 \text{ ppm(v)}$$

The detection limit for a particular compound is dependent on the level of background noise for a detector. This background noise may be related to instrument performance as well as matrix interference.

Data Interpretation

Vapor-phase diffusion is the prevailing mechanism by which soil gas analytes are transported in the subsurface. The presence of an analyte in soil gas is a function of the phase, location and concentration of the source, physical properties of the analyte, and the media through which transport occurs. The site-specific variability among soil properties profoundly affect vapor-phase diffusion and must be considered in the interpretation of analyte distribution in the soil gas. Among these soil properties are: soil moisture, soil particle size and distribution, and air-filled porosity. Anomalies in the spatial distribution (vertically or laterally) of analyte concentrations in soil gas samples will be noted. InterPhase provides an interpretive report upon request of the client.

Although isoconcentration contours of soil gas data can be plotted on site maps, it should be emphasized that these isotherms are only representative of the contaminant distribution in soil vapor. Isoconcentration contours for compounds in soil or groundwater may differ in extent and orientation from those delineated in soil gas. Inherent assumptions that are infrequently discussed in preparing soil gas isotherms are:

* Soil gas concentration data are adequate to describe the spatial distribution of contaminants underlying the site;

* Vertical anisotropy is either insignificant or can be described by existing site data;

* Vapor barriers that may impede the gaseous diffusion of analytes are either nonexistent or do not vary over the investigation site; and

* Soil texture, water content, and air-filled porosity are spatially uniform over the site.

DETAILED ANALYTICAL PROCEDURES

SCOPE OF THE METHOD

This document describes a procedure for the analysis of volatile organic compounds (VOCs) in soil gas. The method is based on EPA Method TO-14 (The Determination of VOCs in Ambient Air Using Summa Passivated Canister Sampling & Gas Chromatographic Analysis) with modifications for the collection of subsurface rather than above-ground air. This method describes the procedures for analyzing samples collected with glass syringes at ambient atmospheric pressures. Soil gas surveys are performed by collecting vapor samples from probes installed within a specified area and analyzing these samples on-site using laboratory grade, multi-detector gas chromatographs (GC). The primary objective of soil gas surveys is the real-time collection of semi-quantitative and qualitative data regarding the presence and spatial distribution of subsurface contamination.

SYSTEM DESCRIPTION

The analytical system is comprised of traditional stationary laboratory grade gas chromatographs configured with capillary and packed columns and a combination of compound-selective detectors. The three gas chromatographs employed in the analysis of soil gas and ambient air include Varian 3400, Hewlett-Packard 5890a, and SRI 8610 instruments. A total of five detectors are used for vapor and air analyses. These detectors include electron capture (ECD), electrolytic conductivity (ELCD or Hall), photoionization (PID), flame ionization (FID), and thermal conductivity (TCD).

Analyte separation for compounds detected by the FID (e.g. petroleum hydrocarbons and ketones) is performed using a 30 m x 0.53 mm DB-WAX or DB-23 megabore capillary column (J&W Scientific). Analyte separation for compounds detected by the ECD and ELCD (e.g., halogenated hydrocarbons) is performed by using a 30 m x 0.53 mm DB-624 megabore capillary column (J&W Scientific). Confirmatory analysis for ECD/ELCD analytes are performed on a DB-WAX column, while confirmatory analysis for FID analytes are performed on a DB-624 column. Analyte separation of vinyl chloride and alkylbenzenes is performed using a 30 m x 0.53 mm DB-WAX or DB-23 megabore capillary column (J&W Scientific), quantification is by PID. Analyte separation for compounds detected by the TCD is performed by using a molecular sieve/porous polymer CTR-1, 2 m stainless steel packed column (Alltech Associates) with diameters of 0.64 and 0.32 cm.

Samples are introduced into the instruments by direct injection in volumes ranging from 25 μL to 1000 μL; aliquots are injected within 15 minutes of collection in order to preserve the integrity of the sample. Once introduced into the injector, samples are transported by carrier gas (i.e., the mobile phase) at a rate of 4 to 30 cm^3/min; makeup gas flow rates designed to maximize detector responses are adjusted according to manufacturer's instructions. Detector response is integrated by a data processing software system loaded on an IBM-compatible 386DX personal computer.

Only UHP helium, hydrogen, and nitrogen are used as carrier and make-up gases. Air required by the FID is filtered through a drierite/silica gel and 5Å molecular sieve in order to remove moisture and organic impurities.

ANALYTES

A total of 45 compounds were analyzed and documented according to the GC operating parameters.

Acetone
Benzene
Bromobenzene
Bis(2-chloroethoxy)methane
Bis(2-chloroisopropyl)ether
Bromodichloromethane
Bromoform
Carbon tetrachloride
Chloroacetaldehyde
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
1-Chlorohexane
2-Chloroethyl vinyl ether
4-Chlorotoluene
Dibromochloromethane
Dibromomethane
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
Dichlorodifluoromethane
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethene
cis-1,2-Dichloroethene
trans-1,2-Dichloroethene
Dichloromethane
Methylethyl ketone
1,1,2,2-Tetrachloroethane
1,1,1,2-Tetrachloroethane
Tetrachloroethene
Toluene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethene
Trichlorofluoromethane
1,2,3-Trichloropropane
Vinyl chloride
1,2-Xylene
1,3-Xylene
1,4-Xylene

GC System Performance Criteria

Initial Certification of the Instrument

Prior to system calibration and sample analysis, the chromatographic instruments are checked according to (i) manufacturer's instructions, (ii) method requirements, and (iii) temporal conditions [e.g., warm-up period, baseline stabilization]. Upon satisfying these check procedures, an injection of UHP nitrogen is made to document that unacceptable levels of residual contamination are not present. The target compounds must not be present above their respective limits of detection (LOD) to be considered acceptable.

Retention Time Determination

Windows for analyte retention time are determined prior to GC analyses. After assuring that the operating conditions for the daily analyses have been satisfied, three injections are made using a mixed standard containing all of the required analytes. For each single component of the standard mixture, standard deviations are calculated from a total of three absolute measurements. The retention window is describe as the mean $\pm$ 3 ð standard deviations. A recalculated window is calculated for each compound on each GC column whenever (i) a new column is installed, (ii) changes are made in operational parameters, or (iii) reprogramming of oven temperature profiles or carrier gas flow rates occurs. Windows are re-established at no greater than 72 hour intervals during system operation. These data are noted in a log book, which is kept in the analytical van as part of the standard operating procedure (SOP). Hence, a quality check on the new operating parameters of the system is conducted.

Analyte Confirmation

Confirmation of the designated analytes may be performed by submitting samples to a certified laboratory for GC/MS analysis. Vapor samples are collected in 2 liter tedlar bags and submitted under chain-of-custody procedures. Due to differences in the degradability, volatility and sorption among VOC's holding times should not exceed 48 hours. The independent analysis of samples by an outside laboratory allows a positive identification of the analyte by atomic mass in a separate and independent environment.

Initial GC Calibration

An initial 3-point dynamic calibration is performed before samples are analyzed. The calibration procedure employs traceable, commercially-prepared standards in methanolic solution. Aliquots are flash evaporated into 125 mL glass bombs to provide standard concentrations over 2 orders-of-magnitude. This method of sample preparation is specifically described by EPA in the SW-846 protocols for the headspace analysis of solid

waste. After permitting the system to equilibrate, the standard vapor mixture is injected into the GC system. Injection sizes may vary from 50 to 200 μL, with greater ranges in mass addressed by dilutionary admixtures. Response factors are calculated by the following equation:

$$RF_{analyte} = concentration_{analyte} \times volume\ (\mu L) \div area\ units_{analyte}$$

Once the GC is initially calibrated, a 1-point calibration is performed daily on the analytical system to verify the initial 3-point calibration. Criteria for the acceptance of the initial calibration procedure include: (i) a variation among the determined response factors of less than 20% relative standard deviation (RSD), (ii) agreement between static and initial calibration checks within 20% RSD, and (iii) agreement between average calibration RF and a quality control check standard within 20% RSD.. In the event that variance exceeds the stated confidence intervals, recalibration is performed until acceptable confidence intervals are achieved.

The concentration of each analyte in the vapor sample can then be determined by using the previously calculated response factor, the area under the peak, and the volume of sample injected as shown in the following equation:

$$concentration_{analyte} = RF_{analyte} \times area\ units_{analyte} \div volume\ (\mu L)$$

Linearity of Response

Linearity in detector response for an analyte is established by the constancy of the calculated response factors over the range of concentrations used for the calibration standards. Variations in response factors not exceeding 20% RSD permit the use of average calibration factors, while greater variations in response factors over the linear range of the detector require the use of calibration curves to quantitate peak area counts as analyte concentrations.

Response Out-of-Range

Response factors exceeding the linear range of the detector are unacceptable because the calibration curves may not be representative. Responses within the working range of the instrument are provided by sample dilution into a 125 mL glass sampling bulb, which is blanked with nitrogen gas prior to each use. Target compounds must not be present above the limits of detection (LOD) to be considered acceptable.

Control Charts

The historical performance of the system is tracked through the used of control charts. Out-of-control events are identified by wide or consistent fluctuations in detector response and logged as to the time and cause. Control charts are maintained in a log book as part of the standard operating procedure (SOP).

Calibration Checks

The detector response is checked (i) after the initial 3-point calibration, (ii) after every daily 1-point calibration, and (iii) at the completion of GC analyses each day. This procedure evaluates the accuracy of the initial calibration and the reproducibility of that detector response over the duration of each days analyses. Check standards are prepared by the same procedure as initial calibration standards (see section titled Initial Calibration). Acceptable concentrations for check standards must differ from concentrations of standards employed in other calibrations. Commercially prepared gas standards (e.g., Scotty Specialty Gasses) may be utilized as a check standard. Accuracy of these standards are reported to be $\pm$ 2%. Detector stability is assessed by comparing these periodic response factors to those generated in the initial calibration. A difference in response of less than 20% is considered to be acceptable.

Instrument Detection Limits

Background noise is for each of the detectors is monitored and recorded throughout the survey to identify any temporal changes in chromatographic conditions. Detection limits are defined as detector signals that are two-fold greater than background levels.

Chromatographic Performance

The performance of the chromatographic system is assessed on the basis of compound identification and the resolution of target analytes. A quantitative indication of chromatographic separation among analytes is provided by calculating the resolution, "R", of two peaks as follows:

Peak Resolution:

$$R = 2 \cdot [\mathrm{RT}\ (A) - \mathrm{RT}\ (B)] \div [\mathit{width}\ (A) - \mathit{width}\ (B)]$$

where,

A & B = contiguous chromatographic peaks;
width = peak width at the baseline of each peak;
RT = analyte retention time.

An "*R*" value equal to or greater than 1.0 indicates complete baseline resolution of peaks A and B, indicating that the detector response signal drops to the baseline between the peaks. Excessive dead volume, fluctuations in operating conditions or column variations are signalled by variations in resolution between peaks over the course of a survey.

As an indication of chromatographic efficiency, the number of theoretical plates (N) is calculated.

Theoretical Plates:

$$N = 16\,(RT/width)^2$$

ANALYST PERFORMANCE

Software for GC integration, spreadsheet calculations, and graphics are included in the vehicle-mounted computers to maximize the efficiency and capabilities of field analysts. The link between field and office computing facilities permits complex decisions regarding site investigations to be made by a combination of field and office scientists. All chromatograms and analytical results are review by either a senior or managing chemist before they are issued in draft form. An ongoing training program is maintained for all field analysts, whose performance is reviewed on a quarterly basis.

SUMMARY OF STANDARD OPERATING PROCEDURES FOR COLLECTING AND ANALYZING SOIL GAS SAMPLES

1) Arrive on site.

2) Flash vaporize commercially prepared standards into glass bulb to generate daily gas standards.

3) Conduct a 3-point initial dynamic calibration of on-site gas chromatograph (standard deviation $\leq$20%) at the beginning of each project to establish linear response for each analyte. Analyze a quality control (QC) check sample to validate linear response, if the check sample is within 20% of the relative standard deviation (RSD) then use the average response factor generated by the 3-point calibration.

4) Conduct a 1-point calibration check at the beginning of each subsequent work day to verify previously established response factors for each analyte. Analyze a quality control (QC) check sample to validate linear response, if the check sample is within 20% of the relative standard deviation (RSD) then use the average response factor generated by the 3-point calibration.

5) Record the project-specific GC parameters of each instrument in a log book.

6) Record the response factor, standard deviation and detection limit of each analyte in a log book.

7) Analyze a randomly selected syringe for residual contamination (syringe blank) using an inert carrier gas (UHP nitrogen or helium).

8) Collect and analyze an ambient air sample each day prior to beginning the soil gas survey.

9) Collect and analyze a randomly selected probe for residual contamination (system/probe blank) using an inert carrier gas.

10) Install ½-inch I.D. hollow soil gas probe to a predetermined depth ($\geq$5 feet) in soil using a disposable drive point and a hydraulic, pneumatic, or manual hammer.

11) Pull the soil gas probe off of the drive point approximately 3 to 6 inches to permit soil vapor entry into the system.

12) Apply a specified vacuum of 22 to 24 inches Hg to the sampling probe and measure the resulting resistance to vapor flow (i.e., time required for evacuated cylinder to reach atmospheric pressure).

13) At the beginning of the survey, conduct a site-specific evacuation volume vs. analyte concentration test in an area where VOCs are expected to be elevated to ensure that the collected samples are representative of the site conditions.

14) Evacuate approximately 1.5 probe volumes to remove ambient air and to document the volume of soil gas required to return the system to atmospheric pressure.

15) Insert 3-inch syringe needle into the steel probe and remove a 10 mL aliquot of soil gas.

16) Record sampling location, sampling depth, time of sample collection, time analyzed, pressure recovery time, probe evacuation volume, calculated flow rate, and any observation of soil characteristics.

17) Subsample the 10 mL soil gas aliquot using a 1 mL syringe.

18) Analyze soil gas sample within 15 minutes of collection according to gas chromatography (real time analysis).

19) Record the concentration of soil gas analytes on the field data sheets.

20) Remove the soil gas probe from the subsurface and store in a designated compartment until the end of the day.

21) Move analytical/sampling van to the next sampling location.

22) Repeat steps 10 through 21 at each new sampling location.

23) Conduct duplicate sampling at 5% of the total sample locations.

24) Analyze afternoon ambient air sample and syringe blank.

25) Analyze QC check standard at the end of the day to verify analyte response factors.

26) Change injection septa on gas chromatographs.

27) Decontaminate external sampling equipment and van (if necessary).

28) Leave site.

29) Decontaminate soil gas probes and associated fittings.

30) Wash, rinse, and oven dry sampling and subsampling syringes.

APPENDIX B

ANALYTICAL RESULTS FOR AUGUST 1993 SOIL VAPOR SAMPLING

INTERPHASE

ENVIRONMENTAL CHEMISTRY SPECIALISTS

August 19, 1993

MEREDITH/BOLI & ASSOCIATES
6701 Center Drive West, Suite 900
Los Angeles, California 90045-1535
Attention: Mr. Andrew Sheldon

SOIL VAPOR ANALYSIS RESULTS
OSCO FACILITY PROJECT SITE
AZUSA, CALIFORNIA
PROJECT #: 9349

Mr. Sheldon:

InterPhase is pleased to submit these tables presenting concentrations of selected aromatic hydrocarbons and selected halogenated hydrocarbons analyzed from vapor wells gas collected at the Osco Facility project site in Azusa, California. Our services were performed on August 3 and 4, 1993.

If you have any questions regarding the results, we would be pleased to discuss them with you. We appreciate the opportunity to have worked with you on this project and look forward to working with you in the future.

Sincerely,
InterPhase

John Adriany
Senior Chemist

attachment

11558 SORRENTO VALLEY ROAD
SAN DIEGO · CA 92121
619·481·2200 FAX 619·481·1855

INTERPHASE
ENVIRONMENTAL CHEMISTRY SPECIALISTS

TABLE 1. Concentration of analytes from vapor well samples collected and analyzed at the Osco Facility project site, Azusa, California; (Project 9349)

ANALYZED BY: John Tangeman
DATE: 8-3-93
Total No.(#) of samples analyzed: 22

Sample (# - ft)	Time Collected	Time Analyzed	Evacuation Volume (L)	InjVol (uL)	Dilution	CFC-11 (µg/L)	CH2Cl2 (µg/L)	*trans-* 1,2-DCE (µg/L)	1,1-DCA (µg/L)	*cis-* 1,2-DCE (µg/L)
System/Syringe Blank #1	06:48	06:48	-	500	-	<0.001	<1	<1	<1	<1
Ambient Air #1	09:00	09:00	-	300	-	***0.96**	<1	<1	<1	<1
B-2RA-67'	09:33	09:34	10.0	200	-	0.058	<1	<1	<1	<1
B-2RB-67'	09:51	09:52	20.0	50	1/100	18	<1000	<1000	<1000	<1000
B2RB-67'	09:51	10:02	-	-	-	NA	NA	NA	NA	NA
B-2RC-67'	10:15	10:16	30.0	30	1/100	16	<1000	<1000	<1000	<1000
B-2RA-160'	10:42	10:42	25.0	30	-	0.041	<10	<10	<10	<10
B-2RB-160'	10:57	10:58	50.0	20	1/100	**^3.9**	<10000	<1000	<1000	<1000
B-2RC-160'	11:26	11:26	75.0	20	1/100	6.1	<10000	<1000	<1000	<1000
B-8A-41'	12:42	12:42	6.0	30	1/1000	<10	<10000	<10000	<10000	<10000
B-8B-41'	13:00	13:00	12.0	30	1/1000	**^20**	<10000	<10000	<10000	<10000
B-8C-41'	13:22	13:23	18.0	30	1/1000	**^18**	<10000	<10000	<10000	<10000
B-8R-45'	13:40	13:41	18.0	50	1/1000	**^18**	<10000	<10000	<10000	<10000
B-8R-72'	14:01	14:01	30.0	50	1/1000	**^9.8**	<10000	<10000	<10000	<10000
B-8R-72'	14:01	14:16	-	20	1/1000	NA	NA	NA	NA	NA
B-8R-111'	14:28	14:28	50.0	20	1/1000	**^26**	<10000	<10000	<10000	<10000
B-4-75'	14:55	14:55	34.0	50	1/1000	**^14**	<10000	<10000	<10000	<10000
B-4-75'	14:55	15:12	-	20	1/6250	NA	NA	NA	NA	NA
B-4-175'	15:29	15:30	80.0	30	1/1000	**^16**	<10000	<10000	<10000	<10000
B-6-70'	15:55	15:55	30.0	30	1/100	5.3	<1000	<1000	<1000	<1000
B-6-70'	15:55	16:09	-	30	1/1000	NA	NA	NA	NA	NA
B-6-70'	15:55	16:18	-	30	1/6250	NA	NA	NA	NA	NA
B-6-190'	16:40	16:40	90.0	30	1/6250	440	<100000	<100000	<100000	<100000
B-2-22'	17:05	17:05	10.0	50	1/100	61	<1000	<1000	<1000	<1000
B-2-22' duplicate	17:06	17:20	-	50	1/100	49	<1000	<1000	<1000	<1000
Ambient Air #2	17:35	17:35	-	300	-	***0.86**	<1	<1	<1	<1
System/Syringe Blank #2	17:50	17:50	-	500	-	<0.001	<1	<1	<1	<1

µg/L: micrograms per liter
<: less than
>: greater than
L: liters
uL: microliters
NA: not analyzed
%: percent
^: below reporting limits
*: exceeds reporting limits

CFC-11: trichlorofluoromethane
CH2Cl2: methylene chloride
DCE: dichloroethene
DCA: dichloroethane
CHCl3: chloroform
TCA: trichloroethane
MEK: methyl ethyl ketone
MIBK: methyl isobutyl ketone

CCl4: carbon tetrachloride
TCE: trichloroethene
PCE: tetrachloroethene
CHBr2Cl: dibromochloromethane
ClBen: chlorobenzene
PCA: tetrachloroethane
ClEth: chloroethane

11558 SORRENTO VALLEY ROAD
SAN DIEGO · CA 92121
619·481·2200 FAX 619·481·1855

TABLE 1. Concentration of analytes from vapor well samples collected and analyzed at the Osco Facility project site, Azusa, California; (Project 9349), continued

ANALYZED BY: John Tangeman
DATE: 8-3-93
Total No.(#) of samples analyzed: 22

Sample (# - ft)	CHCl3 (µg/L)	1,1,1-TCA (µg/L)	CCl4 (µg/L)	1,2-DCA (µg/L)	TCE (µg/L)	1,1,2-TCA (µg/L)	PCE (µg/L)	CHBr2Cl (µg/L)	ClBen (µg/L)	1,1,1,2-PCA (µg/L)	1,1,2,2-PCA (µg/L)
System/Syringe Blank #1	<0.01	<0.001	<0.001	<1	<0.01	<1	<0.001	<0.001	<0.1	<0.1	<0.1
Ambient Air #1	<0.01	0.01	<0.001	<1	<0.01	<1	0.022	<0.001	<0.1	<0.1	<0.1
B-2RA-67'	<0.01	0.16	<0.01	<1	0.055	<1	0.38	<0.001	<0.1	<0.1	<0.1
B-2RB-67'	<10	120	<1	<1000	26	<1000	130	<1	<100	<100	<100
B2RB-67'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B-2RC-67'	<10	***160**	<1	<1000	34	<1000	180	<1	<100	<100	<100
B-2RA-160'	<0.1	***1.5**	<0.01	<10	0.45	<10	2.4	<0.01	<1	<1	<1
B-2RB-160'	<10	53	<0.01	<1000	**^20**	<1000	100	<1	<100	<100	<100
B-2RC-160'	<10	91	<0.01	<1000	44	<1000	270	<1	<100	<100	<100
B-8A-41'	<100	<10	<10	<10000	<100	<10000	570	<10	<1000	<1000	<1000
B-8B-41'	<100	250	<10	<10000	<100	<10000	990	<10	<1000	<1000	<1000
B-8C-41'	<100	190	<10	<10000	<100	<10000	980	<10	<1000	<1000	<1000
B-8R-45'	<100	230	<10	<10000	<100	<10000	1000	<10	<1000	<1000	<1000
B-8R-72'	<100	290	<10	<10000	**^140**	<10000	NA	<10	<1000	<1000	<1000
B-8R-72'	NA	NA	NA	NA	NA	NA	6700	NA	NA	NA	NA
B-8R-111'	<100	240	<10	<10000	<100	<10000	1400	<10	<1000	<1000	<1000
B-4-75'	<100	850	<10	<10000	**^93**	<10000	NA	<10	<1000	<1000	<1000
B-4-75'	NA	NA	NA	NA	NA	NA	16000	NA	NA	NA	NA
B-4-175'	<100	370	<10	<10000	**^280**	<10000	2100	<10	<1000	<1000	<1000
B-6-70'	<10	NA	<1	<1000	110	<1000	NA	<1	<100	<100	<100
B-6-70'	NA	550	NA	NA	NA	NA	NA	NA	NA	NA	NA
B-6-70'	NA	NA	NA	NA	NA	NA	7200	NA	NA	NA	NA
B-6-190'	<1000	1400	<100	<100000	<1000	<100000	10000	<100	<10000	<10000	<10000
B-2-22'	<10	49	<1	<1000	**^7.3**	<1000	43	<1	<100	<100	<100
B-2-22' duplicate	<10	39	<1	<1000	**^5.7**	<1000	43	<1	<100	<100	<100
Ambient Air #2	<0.01	0.048	<0.001	<1	<0.01	<1	0.3	<0.001	<0.1	<0.1	<0.1
System/Syringe Blank #2	<0.01	<0.001	<0.001	<1	<0.01	<1	<0.001	<0.001	<0.1	<0.1	<0.1

µg/L: micrograms per liter
<: less than
>: greater than
L: liters
uL: microliters
NA: not analyzed
%: percent
^: below reporting limits
*: exceeds reporting limits

CFC-11: trichlorofluoromethane
CH2Cl2: methylene chloride
DCE: dichloroethene
DCA: dichloroethane
CHCl3: chloroform
TCA: trichloroethane
MEK: methyl ethyl ketone
MIBK: methyl isobutyl ketone

CCl4: carbon tetrachloride
TCE: trichloroethene
PCE: tetrachloroethene
CHBr2Cl: dibromochloromethane
ClBen: chlorobenzene
PCA: tetrachloroethane
ClEth: chloroethane

TABLE 1. Concentration of analytes from vapor well samples collected and analyzed at the Osco Facility project site, Azusa, California; (Project 9349), continued

ANALYZED BY: John Tangeman
DATE: 8-3-93
Total No.(#) of samples analyzed: 22

Sample (# - ft)	Injection Volume (µL)	Vinyl Chloride (µg/L)	1,1-DCE (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	m,p-Xylene (µg/L)	o-Xylene (µg/L)	Injection Volume (µL)	ClEth (µg/L)	Acetone (µg/L)	MEK (µg/L)	MIBK (µg/L)
System/Syringe Blank #1	500	<1	<1	<1	<1	<1	<1	<1	1000	<50	<5	<5	<5
Ambient Air #1	500	<1	<1	<1	<1	<1	<1	<1	1000	<50	<5	<5	<5
B-2RA-67'	500	<1	2.2	<1	2.9	1.4	7.9	1.9	1000	<50	<5	<5	<5
B-2RB-67'	500	<1	NA	NA	NA	NA	NA	NA	1000	<50	190	690	160
B2RB-67'	50	NA	320	<10	1100	560	2000	940	-	NA	NA	NA	NA
B-2RC-67'	30	<10	630	<10	2300	1200	4400	1600	1000	<50	290	1100	200
B-2RA-160'	500	<1	4.9	<1	916	5.3	20	6.7	1000	<50	<5	<5	<5
B-2RB-160'	50	<10	62	<10	75	31	120	36	500	<50	60	160	<5
B-2RC-160'	30	<10	130	<10	49	<10	15	<10	500	<50	120	390	45
B-8A-41'	500	<1	16	<1	<1	<1	<1	<1	1000	<50	<5	<5	<5
B-8B-41'	50	<10	24	<10	<10	<10	<10	<10	1000	<50	40	32	<5
B-8C-41'	50	<10	22	<10	<10	<10	<10	<10	1000	<50	46	29	<5
B-8R-45'	50	<10	34	<10	<10	<10	<10	<10	1000	<50	51	41	<5
B-8R-72'	50	<10	22	<10	<10	<10	<10	<10	1000	<50	43	180	<5
B-8R-72'	-	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	NA
B-8R-111'	50	<10	180	<10	<10	<10	<10	<10	1000	<50	220	170	<5
B-4-75'	50	<10	750	22	520	470	1400	630	1000	<50	850	430	100
B-4-75'	-	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	NA
B-4-175'	50	<10	140	<10	<10	<10	<10	<10	1000	<50	230	460	<5
B-6-70'	50	<10	31	<10	<10	<10	<10	<10	1000	<50	91	45	<5
B-6-70'	-	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	NA
B-6-70'	-	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	NA
B-6-190'	50	<10	110	<10	<10	<10	<10	<10	1000	<50	180	310	<5
B-2-22'	30	<10	<10	<10	130	190	1000	580	1000	<50	<5	210	<5
B-2-22' duplicate	30	<10	<10	<10	150	300	1800	1300	1000	<50	<5	200	<5
Ambient Air #2	500	<1	<1	<1	<1	<1	<1	<1	1000	<50	<5	<5	<5
System/Syringe Blank #2	500	<1	<1	<1	<1	<1	<1	<1	1000	<50	<5	<5	<5

µg/L: micrograms per liter
<: less than
>: greater than
L: liters
uL: microliters
NA: not analyzed
%: percent
^: below reporting limits
*: exceeds reporting limits

CFC-11: trichlorofluoromethane
CH2Cl2: methylene chloride
DCE: dichloroethene
DCA: dichloroethane
CHCl3: chloroform
TCA: trichloroethane
MEK: methyl ethyl ketone
MIBK: methyl isobutyl ketone

CCl4: carbon tetrachloride
TCE: trichloroethene
PCE: tetrachloroethene
CHBr2Cl: dibromochloromethane
ClBen: chlorobenzene
PCA: tetrachloroethane
ClEth: chloroethane

INTERPHASE
ENVIRONMENTAL CHEMISTRY SPECIALISTS

TABLE 2. Concentration of analytes from vapor well samples collected and analyzed at the Osco Facility project site, Azusa, California; (Project 9349)

ANALYZED BY: John Tangeman
DATE: 8-4-93
Total No.(#) of samples analyzed: 7

Sample (# - ft)	Time Collected	Time Analyzed	Evacuation Volume (L)	InjVol (uL)	Dilution	CFC-11 (µg/L)	CH2Cl2 (µg/L)	*trans-* 1,2-DCE (µg/L)	1,1-DCA (µg/L)	*cis-* 1,2-DCE (µg/L)
System/Syringe Blank #1	06:56	06:56	-	500	-	<0.001	<1	<1	<1	<1
Ambient Air #1	08:43	08:43	-	300	-	^0.003	<1	<1	<1	<1
B-5-67'	09:10	09:10	30.0	20	1/100	5.4	<1000	<1000	<1000	<1000
B-5-160'	09:40	09:41	72.0	20	1/100	9.7	<1000	<1000	<1000	<1000
B-3-68'	10:04	10:04	30.0	50	1/100	2.4	<1000	<1000	<1000	<1000
B-3-104'	10:30	10:31	45.0	20	-	0.32	<10	<10	<10	<10
B-1-71'	10:56	10:56	30.0	20	1/1000	^28	<10000	<10000	<10000	<10000
B-1-136'	11:13	11:13	60.0	20	1/1000	NA	NA	NA	NA	NA
B-1-136'	11:13	11:24	-	200	1/1000	19	<1000	<1000	<1000	<1000
Ambient Air #2	11:40	11:40	-	200	-	0.018	<1	<1	<1	<1
System/Syringe Blank #2	11:54	11:54	-	500	-	<0.001	<1	<1	<1	<1

µg/L: micrograms per liter
<: less than
>: greater than
L: liters
uL: microliters
NA: not analyzed
%: percent
^: below reporting limits
*: exceeds reporting limits

CFC-11: trichlorofluoromethane
CH2Cl2: methylene chloride
DCE: dichloroethene
DCA: dichloroethane
CHCl3: chloroform
TCA: trichloroethane
MEK: methyl ethyl ketone
MIBK: methyl ibusotyl ketone

CCl4: carbon tetrachloride
TCE: trichloroethene
PCE: tetrachloroethene
CHBr2Cl: dibromochloromethane
ClBen: chlorobenzene
PCA: tetrachloroethane
ClEth: chloroethane

11558 SORRENTO VALLEY ROAD
SAN DIEGO • CA 92121
619•481•2200 FAX 619•481•1855

TABLE 2. Concentration of analytes from vapor well samples collected and analyzed at the Osco Facility project site, Azusa, California; (Project 9349), continued

ANALYZED BY: John Tangeman
DATE: 8-4-93
Total No.(#) of samples analyzed: 7

Sample (# - ft)	CHCl3 (µg/L)	1,1,1-TCA (µg/L)	CCl4 (µg/L)	1,2-DCA (µg/L)	TCE (µg/L)	1,1,2-TCA (µg/L)	PCE (µg/L)	CHBr2Cl (µg/L)	ClBen (µg/L)	1,1,1,2-PCA (µg/L)	1,1,2,2-PCA (µg/L)
System/Syringe Blank #1	<0.01	<0.001	<0.001	<1	<0.01	<1	<0.001	<0.001	<0.1	<0.1	<0.1
Ambient Air #1	<0.01	0.016	<0.001	<1	<0.01	<1	^0.004	<0.001	<0.1	<0.1	<0.1
B-5-67'	<10	120	<1	<1000	^17	<1000	*780	<1	<100	<100	<100
B-5-160'	<10	110	<1	<1000	230	<1000	620	<1	<100	<100	<100
B-3-68'	<10	19	<1	<1000	<10	<1000	110	<1	<100	<100	<100
B-3-104'	<0.1	0.27	<0.01	<10	<0.1	<10	0.55	<0.01	<1	<1	<1
B-1-71'	<100	820	<10	<10000	^260	<10000	*8600	<10	<1000	<1000	<1000
B-1-136'	NA	520	NA	NA	NA	NA	740	NA	NA	NA	NA
B-1-136'	<10	NA	<1	<1000	^31	<1000	NA	<1	<100	<100	<100
Ambient Air #2	<0.01	0.036	<0.001	<1	<0.01	<1	0.016	<0.001	<0.1	<0.1	<0.1
System/Syringe Blank #2	<0.01	<0.001	<0.001	<1	<0.01	<1	0.007	<0.001	<0.1	<0.1	<0.1

µg/L: micrograms per liter
<: less than
>: greater than
L: liters
uL: microliters
NA: not analyzed
%: percent
^: below reporting limits
*: exceeds reporting limits

CFC-11: trichlorofluoromethane
CH2Cl2: methylene chloride
DCE: dichloroethene
DCA: dichloroethane
CHCl3: chloroform
TCA: trichloroethane
MEK: methyl ethyl ketone
MIBK: methyl ibusotyl ketone

CCl4: carbon tetrachloride
TCE: trichloroethene
PCE: tetrachloroethene
CHBr2Cl: dibromochloromethane
ClBen: chlorobenzene
PCA: tetrachloroethane
ClEth: chloroethane

TABLE 2. Concentration of analytes from vapor well samples collected and analyzed at the Osco Facility project site, Azusa, California; (Project 9349), continued

ANALYZED BY: John Tangeman
DATE: 8-4-93
Total No.(#) of samples analyzed: 7

Sample (# - ft)	Injection Volume (µL)	Vinyl Chloride (µg/L)	1,1-DCE (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	m,p-Xylene (µg/L)	o-Xylene (µg/L)	Injection Volume (µL)	ClEth (µg/L)	Acetone (µg/L)	MEK (µg/L)	MIBK (µg/L)
System/Syringe Blank #1	500	<1	<1	<1	<1	<1	<1	<1	1000	<50	<5	<5	<5
Ambient Air #1	500	<1	<1	<1	<1	<1	<1	<1	1000	<50	<5	<5	<5
B-5-67'	50	<10	30	<10	<10	<10	<10	<10	1000	<50	50	18	<5
B-5-160'	50	<10	230	<10	<10	<10	<10	<10	1000	<50	190	39	<5
B-3-68'	50	<10	<10	<10	<10	<10	<10	<10	1000	<50	<5	<5	<5
B-3-104'	500	<1	<1	<1	<1	<1	<1	<1	1000	<50	<5	<5	<5
B-1-71'	50	<10	27	<10	44	<10	48	68	1000	<50	<5	370	<5
B-1-136'	50	<10	NA	<10	NA	77	310	180	1000	<50	1400	1300	260
B-1-136'	5	NA	2800	NA	480	NA	NA	NA	-	NA	NA	NA	NA
Ambient Air #2	500	<1	<1	<1	<1	<1	<1	<1	1000	<50	<5	<5	<5
System/Syringe Blank #2	500	<1	<1	<1	<1	<1	<1	<1	1000	<50	<5	<5	<5

µg/L: micrograms per liter
<: less than
>: greater than
L: liters
uL: microliters
NA: not analyzed
%: percent
^: below reporting limits
*: exceeds reporting limits

CFC-11: trichlorofluoromethane
CH2Cl2: methylene chloride
DCE: dichloroethene
DCA: dichloroethane
CHCl3: chloroform
TCA: trichloroethane
MEK: methyl ethyl ketone
MIBK: methyl ibusotyl ketone

CCl4: carbon tetrachloride
TCE: trichloroethene
PCE: tetrachloroethene
CHBr2Cl: dibromochloromethane
ClBen: chlorobenzene
PCA: tetrachloroethane
ClEth: chloroethane

QUALITY CONTROL SUMMARY

Date : 8/3/93
Proj # : 9349
Chemist : John Tangeman
Machine ID: Phase 3
Supply Source: Chem Service

				1 POINT CALIBRATION CHECK					QC CHECK						
				Calibration Information and Detector Response					Recovery Concentrations and Percentages						
		COLUMN	STDconc	Injection 1				% Dif	Actual		Observed	recovery		Observed	recovery
	DETECTOR	TYPE/SERIAL #	ug/L	uL	area	rf	*Mean rf*	*from mean*	ug/L	uL	ug/L	am	uL	ug/L	pm
cfc11	ECD	DB-624/1213537	0.05	100		0.1	0.094	6.4	0.05	100	0.042	84%	100	0.04	80%
ch2cl2	ECD	DB-624/1213537	21.26	100		39.5	45.000	12.2	26	100	21	81%	100	22.3	86%
1,1,1-tca	ECD	DB-624/1213537	0.0741	100		0.16	0.160	0	0.07	100	0.062	88%	100	0.074	106%
ccl4	ECD	DB-624/1213537	0.018	100		0.032	0.028	14.3	0.015	100	0.012	80%	100	0.016	107%
tce	ECD	DB-624/1213537	0.42	100		0.44	0.430	2.3	0.35	100	0.39	111%	100	0.34	97%
pce	ECD	DB-624/1213537	0.11	100		0.105	0.097	8.2	0.1	100	0.12	120%	100	0.11	110%
chbr2cl	ECD	DB-624/1213537	0.13	100		0.16	0.170	5.9	0.14	100	0.112	80%	100	0.13	93%
1,1-dce	PID	AT-624/6820	28.96	200	304	19.1	19.600	2.6	2.5	500	2.3	92%	500	2.2	88%
benzene	PID	AT-624/6820	16.4	200	413	7.9	8.400	6	9.5	200	9.5	100%	200	11.3	119%
toluene	PID	AT-624/6820	16.88	200	344	9.8	10.900	10.1	11.4	200	10.5	92%	200	12.8	112%
ethyl benzene	PID	AT-624/6820	17.36	200	219	15.9	17.900	11.2	16	200	13.4	84%	200	17.5	109%
m,p-xylene	PID	AT-624/6820	30.96	200	484	12.8	13.200	3	25.6	200	25.5	100%	200	29.1	114%
o-xylene	PID	AT-624/6820	15.44	200	165	18.7	19.200	2	17	200	13.4	79%	200	16.3	96%

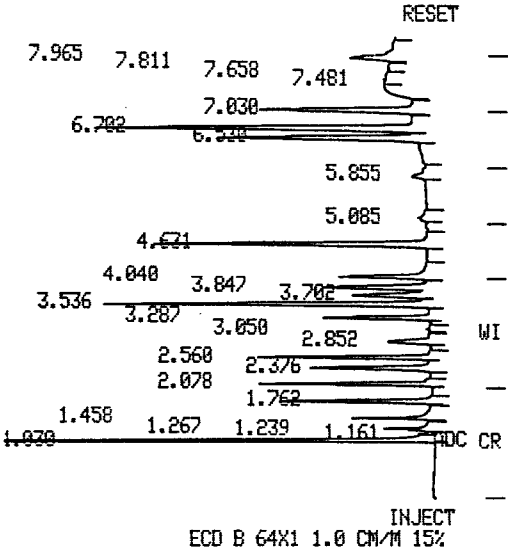
check std 100ml

VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 464
TIME 19:48 03 AUG 93
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		1.030		20000483
2		1.161		8660
3		1.239		36074
4		1.267		98873
5		1.378		7999
6		1.458		224354
7	F11	1.762	0.0515	548932
8		2.078		567252
9	CH2CL2	2.376	22.2897	495326
10	TRANS	2.560	56.4931	594664
11	11DCA	2.852	25.1025	241370
12		3.050		8521
13	CIS	3.287	70.0123	424317
14	CHCL3	3.536	0.5124	1423439
15	111TCA	3.702	0.0739	434735
16	CCL4	3.847	0.0158	565966
17	12DCA	4.040	20.9576	498990
18	TCE	4.631	0.5112	1246987
19	CHBRCL2	5.085	0.0036	39716
20		5.855		71122
21	112TCA	6.530	4.5395	1008795
22	PCE	6.702	0.1444	1605131
23	CHBR2CL	7.030	0.1272	748638
24		7.481		561461
25		7.658		190166
26		7.811		97494
27	CHLBEN	7.965	0.0086	345173
	TOTALS:		200.8440	32094653

DETECTED PEAKS: 27 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 100.00000
NOISE: 1806.1 OFFSET: -25

ERROR LOG:
COL TEMP
ADC OVERRANGE



ECD B 64X1 1.0 CM/M 15%

19:47 FAULT 47 DET A FLAMEOUT

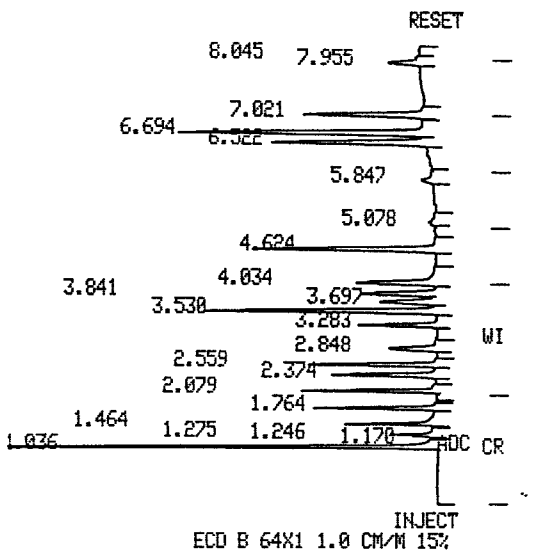
Check Std
10 ml

VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 461
TIME 19:08 03 AUG 93
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		1.036		15016057
2		1.170		4336
3		1.246		35725
4		1.275		91076
5		1.386		8934
6		1.464		286573
7	F11	1.764	0.0396	422120
8		2.079		420618
9	~~CH2CL2~~	2.374	~~19.8172~~	422517
10	~~TRANS~~	2.559	~~40.1929~~	423083
11	~~11DCA~~	2.848	~~26.2171~~	252087
12	~~CIS~~	3.283	~~50.3892~~	305389
13	~~CHCL3~~	3.530	~~0.3622~~	1006295
14	~~111TCA~~	3.697	~~0.0531~~	312546
15	~~CCL4~~	3.841	~~0.0112~~	401855
16	~~12DCA~~	4.034	~~19.3892~~	461649
17	TCE	4.624	0.3396	828447
18	~~CHBRCL2~~	5.078	0.0026	29174
19		5.847		59928
20	~~112TCA~~	6.522	~~5.4846~~	774365
21	PCE	6.694	0.1109	1232345
22	~~CHBR2CL~~	7.021	~~0.0983~~	581069
23	~~CHLBEN~~	7.955	~~0.0044~~	176610
24		8.045		15862
TOTALS:			159.7093	23568671

DETECTED PEAKS: 24 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 100.00000
NOISE: 1806.1 OFFSET: -73

ERROR LOG:
COL TEMP
ADC OVERRANGE



ECD B 64X1 1.0 CM/M 15%

19:08 FAULT 47 DET A FLAMEOUT

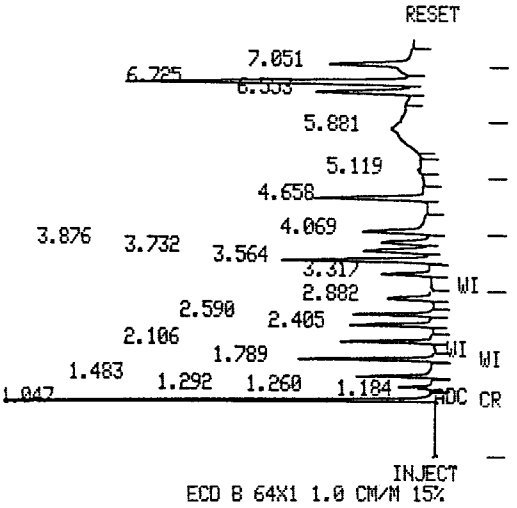
check std 100ml

VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 432
TIME 08:48 03 AUG 93
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		1.047		11049371
2		1.184		2160
3		1.260		25127
4		1.292		71531
5		1.405		6046
6		1.483		224982
7	F11	1.789	0.0419	431969
8		2.106		289045
9	CH2CL2	2.405	~~13.7534~~	306520
10	TRANS	2.590	~~23.0377~~	250103
11	11DCA	2.882	~~23.5891~~	226819
12	CIS	3.317	~~30.9655~~	185435
13	CHCL3	3.564	~~0.2243~~	623274
14	111TCA	3.732	0.0617	342818
15	CCL4	3.876	~~0.0067~~	241566
16	12DCA	4.069	~~15.7527~~	376018
17	TCE	4.658	~~0.2186~~	492044
18	CHBRCL2	5.119	~~0.0020~~	22776
19		5.881		631883
20	112TCA	6.553	~~2.0750~~	462008
21	PCE	6.725	0.1237	1406350
22	CHBR2CL	7.051	~~0.0966~~	595182
	TOTALS:		110.0341	18263037

DETECTED PEAKS: 22 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 100.00000
NOISE: 1596.4 OFFSET: -52

ERROR LOG:
ADC OVERRANGE



ECD B 64X1 1.0 CM/M 15%

08:46 FAULT 58 DET B AUTOZERO EXCEEDED

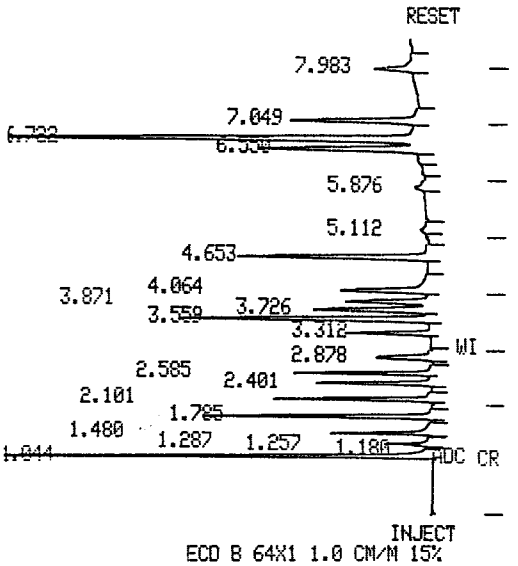
Check Std 100ml

VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 431
TIME 08:32 03 AUG 93
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		1.044		16582725
2		1.180		3036
3		1.257		31106
4		1.287		104258
5		1.401		7668
6		1.480		307684
7	~~F11~~	1.785	0.0785	780737
8		2.101		525987
9	CH2CL2	2.401	20.8146	462547
10	TRANS	2.585	42.7994	464641
11	11DCA	2.878	32.4870	312375
12	CIS	3.312	56.0455	335622
13	CHCL3	3.559	0.3969	1102707
14	~~111TCA~~	3.726	~~0.1075~~	614631
15	CCL4	3.871	0.0122	437003
16	12DCA	4.064	22.3383	531865
17	TCE	4.653	0.3867	870284
18	CHBRCL2	5.112	0.0029	32156
19		5.876		51335
20	112TCA	6.550	4.0095	891007
21	~~PCE~~	6.722	~~0.2566~~	2645873
22	CHBR2CL	7.049	0.1117	687845
23	CHLBEN	7.983	0.0057	231529
TOTALS:			179.8537	28014632

DETECTED PEAKS: 23 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 100.00000
NOISE: 1596.4 OFFSET: -125

ERROR LOG:
ADC OVERRANGE



ECD B 64X1 1.0 CM/M 15%

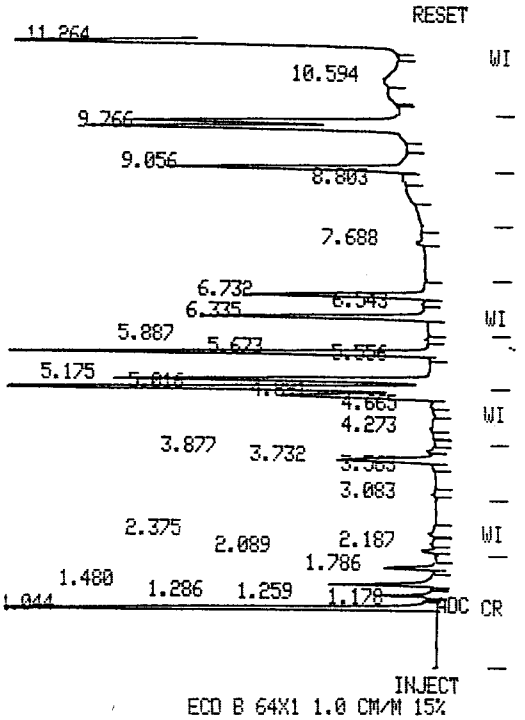
calibration
Std
100ml

VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 430
TIME 08:15 03 AUG 93
SAMPLE:
RUN MODE: CALIBRATION
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT FACTOR	AREA COUNTS
1		1.044		18794814
2		1.178		4253
3		1.259		10838
4		1.286		124884
5		1.480		342747
6	F11	1.786	0.2785	179505
7		2.089		58704
8		2.187		25055
9	CH2CL2	2.375	742.2938	28640
10		3.083		7564
11	CHCL3	3.563	48.1842	10791
12	111TCA	3.732	0.1361	544128
13	CCL4	3.877	0.7313	24611
14		4.273		29525
15	TCE	4.665	75.9717	5528
16	12DCP	4.891	83.9235	953248
17	CH2BR2	5.016	0.1461	3422055
18	CHBRCL2	5.175	0.1008	1585742
19		5.556		10092
20	T13DCP	5.673	1.6832	2168452
21		5.887		9069
22	C13DCP	6.335	4.7067	1062304
23	112TCA	6.543	498.2553	9733
24	PCE	6.732	0.1190	924261
25		7.688		36283
26		8.803		62072
27	CHBR3	9.056	0.5333	1237572
28	BRBEN	9.766	106.4163	1590921
29	123TCP	9.870	10.9352	1463157
30	1122PCA	10.594	22.8627	407649
	TOTALS:			35134211

DETECTED PEAKS: 31 REJECTED PEAKS: 1
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 100.00000
NOISE: 1596.4 OFFSET: 19

ERROR LOG:
ADC OVERRANGE
FACTOR NOT UPDATED
FACTOR OUT OF TOLERANCE



ECD B 64X1 1.0 CM/M 15%

cont. + calibration std 100ul

VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 429 RECALC
TIME 07:57 03 AUG 93
SAMPLE:
RUN MODE: CALIBRATION
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT FACTOR	AREA COUNTS
1		1.046		18344057
2		1.183		5324
3		1.264		8064
4		1.292		123880
5		1.408		5600
6		1.486		356706
7	F11	1.792	0.2933	170466
8		2.096		57751
9		2.196		33413
10	CH2CL2	2.395	692.5596	30697
11	TRANS	2.575	7557.0349	8074
12		3.089		10352
13	CHCL3	3.569	61.4502	8462
14	111TCA	3.737	0.1253	591274
15	CCL4	3.880	0.7738	23260
16		4.274		31526
17	TCE	4.672	73.0131	5752
18	12DCP	4.892	83.1412	962217
19	CH2BR2	5.017	0.1464	3415018
20	CHBRCL2	5.177	0.1009	1585468
21		5.552		5949
22	T13DCP	5.674	1.6766	2176946
23		5.886		9262
24	C13DCP	6.337	4.7089	1061810
25	~~112TCA~~	6.544	~~613.3683~~	7907
26	~~PCE~~	6.733	~~0.0669~~	1642699
27	~~CHBR2CL~~	7.086	~~20.8222~~	6243
28		7.688		47630
29	~~CHBR3~~	9.054	~~0.5876~~	1123205
30		9.220		173401
31	BRBEN	9.763	68.0477	2487958
32	~~1112PCA~~	9.868	0.0498	1643516
33	~~1122PCA~~	10.580	803.9213	11593
34	13DCP	11.256	21.5330	1866894
35	~~11.405~~	11.405	46.9450	2249438
36	14DCB	11.571		12705
37	12DCB	11.994	25.9957	1707974
38		12.609		1399278

TOTALS: 43411783

DETECTED PEAKS: 38 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.00000000 DIVISOR: 100.00000
NOISE: 1596.4 OFFSET: -32

ERROR LOG:
ADC OVERRANGE
FACTOR NOT UPDATED
FACTOR OUT OF TOLERANCE

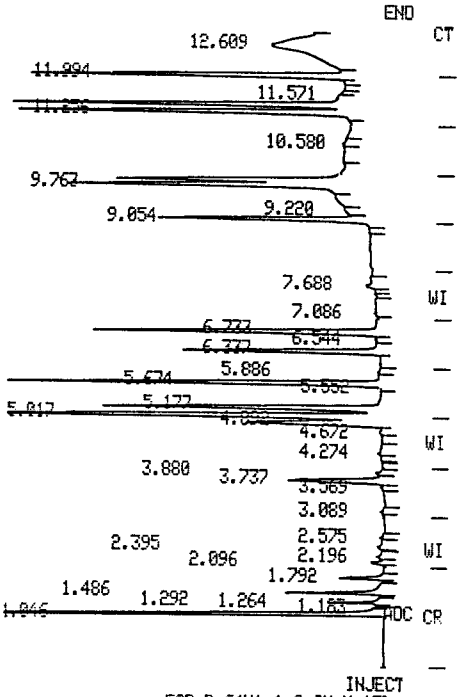
1 cal calibration Std 100 ml

VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 429
TIME 07:57 03 AUG 93
SAMPLE:
RUN MODE: CALIBRATION
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT FACTOR	AREA COUNTS
1		1.046		18344057
2		1.183		5324
3		1.264		8064
4		1.292		123880
5		1.408		5600
6		1.486		356706
7	F11	1.792	0.2933	170466
8		2.096		57751
9		2.196		33413
10	CH2CL2	2.395	692.5596	30697
11	TRANS	2.575	7557.0349	8074
12		3.089		10352
13	CHCL3	3.569	61.4502	8462
14	111TCA	3.737	0.1253	591274
15	CCL4	3.880	0.7738	23260
16		4.274		31526
17	TCE	4.672	73.0131	5752
18	12DCP	4.892	83.1412	962217
19	CH2BR2	5.017	0.1464	3415018
20	CHBRCL2	5.177	0.1009	1585468
21		5.552		5949
22	T13DCP	5.674	1.6766	2176946
23		5.886		9262
24	C13DCP	6.337	4.7089	1061810
25	112TCA	6.544	613.3603	7907
26	PCE	6.773	0.0669	1642699
27	CHBR2CL	7.086	20.8222	6243
28		7.688		47630
29	CHBR3	9.054	0.5876	1123205
30		9.220		173401
31	BRBEN	9.763	68.0477	2487958
32	1112PCA	9.868	0.0498	1643516
33	1122PCA	10.580	803.9213	11593
34	14DCB	11.256	56.5645	1866894
35		11.405		2249438
36		11.571		12705
37	12DCB	11.994	25.9957	1707974
38		12.609		1399278
TOTALS:				43411783

DETECTED PEAKS: 38 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 100.00000
NOISE: 1596.4 OFFSET: -32

ERROR LOG:
ADC OVERRANGE
FACTOR NOT UPDATED
FACTOR OUT OF TOLERANCE



ECD B 64X1 1.0 CM/M 15%

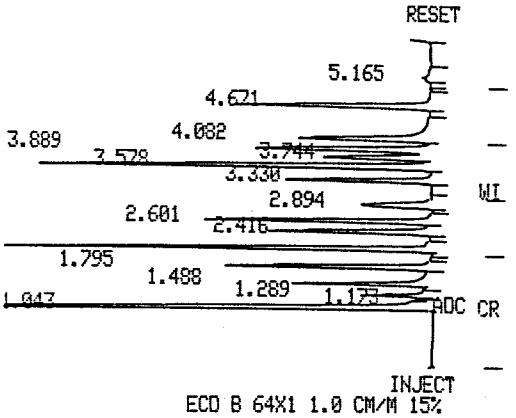
calibration Std 100ml

VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 428
TIME 07:40 03 AUG 93
SAMPLE:
RUN MODE: CALIBRATION
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT FACTOR	AREA COUNTS
1		1.043		27934701
2		1.173		6556
3		1.289		181680
4		1.488		502224
5	F11	1.795	0.0614	813353
6		2.115		1615891
7	CH2CL2	2.416	29.6726	716483
8	TRANS	2.601	69.6549	876032
9	11DCA	2.894	56.5853	446228
10	CIS	3.330	125.2150	619174
11	CHCL3	3.578	0.2032	1835919
12	111TCA	3.744	0.1232	600981
13	CCL4	3.889	0.0191	941268
14	12DCA	4.082	23.0176	860208
15	TCE	4.671	0.4443	945179
16	CHBRCL2	5.165	2.9671	55805
	TOTALS:			38951690

DETECTED PEAKS: 16 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 100.00000
NOISE: 1596.4 OFFSET: 3

ERROR LOG:
COL TEMP
ADC OVERRANGE
FACTOR NOT UPDATED
FACTOR OUT OF TOLERANCE



ECD B 64X1 1.0 CM/M 15%

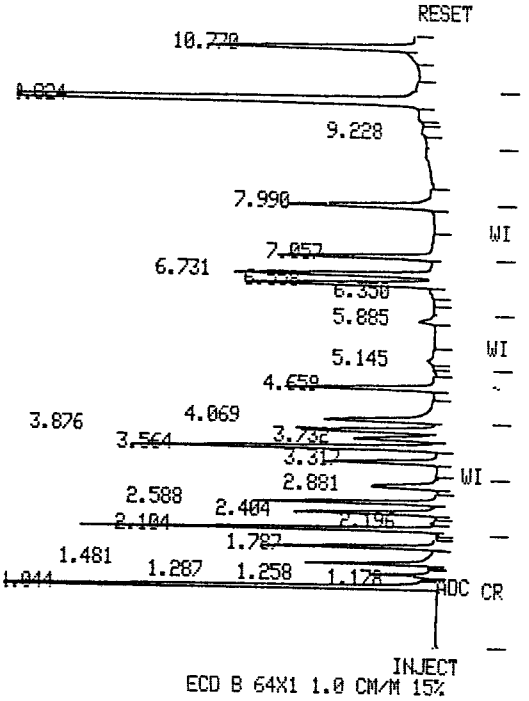
calibration std 100ul

VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 427
TIME 07:26 03 AUG 93
SAMPLE:
RUN MODE: CALIBRATION
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT FACTOR	AREA COUNTS
1		1.044		21732166
2		1.178		7739
3		1.258		23993
4		1.287		136465
5		1.403		9571
6		1.481		452167
7	~~F11~~	1.787	~~0.0906~~	620320
8		2.104		1240347
9		2.196		7979
10	~~CH2CL2~~	2.404	~~35.1096~~	604154
11	~~TRANS~~	2.588	~~92.1129~~	662447
12	~~11DCA~~	2.881	~~62.9878~~	400875
13	CIS	3.317	166.9900	464279
14	CHCL3	3.564	0.3785	1373761
15	111TCA	3.732	0.1657	447077
16	~~CCL4~~	3.876	~~0.0255~~	704719
17	~~12DCA~~	4.069	~~26.9112~~	735750
18	~~TCE~~	4.659	~~0.0040~~	695310
19	CHBRCL2	5.145	~~2.5925~~	61714
20		5.885		91802
21	~~C13DCP~~	6.350	~~157.1632~~	31814
22	~~112TCA~~	6.558	4.9512	979546
23	PCE	6.731	0.1051	1046410
24	CHBR2CL	7.057	0.1624	800174
25	CHLBEN	7.990	0.0246	810714
26	CHBR3	9.228	132.2575	4990
27	1112PCA	9.824	0.0099	8259522
28	~~1122PCA~~	10.770	~~7.4533~~	1250439
TOTALS:				43656259

DETECTED PEAKS: 28 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 100.00000
NOISE: 1596.4 OFFSET: -1

ERROR LOG:
ADC OVERRANGE
FACTOR NOT UPDATED
FACTOR OUT OF TOLERANCE



ECD B 64X1 1.0 CM/M 15%

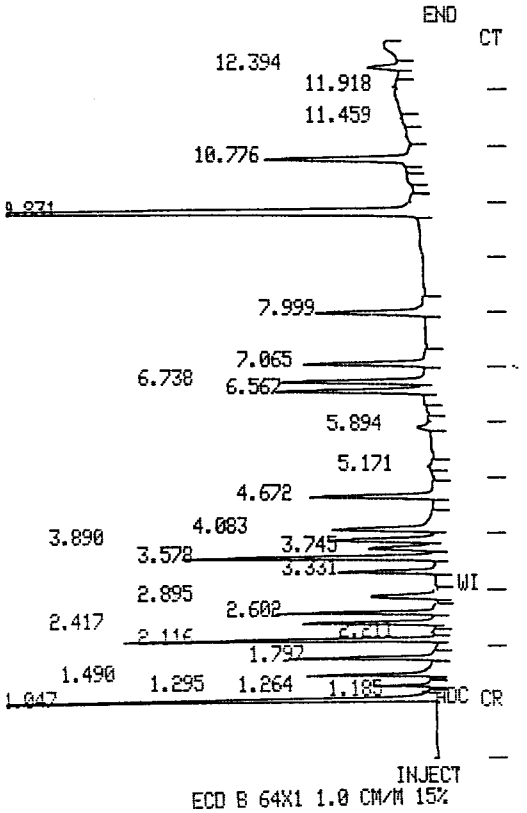
calibration std 100ml

VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 426
TIME 07:04 03 AUG 93
SAMPLE:
RUN MODE: CALIBRATION
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT FACTOR	AREA COUNTS
1		1.047		17230365
2		1.185		7638
3		1.264		5025
4		1.295		122384
5		1.412		10297
6		1.490		416535
7	F11	1.797	0.1006	496843
8		2.116		1036336
9		2.211		12589
10	CH2CL2	2.417	39.5441	537627
11	TRANS	2.602	109.3245	558154
12	11DCA	2.895	67.6201	373409
13	CIS	3.331	198.2618	391048
14	CHCL3	3.578	0.4655	1117064
15	111TCA	3.745	0.2070	357884
16	CCL4	3.890	0.0323	556640
17	12DCA	4.083	31.7724	623182
18	TCE	4.672	0.7330	572977
19	CHBRCL2	5.171	8.9076	17962
20		5.894		67918
21	112TCA	6.567	5.8428	830073
22	PCE	6.738	0.1487	739386
23	CHBR2CL	7.065	0.2137	608062
24	CHLBEN	7.999	0.0322	620731
25	~~123TCP~~ 112PCA	9.831	~~2.6005~~ 0.013	6152528
26	4122PCA	10.776	9.8920	942172
27	14DCB	11.459	7573.1581	13943
28	12DCB	11.918	391.7660	113332
29		12.394		175383
	TOTALS:			34707501

DETECTED PEAKS: 29 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 100.00000
NOISE: 1596.4 OFFSET: -40

ERROR LOG:
ADC OVERRANGE
FACTOR NOT UPDATED
FACTOR OUT OF TOLERANCE



ECD B 64X1 1.0 CM/M 15%

$\frac{100}{40000}$ = 1/00 dilution

amount injected 30 x 1/00 = 0.3ul

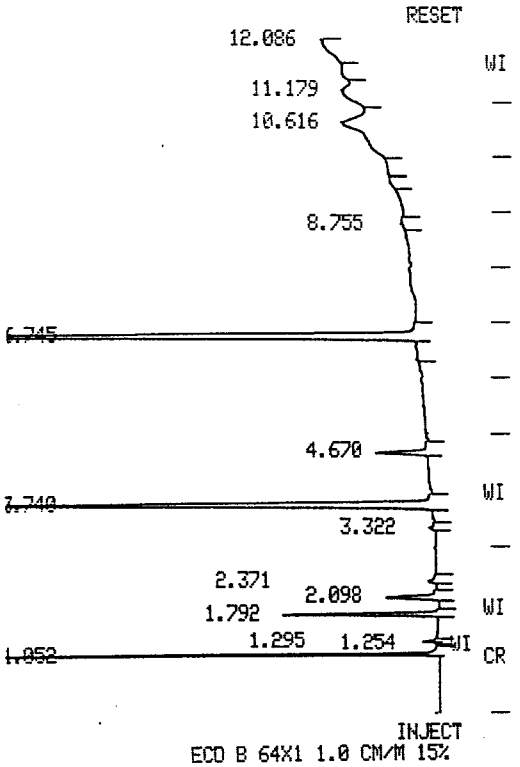
2RC-67'

0.3ul

YARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 437
TIME 10:16 03 AUG 93
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		1.052		4830821
2		1.254		3263
3		1.295		22039
4	F11	1.792	15.5604	481249
5		2.098		211273
6	CH2CL2	2.371	438.3268	29221
7	CIS	3.322	623.6563	11204
8	111TCA	3.740	157.5073	2625123
9	TCE	4.670	33.9561	229247
10	PCE	6.745	183.5137	6256148
11	CHBR3	8.755	0.9633	6148
12	1122PCA	10.616	4172.8706	787334
13	13DCB	11.179	1920.1599	250455
14	12DCB	12.086	498.2665	48219
	TOTALS:		8044.7812	15791751

DETECTED PEAKS: 14 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 0.3000000
NOISE: 1596.4 OFFSET: 63



ECD B 64X1 1.0 CM/M 15%

QUALITY CONTROL SUMMARY

Date : 8/4/93
Proj # : 9349
Chemist : John Tangeman
Machine ID: Phase 3
Supply Source: Chem Service

				1 POINT CALIBRATION CHECK					QC CHECK						
				Calibration Information and Detector Response					Recovery Concentrations and Percentages						
		COLUMN	STDconc	Injection 1				% Dif	Actual		Observed	recovery		Observed	recovery
	DETECTOR	TYPE/SERIAL #	ug/L	uL	area	rf	*Mean rf*	*from mean*	ug/L	uL	ug/L	am	uL	ug/L	pm
cfc11	ECD	DB-624/1213537	0.05	100		0.102	0.094	8.5	0.05	100	0.046	92%	100	0.049	98%
ch2cl2	ECD	DB-624/1213537	21.26	100		41.3	45.000	8.2	26	100	26.2	101%	100	23.6	91%
1,1,1-tca	ECD	DB-624/1213537	0.0741	100		0.18	0.160	12.5	0.07	100	0.073	104%	100	0.068	97%
ccl4	ECD	DB-624/1213537	0.018	100		0.032	0.028	14.3	0.015	100	0.017	113%	100	0.012	80%
tce	ECD	DB-624/1213537	0.42	100		0.46	0.430	7	0.35	100	0.36	103%	100	0.32	91%
pce	ECD	DB-624/1213537	0.11	100		0.085	0.097	12.4	0.1	100	0.109	109%	100	0.118	118%
chbr2cl	ECD	DB-624/1213537	0.13	100		0.18	0.170	5.8	0.14	100	0.16	114%	100	0.11	79%
1,1-dce	PID	AT-624/6820	28.96	200	302	19.2	19.600	2	2.5	500	2.4	96%	500	2.9	116%
benzene	PID	AT-624/6820	16.4	200	409	8	8.400	4.8	9.5	200	11.3	119%	200	11.3	119%
toluene	PID	AT-624/6820	16.88	200	358	9.4	10.900	13.8	11.4	200	12.5	110%	200	12.5	110%
ethyl benzene	PID	AT-624/6820	17.36	200	224	15.5	17.900	13.4	16	200	17.1	107%	200	14.3	89%
m,p-xylene	PID	AT-624/6820	30.96	200	488	12.7	13.200	3.8	25.6	200	26.4	103%	200	22.4	88%
o-xylene	PID	AT-624/6820	15.44	200	180	17.2	19.200	10.4	17	200	14.4	85%	200	13.4	79%

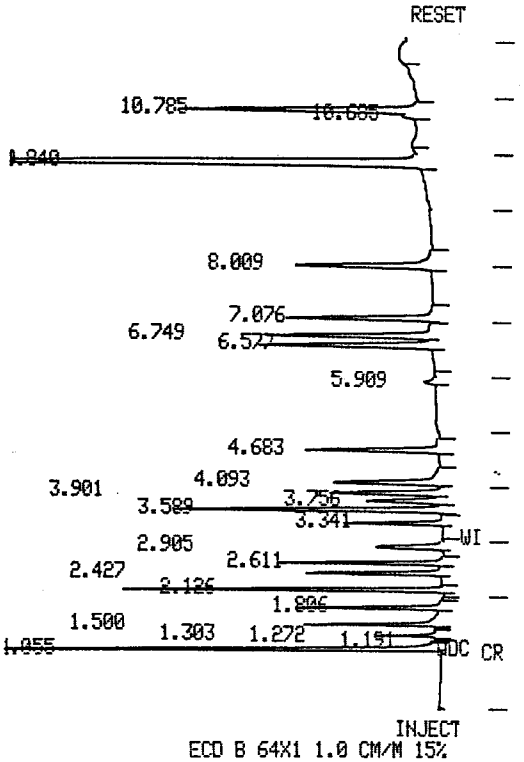
calibration Std 100ml

VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 468
TIME 07:11 04 AUG 93
SAMPLE:
RUN MODE: CALIBRATION
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT FACTOR	AREA COUNTS
1		1.055		15939959
2		1.191		5684
3		1.272		7541
4		1.303		141925
5		1.418		15852
6		1.500		459045
7	F11	1.806	0.1019	490409
8		2.126		1027007
9	CH2CL2	2.427	41.2854	514951
10	TRANS	2.611	109.4437	557546
11	11DCA	2.905	67.2334	375557
12	CIS	3.341	202.9504	382014
13	CHCL3	3.589	0.4491	1157720
14	111TCA	3.756	0.1853	399857
15	CCL4	3.901	0.0315	571038
16	12DCA	4.093	31.2011	634592
17	~~TCE~~	4.683	~~0.6914~~	607413
18		5.909		60597
19	112TCA	6.577	5.4973	882242
20	~~PCE~~	6.749	~~0.1326~~	829362
21	CHBR2CL	7.076	0.1830	710360
22	CHLBEN	8.009	0.0263	760442
23	1112PCA	9.840	0.0091	8958118
24	~~1122PCA~~	10.685	~~169.2848~~	55055
25	1112PCA	10.785	7.2	1297642
TOTALS:				36841940

DETECTED PEAKS: 25 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 500.00000
NOISE: 2678.7 OFFSET: -1242

ERROR LOG:
ADC OVERRANGE
FACTOR NOT UPDATED
FACTOR OUT OF TOLERANCE



ECD B 64X1 1.0 CM/M 15%

SOIL GAS INITIAL CALIBRATION STANDARD REPORT

ATE: 6/24/93 ANALYST: John Tangeman STD SOURCE: Chem Service MACHINE ID: Phase 3

COMPOUND	DETECTOR	uL	RT	CONC. (ug/L)	AREA	RF	uL	RT	CONC. (ug/L)	AREA	RF	uL	RT	CONC. (ug/L)	AREA	RF	RFave	SD	%RSD
romobenzene	ECD	100	9.553	169.3		108	200	9.527	169.3		119	300	9.556	169.3		111.00	112.67	5.69	5%
romodichloromethane	ECD	50	4.993	0.16		0.088	100	4.997	0.16		0.088	500	4.987	0.16		0.099	0.092	0.006	7%
romoform	ECD	50	8.847	0.66		0.5	100	8.864	0.66		0.4	200	8.815	0.66		0.52	0.47	0.06	14%
romomethane	FID	50	1.616	1075		3600	100	1.616	1075		2800	200	1.616	1075		3300	3233.33	404.15	12%
arbon tetrachloride	ECD	20	3.422	0.018		0.026	100	3.762	0.018		0.026	700	3.737	0.036		0.033	0.028	0.004	14%
hloroethane	ECD	50	1.666	1036		820	200	1.683	1036		850	300	1.683	1036		810	826.67	20.82	3%
hloroform	ECD	50	3.121	0.52		0.32	100	3.458	0.52		0.34	300	3.117	0.52		0.410	0.357	0.047	13%
hloromethane	FID	50	1.332	1068		1400	200	1.35	1068		1500	300	1.333	1068		1500	1466.67	57.74	4%
ibromochloromethane	ECD	20	6.371	0.13		0.16	100	6.342	0.13		0.16	500	6.354	0.13		0.180	0.167	0.012	7%
ibromomethane	ECD	50	4.834	0.5		0.12	100	4.838	0.5		0.13	500	4.829	0.5		0.140	0.130	0.010	8%
ichloromethane	ECD	100	2.322	21.26		36	200	2.122	21.26		47.4	250	2.117	21.26		51.70	45.03	8.11	18%
1,1-Dichloroethane	ECD	200	2.531	25.25		95.1	250	2.525	25.25		96.5	500	2.901	25.25		120.00	103.87	13.99	13%
1,2-Dichloroethane	ECD	200	3.578	19.8		38.3	300	3.572	19.8		43	500	3.57	19.8		44.80	42.03	3.36	8%
1,1-Dichloroethene	ECD	20	1.884	12.3		8.6	100	2.03	12.3		9.8	300	1.865	12.3		11.00	9.80	1.20	12%
c-1,2-Dichloroethene	ECD	20	2.922	77.53		153	100	3.215	77.53		154	500	2.901	77.53		188.00	165.00	19.92	12%
t-1,2-Dichloroethene	ECD	20	2.292	61.02		90.5	100	2.269	61.02		94.1	500	2.271	61.02		100.00	94.87	4.80	5%
1,2-Dichloropropane	ECD	100	4.73	80		67	150	4.736	80		76	200	4.686	80		88.00	77.00	10.54	14%
c-1,3-Dichloropropene	ECD	50	6.145	5		3.7	100	6.147	5		3.9	300	6.146	5		4.70	4.10	0.53	13%
t-1,3-Dichloropropene	ECD	10	5.487	3.65		1.3	100	5.489	3.65		1.4	500	5.478	3.65		1.70	1.47	0.21	14%
1,1,1,2-Tetrachloroethane	ECD	50	9.05	0.082		0.0075	100	9.037	0.082		0.0094	300	9.049	0.082		0.009	0.008533	0.001	11%
1,1,2,2-Tetrachloroethane	ECD	100	9.969	9.32		15.5	250	9.982	9.32		16.3	500	9.98	9.32		15.90	15.90	0.40	3%
Tetrachloroethene	ECD	20	6.059	0.11		0.084	100	6.579	0.11		0.104	700	6.557	0.22		0.102	0.097	0.011	11%
1,1,1-Trichloroethane	ECD	20	3.292	0.0741		0.15	100	3.264	0.0741		0.16	500	3.27	0.0741		0.180	0.163	0.015	9%
1,1,2-Trichloroethane	ECD	20	5.894	4.85		4.1	50	5.878	4.85		4.6	100	5.864	4.85		4.80	4.50	0.36	8%
Trichloroethene	ECD	20	4.125	0.42		0.39	100	4.095	0.42		0.4	700	4.511	0.84		0.49	0.43	0.06	13%
1,2,3-Trichloropropane	ECD	50	9.649	16		3.3	200	9.6	16		3.2	500	9.618	16		3.40	3.30	0.10	3%
Trichlorofluoromethane	ECD	20	1.615	0.05		0.086	100	1.599	0.05		0.085	500	1.594	0.1		0.110	0.094	0.014	15%
Trichlorotrifluoroethane	ECD	20	1.999	0.7		0.43	200	1.994	0.7		0.45	700	1.979	0.7		0.480	0.453	0.025	6%
Vinyl chloride	PID	20	1.266	25		31.2	200	1.266	25		33.3	500	1.266	25		35.9	33.5	2.35	7%
Benzene	PID	50	3.583	16.4		7.6	200	3.55	16.4		8.6	500	3.566	16.4		8.9	8.367	0.68	8%
Chlorobenzene	ECD	50	7.257	0.02		0.024	100	7.243	0.02		0.024	500	7.255	0.02		0.028	0.025	0.00	9%
1,2-Dichlorobenzene	ECD	100	11.778	44.4		28.5	300	11.782	44.4		29.3	500	11.759	44.4		35.20	31.00	3.66	12%
1,3-Dichlorobenzene	ECD	100	11.043	40.2		20.1	300	11.047	40.2		24.3	500	11.024	40.2		24.60	23.00	2.52	11%
1,4-Dichlorobenzene	ECD	100	11.211	105.6		58.2	200	11.163	105.6		63.2	500	11.174	105.6		63.20	61.53	2.89	5%
Ethyl benzene	PID	50	7.716	17.36		20.2	200	7.716	17.4		16.9	500	7.733	17.4		16.70	17.93	1.97	11%
Toluene	PID	50	5.566	16.88		11	200	5.55	16.88		10.6	500	5.55	16.88		11.00	10.87	0.23	2%
m,p-xylenes	PID	50	7.916	30.96		14.6	200	7.916	30.96		12.6	500	7.933	30.96		12.50	13.23	1.18	9%
o-Xylene	PID	50	8.583	15.44		20.3	200	8.58	15.44		19.5	500	8.582	15.44		17.90	19.23	1.22	6%
1,1-dichloroethene	PID	20	1.833	28.96		18.1	200	1.816	28.96		20.5	500	1.833	28.96		20.20	19.60	1.31	7%
1,3,5-trimethylbenzene	PID	50	10.366	35.6		11.9	200	10.35	35.6		14	500	10.333	35.6		13.90	13.27	1.18	9%
1,2,4-trimethylbenzene	PID	50	11.05	28.8		16	200	11.03	28.8		17	500	11.016	28.8		18.00	17.00	1.00	6%
styrene	PID	20	6.35	20		1.67	100	6.55	20		1.9	200	7.983	20		2.24	1.94	0.29	15%

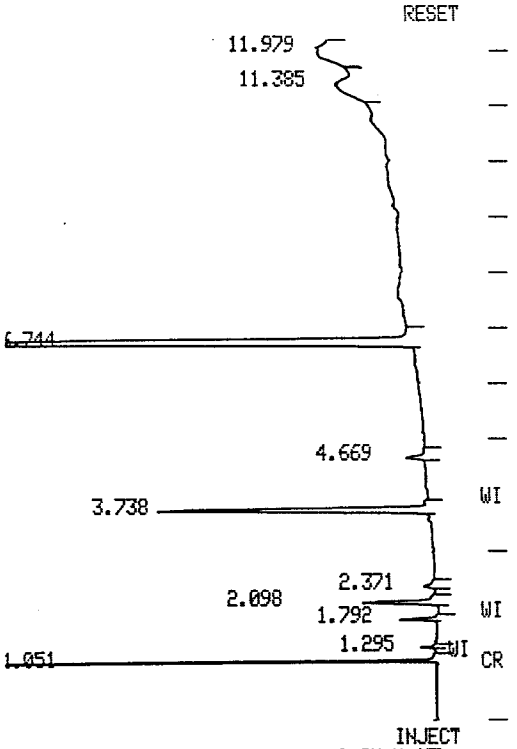
REVISED 6/24/93

400/40000 = 1/100 dilution
amount injected 20x1/100 = 0.2ul
B-5-67
0.2ul

VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 475
TIME 09:10 04 AUG 93
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		1.051		4128450
2		1.295		25117
3	F11	1.792	5.4215	115352
4		2.098		301335
5	CH2CL2	2.371	1029.9474	45775
6	111TCA	3.738	116.8169	1374316
7	TCE	4.669	17.2716	84252
8	PCE	6.744	777.2505	17272234
9	14DCB	11.385	14333.130	466118
10	12DCB	11.979	6804.0058	438968
TOTALS:			23083.844	24251921

DETECTED PEAKS: 10 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 0.2000000
NOISE: 2678.7 OFFSET: 9



ECD B 64X1 1.0 CM/M 15%

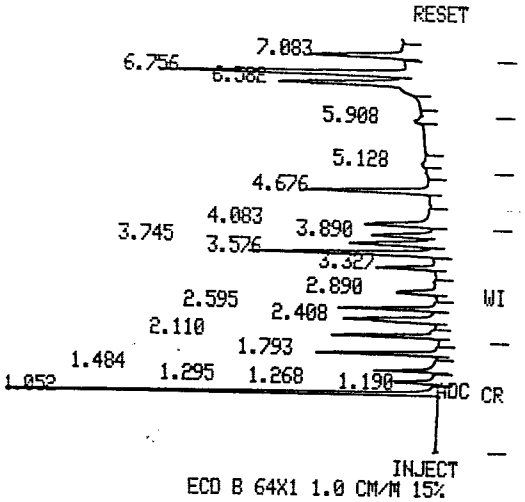
VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 487
TIME 12:26 04 AUG 93
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: EXTERNAL STANDARD

Chub
Std
100ul

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		1.052		14023345
2		1.190		2301
3		1.268		66092
4		1.295		90719
5		1.405		10105
6		1.484		185279
7	~~F11~~	1.793	~~0.0365~~	410224
8		2.110		327098
9	~~CH2CL2~~	2.408	~~22.4588~~	499085
10	~~TRANS~~	2.595	~~31.2259~~	328693
11	~~11DCA~~	2.890	~~21.7772~~	209396
12	~~CIS~~	3.327	~~37.5589~~	227629
13	~~CHCL3~~	3.576	~~0.2867~~	796635
14	111TCA	3.745	0.0677	451727
15	~~CCL4~~	3.890	~~0.0098~~	323100
16	~~12DCA~~	4.083	~~16.4363~~	391342
17	~~TCE~~	4.676	~~0.2460~~	572287
18	~~CHBRCL2~~	5.128	~~0.0024~~	26422
19		5.908		35879
20	~~112TCA~~	6.582	~~3.7942~~	843155
21	PCE	6.756	0.1183	1259343
22	~~CHBR2CL~~	7.083	~~0.0790~~	464900
TOTALS:			134.0996	21544770

DETECTED PEAKS: 22 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 100.00000
NOISE: 2678.7 OFFSET: -94

ERROR LOG:
COL TEMP
ADC OVERRANGE



ECD B 64X1 1.0 CM/M 15%

12:23 FAULT 58 DET B AUTOZERO EXCEEDED

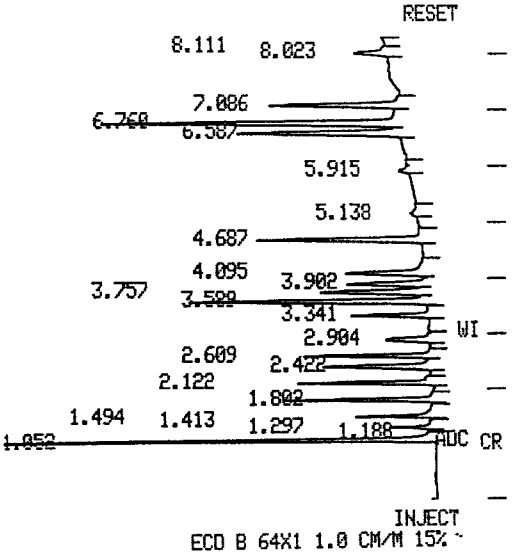
check std 100ml

VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 486
TIME 12:11 04 AUG 93
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		1.052		16296339
2		1.188		2574
3		1.297		118026
4		1.413		9870
5		1.494		241730
6	F11	1.802	0.0493	524800
7		2.122		434292
8	CH2CL2	2.422	23.6298	525107
9	TRANS	2.609	41.0821	432444
10	11DCA	2.904	25.4358	244575
11	CIS	3.341	49.9489	302720
12	CHCL3	3.589	0.3777	1049311
13	111TCA	3.757	0.0869	579403
14	CCL4	3.902	0.0117	419636
15	12DCA	4.095	19.0213	452890
16	TCE	4.687	0.3242	754167
17	CHBRCL2	5.138	0.0030	33300
18		5.915		43748
19	112TCA	6.587	3.7220	827132
20	PCE	6.760	0.1465	1508578
21	CHBR2CL	7.086	0.1061	624484
22	CHLBEN	8.023	0.0044	178237
23		8.111		16972
	TOTALS:		163.9503	25620344

DETECTED PEAKS: 23 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 100.00000
NOISE: 2678.7 OFFSET: 24

ERROR LOG:
ADC OVERRANGE



ECD B 64X1 1.0 CM/M 15%

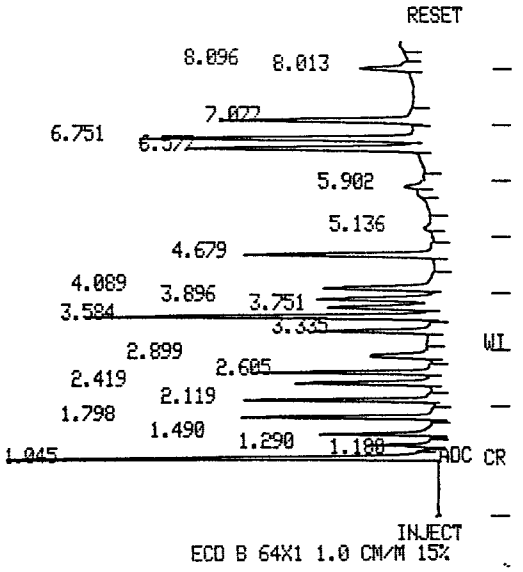
Check Std 100ml

VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 473
TIME 08:27 04 AUG 93
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		1.045		23286899
2		1.180		12615
3		1.290		164942
4		1.490		392391
5	E11	1.798	0.0667	710584
6		2.119		648832
7	CH2CL2	2.419	26.2373	583053
8	TRANS	2.605	61.0968	643124
9	11DCA	2.899	37.7225	362717
10	CIS	3.335	77.4901	469637
11	CHCL3	3.584	0.5580	1550061
12	111TCA	3.751	0.0961	565839
13	CCL4	3.896	0.0170	609828
14	12DCA	4.089	26.6135	633656
15	TCE	4.679	0.3616	882144
16	CHBRCL2	5.136	0.0043	47267
17		5.902		233574
18	112TCA	6.577	5.3627	1201693
19	PCE	6.751	0.1272	1420416
20	CHBR2CL	7.077	0.1649	970525
21	CHLBEN	8.013	0.0070	280545
22		8.096		22284
TOTALS:			235.9328	35692635

DETECTED PEAKS: 22 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 100.00000
NOISE: 2678.7 OFFSET: 69

ERROR LOG:
ADC OVERRANGE



ECD B 64X1 1.0 CM/M 15%

08:24 FAULT 58 DET B AUTOZERO EXCEEDED

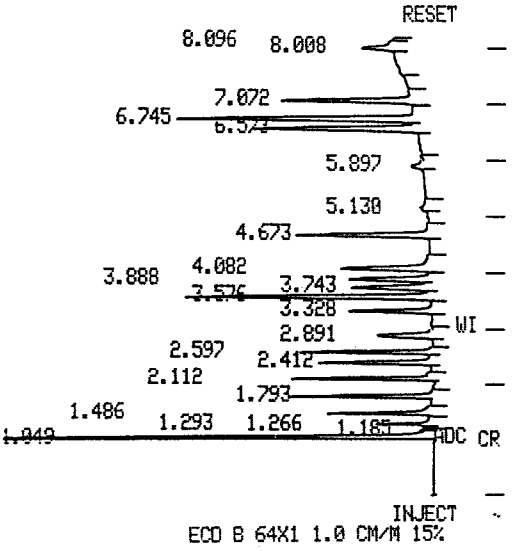
Check STD 100ml

VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 472
TIME 08:14 04 AUG 93
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		1.049		16676247
2		1.185		11428
3		1.266		13116
4		1.293		114401
5		1.486		320695
6	F11	1.793	0.0460	490023
7		2.112		451179
8	~~CH2CL2~~	2.412	20.3894	453097
9	~~TRANS~~	2.597	42.2014	444225
10	~~11DCA~~	2.891	32.0942	308598
11	~~CIS~~	3.328	54.6729	331351
12	~~CHCL3~~	3.576	0.3917	1088117
13	111TCA	3.743	0.0733	431404
14	~~CCL4~~	3.888	0.0119	425067
15	~~12DCA~~	4.082	21.3318	507900
16	~~TCE~~	4.673	0.2507	611548
17	CHBRCL2	5.130	0.0034	37220
18		5.897		63613
19	112TCA	6.573	3.7346	835987
20	PCE	6.745	0.1093	1214482
21	CHBR2CL	7.072	0.1078	634574
22	CHLBEN	8.008	0.0045	182208
23		8.096		30093
TOTALS:			175.4233	25676582

DETECTED PEAKS: 23 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 100.00000
NOISE: 2678.7 OFFSET: -44

ERROR LOG:
ADC OVERRANGE



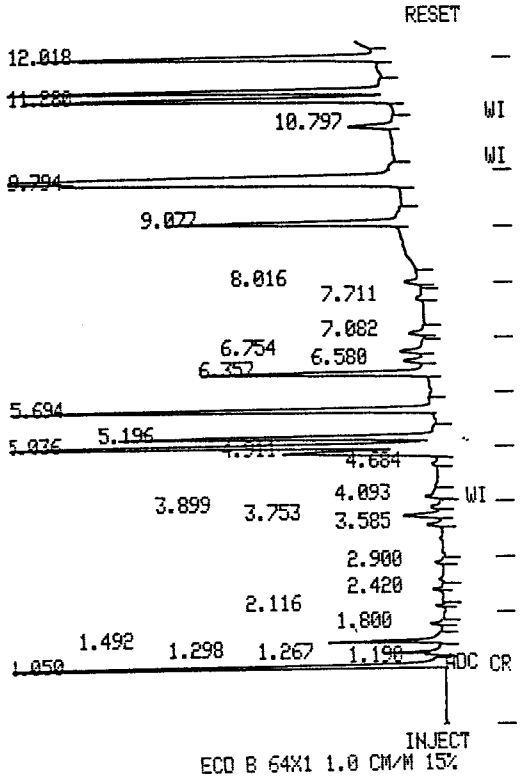
ECD B 64X1 1.0 CM/M 15%

METHOD 1 RUN 471 1000
TIME 07:56 04 AUG 93
SAMPLE:
RUN MODE: CALIBRATION
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT FACTOR	AREA COUNTS
1		1.050		17913009
2		1.190		4508
3		1.267		26600
4		1.298		126724
5		1.492		365153
6	F11	1.800	1.3073	38245
7		2.116		27108
8	CH2CL2	2.420	450.0736	47236
9	11DCA	2.900	772.5565	32683
10	CHCL3	3.585	7.8944	65868
11	111TCA	3.753	0.3575	207264
12	CCL4	3.899	0.3184	56518
13	12DCA	4.093	434.5619	45563
14	TCE	4.684	15.4608	27165
15	~~CH2BR2~~ 2DCP	4.911	~~0.5031~~ 80	993794
16	~~CHBRCL2~~ CCL4	5.036	~~0.04740~~ 0.15	3375499
17	CHBRCl2	5.196	0.10	1545004
18	T13DCP	5.694	1.7031	2143142
19	C13DCP	6.357	4.6811	1068116
20	112TCA	6.580	37.9752	127714
21	PCE	6.754	0.8355	131643
22	CHBR2CL	7.082	1.6921	76824
23		7.711		37950
24	CHLBEN	8.016	0.2631	76008
25	CHBR3	9.077	0.5440	1213078
26	BRBEN	9.794	105.1764	1609675
27	123TCP	9.859	4.9950	3203169
28	1122PCA	10.797	40.6005	229553
29	13DCB	11.280	22.6119	1777820
30	14DCB	11.429	53.2332	1983721
31	12DCB	12.018	27.3815	1621529
	TOTALS:			40197899

DETECTED PEAKS: 31 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 500.00000
NOISE: 2678.7 OFFSET: -69

ERROR LOG:
COL TEMP
ADC OVERRANGE
FACTOR NOT UPDATED
FACTOR OUT OF TOLERANCE



ECD B 64X1 1.0 CM/M 15%

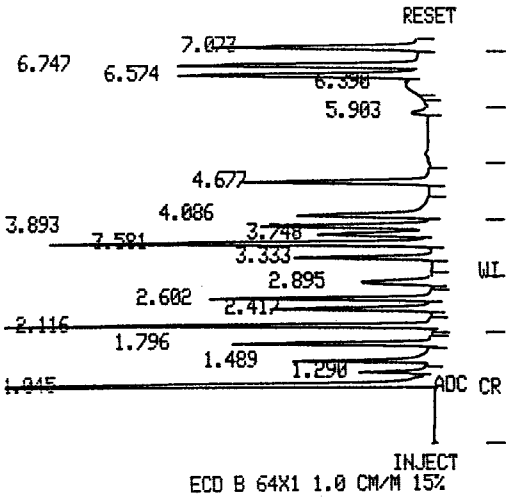
calibration Std 100ul

VARIAN 3400 GAS CHROMATOGRAPH
METHOD 1 RUN 470
TIME 07:41 04 AUG 93
SAMPLE:
RUN MODE: CALIBRATION
CALCULATION TYPE: EXTERNAL STANDARD

PEAK NO.	PEAK NAME	TIME MIN	RESULT FACTOR	AREA COUNTS
1		1.045		27149041
2		1.290		202554
3		1.489		506790
4	F11	1.796	0.0640	781041
5		2.116		1582246
6	CH2CL2	2.417	29.4872	720989
7	TRANS	2.602	70.3941	866833
8	11DCA	2.895	55.5682	454395
9	CIS	3.333	134.3620	577023
10	CHCL3	3.581	0.2915	1783844
11	111TCA	3.748	0.1170	633258
12	CCL4	3.893	0.0197	912190
13	12DCA	4.086	27.4413	844640
14	TCE	4.677	0.4593	0.1% 914264
15		5.903		88772
16	13DCP	6.390	17.4455	286606
17	112TCA	6.574	3.6318	1335415
18	PCE	6.747	0.0853	1288066
19	CHBR2CL	7.073	0.1246	1043195
	TOTALS:			41971168

DETECTED PEAKS: 19 REJECTED PEAKS: 0
AMOUNT STANDARD: 100.00000
MULTIPLIER: 1.0000000 DIVISOR: 500.00000
NOISE: 2678.7 OFFSET: -28

ERROR LOG:
ADC OVERRANGE
FACTOR NOT UPDATED
FACTOR OUT OF TOLERANCE



ECD B 64X1 1.0 CM/M 15%

07:38 FAULT 58 DET B AUTOZERO EXCEEDED

Performance Analytical Inc.
Environmental Testing and Consulting

LABORATORY REPORT

Client:	Meredith/Boli & Associates, Inc.	Date of Report:	08/10/93
Address:	6701 Center Drive West, Suite 900	Date Received:	08/04/93
	Los Angeles, CA 90045-1535	Purchase Order:	Verbal
Contact:	Mr. Roger McCracken	PAI Project No:	5451

Client Project: OSCO (CWM)

One (1) Stainless Steel Summa Canister labeled: "B4-75"

The sample was received at the laboratory under chain of custody on August 4, 1993. The sample was received intact. The sample was analyzed on August 9, 1993.

Volatile Organic Compound Analysis

The sample was analyzed by combined gas chromatography/mass spectrometry (GC/MS) for Volatile Organic Compounds. The analyses were performed according to the methodology outlined in EPA Method TO-14 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, EPA 600/4-84-041, U.S. Environmental Protection Agency, Research Triangle Park, NC, April, 1984 and May, 1988. The analyses were performed by gas chromatography/mass spectrometry, utilizing a direct cryogenic trapping technique. The analytical system used was comprised of a Finnigan Model 4500C GC/MS/DS interfaced to a Tekmar 5010 Automatic Desorber. A thick film (5 micron) crossbonded 100% Dimethyl polysiloxane megabore column (RT_x-1, Restek Corporation, Bellefonte, PA) was used to achieve chromatographic separation.

The results of analysis are given on the attached data summary sheets.

Data Release Authorization:

Chris Parnell
Senior Chemist

Reviewed and Approved:

Michael Tuday
Laboratory Director

20954 Osborne Street, Canoga Park, CA 91304 • Phone 818 709-1139 • Fax 818 709-2915

Performance Analytical Inc.
Environmental Testing and Consulting

PERFORMANCE ANALYTICAL INC.

RESULTS OF ANALYSIS

Client: Meredith/Boli & Associates

Client Sample ID: N/A

PAI Sample ID: PAI Method Blank

Test Code: GC/MS EPA TO-14
Analyst: Chris Parnell
Instrument ID: Finnigan 4500C/Tekmar 5010
Verified by: Michael Tuday

Matrix: Summa Canister
Date Received: N/A
Date Analyzed: 08/09/93
Volume Analyzed: 1.00 Liter

CAS #	COMPOUND	RESULT (UG/M^3)	DETECTION LIMIT (UG/M^3)	RESULT (PPB)	DETECTION LIMIT (PPB)
74-87-3	CHLOROMETHANE	ND	5.0	ND	2.4
75-01-4	VINYL CHLORIDE	ND	5.0	ND	2.0
75-00-3	CHLOROETHANE	ND	5.0	ND	1.9
74-83-9	BROMOMETHANE	ND	5.0	ND	1.3
67-64-1	ACETONE	ND	10	ND	4.2
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.0	ND	0.90
75-35-4	1,1-DICHLOROETHENE	ND	5.0	ND	1.3
75-09-2	METHYLENE CHLORIDE	ND	5.0	ND	1.5
75-15-0	CARBON DISULFIDE	ND	5.0	ND	1.6
76-13-1	TRICHLOROTRIFLUOROETHANE	ND	5.0	ND	0.66
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.0	ND	1.3
156-59-2	CIS-1,2-DICHLOROETHENE	ND	5.0	ND	1.3
75-34-3	1,1-DICHLOROETHANE	ND	5.0	ND	1.2
108-05-4	VINYL ACETATE	ND	10	ND	2.8
78-93-3	2-BUTANONE	ND	10	ND	3.4
67-66-3	CHLOROFORM	ND	5.0	ND	1.0
107-06-2	1,2-DICHLOROETHANE	ND	5.0	ND	1.2
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.0	ND	0.93
71-43-2	BENZENE	ND	5.0	ND	1.6
56-23-5	CARBON TETRACHLORIDE	ND	5.0	ND	0.80
78-87-5	1,2-DICHLOROPROPANE	ND	5.0	ND	1.1
75-27-4	BROMODICHLOROMETHANE	ND	5.0	ND	0.75
79-01-6	TRICHLOROETHENE	ND	5.0	ND	0.94
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.0	ND	1.1

ND = Not Detected TR = Trace Level - Below Indicated Detection Limit

20954 Osborne Street, Canoga Park, CA 91304 • Phone 818 709-1139 • Fax 818 709-2915

Performance Analytical Inc.
Environmental Testing and Consulting

PERFORMANCE ANALYTICAL INC.

RESULTS OF ANALYSIS (Continued)

Client: Meredith/Boli & Associates

Client Sample ID: N/A

PAI Sample ID: PAI Method Blank

Test Code:	GC/MS EPA TO-14	Matrix:	Summa Canister
Analyst:	Chris Parnell	Date Received:	N/A
Instrument ID:	Finnigan 4500C/Tekmar 5010	Date Analyzed:	08/09/93
Verified by:	Michael Tuday	Volume Analyzed:	1.00 Liter

CAS #	COMPOUND	RESULT (UG/M^3)	DETECTION LIMIT (UG/M^3)	RESULT (PPB)	DETECTION LIMIT (PPB)
108-10-1	4-METHYL-2-PENTANONE	ND	10	ND	2.4
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.0	ND	1.1
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.0	ND	0.93
108-88-3	TOLUENE	ND	5.0	ND	1.3
124-48-1	DIBROMOCHLOROMETHANE	ND	5.0	ND	0.59
119-78-6	2-HEXANONE	ND	10	ND	2.4
106-93-4	1,2-DIBROMOETHANE	ND	5.0	ND	0.65
127-18-4	TETRACHLOROETHENE	ND	5.0	ND	0.75
108-90-7	CHLOROBENZENE	ND	5.0	ND	1.1
100-41-4	ETHYLBENZENE	ND	5.0	ND	1.2
75-25-2	BROMOFORM	ND	5.0	ND	0.49
100-42-5	STYRENE	ND	5.0	ND	1.2
1330-20-7	m- & p-XYLENES	ND	5.0	ND	1.2
95-47-6	o-XYLENE	ND	5.0	ND	1.2
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.0	ND	0.74
541-73-1	1,3-DICHLOROBENZENE	ND	5.0	ND	0.84
106-46-7	1,4-DICHLOROBENZENE	ND	5.0	ND	0.84
95-50-1	1,2-DICHLOROBENZENE	ND	5.0	ND	0.84

ND = Not Detected TR = Trace Level - Below Indicated Detection Limit

20954 Osborne Street, Canoga Park, CA 91304 • Phone 818 709-1139 • Fax 818 709-2915

Performance Analytical Inc.
Environmental Testing and Consulting

PERFORMANCE ANALYTICAL INC.

RESULTS OF ANALYSIS

Client: Meredith/Boli & Associates

Client Sample ID: B4-75 (08/04/93) (11:30)

PAI Sample ID: 9302810

Test Code: GC/MS EPA TO-14
Analyst: Chris Parnell
Instrument ID: Finnigan 4500C/Tekmar 5010
Verified by: Michael Tuday

Matrix: Summa Canister
Date Received: 08/04/93
Date Analyzed: 08/09/93
Volume Analyzed: 0.050 ml & 0.020 ml
P_i = -0.8 P_f = +2.4 DF= 1.23

CAS #	COMPOUND	RESULT (MG/M^3)	DETECTION LIMIT (MG/M^3)	RESULT (PPM)	DETECTION LIMIT (PPM)
74-87-3	CHLOROMETHANE	ND	100	ND	49
75-01-4	VINYL CHLORIDE	ND	100	ND	39
75-00-3	CHLOROETHANE	ND	100	ND	38
74-83-9	BROMOMETHANE	ND	100	ND	26
67-64-1	ACETONE	ND	200	ND	84
75-69-4	TRICHLOROFLUOROMETHANE	ND	100	ND	18
75-35-4	1,1-DICHLOROETHENE	ND	100	ND	25
75-09-2	METHYLENE CHLORIDE	ND	100	ND	29
75-15-0	CARBON DISULFIDE	ND	100	ND	32
76-13-1	TRICHLOROTRIFLUOROETHANE	ND	100	ND	13
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	100	ND	25
156-59-2	CIS-1,2-DICHLOROETHENE	ND	100	ND	25
75-34-3	1,1-DICHLOROETHANE	ND	100	ND	25
108-05-4	VINYL ACETATE	ND	200	ND	57
78-93-3	2-BUTANONE	ND	200	ND	68
67-66-3	CHLOROFORM	ND	100	ND	21
107-06-2	1,2-DICHLOROETHANE	ND	100	ND	25
71-55-6	1,1,1-TRICHLOROETHANE	2100	100	400	19
71-43-2	BENZENE	ND	100	ND	31
56-23-5	CARBON TETRACHLORIDE	ND	100	ND	16
78-87-5	1,2-DICHLOROPROPANE	ND	100	ND	22
75-27-4	BROMODICHLOROMETHANE	ND	100	ND	15
79-01-6	TRICHLOROETHENE	170	100	32	19
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	100	ND	22

ND = Not Detected TR = Trace Level - Below Indicated Detection Limit

20954 Osborne Street, Canoga Park, CA 91304 • Phone 818 709-1139 • Fax 818 709-2915

Performance Analytical Inc.
Environmental Testing and Consulting

PERFORMANCE ANALYTICAL INC.

RESULTS OF ANALYSIS (Continued)

Client: Meredith/Boli & Associates

Client Sample ID: B4-75 (08/04/93) (11:30)

PAI Sample ID: 9302810

Test Code: GC/MS EPA TO-14
Analyst: Chris Parnell
Instrument ID: Finnigan 4500C/Tekmar 5010
Verified by: Michael Tuday

Matrix: Summa Canister
Date Received: 08/04/93
Date Analyzed: 08/09/93
Volume Analyzed: 0.050 ml & 0.020 ml
P_i = -0.8 P_f = +2.4 DF= 1.23

CAS #	COMPOUND	RESULT (MG/M^3)	DETECTION LIMIT (MG/M^3)	RESULT (PPM)	DETECTION LIMIT (PPM)
108-10-1	4-METHYL-2-PENTANONE	ND	200	ND	49
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	100	ND	22
79-00-5	1,1,2-TRICHLOROETHANE	ND	100	ND	19
108-88-3	TOLUENE	860	100	230	27
124-48-1	DIBROMOCHLOROMETHANE	ND	100	ND	12
119-78-6	2-HEXANONE	ND	200	ND	49
106-93-4	1,2-DIBROMOETHANE	ND	100	ND	13
127-18-4	TETRACHLOROETHENE	43000	100	6300	15
108-90-7	CHLOROBENZENE	ND	100	ND	22
100-41-4	ETHYLBENZENE	870	100	200	23
75-25-2	BROMOFORM	ND	100	ND	9.8
100-42-5	STYRENE	ND	100	ND	24
1330-20-7	m- & p-XYLENES	3700	100	850	23
95-47-6	o-XYLENE	1400	100	330	23
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	100	ND	15
541-73-1	1,3-DICHLOROBENZENE	ND	100	ND	17
106-46-7	1,4-DICHLOROBENZENE	ND	100	ND	17
95-50-1	1,2-DICHLOROBENZENE	ND	100	ND	17

ND = Not Detected TR = Trace Level - Below Indicated Detection Limit

20954 Osborne Street, Canoga Park, CA 91304 • Phone 818 709-1139 • Fax 818 709-2915

Performance Analytical Inc.
Environmental Testing and Consulting

20954 Osborne Street
Canoga Park, California 91304
Phone 818 709-1139
Fax 818 709-2915

Chain of Custody Record
Analytical Services Request

Client/Project Name	Address/Phone	ANALYSES	PAI Project No.
OSCO (CWM)	310-670-9221		5451
Project Location	**Client Project No.**		
AZUSA			
Contact	**Sampler (Signature)**	**P.O. No.**	
MCCUACKEN	[signature]		

	Sample Identification No.	Date	Time	Lab Sample No.	Type of Sample	TO-14						Expected Turnaround Time	Remarks
25	B4-75	8/4/93	11:30	9302810	AIR	X							19000-15,000 ug/m³ PCE IN FIELD SAMPLE

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	8/4/93	12:48	Robin Taylor	8/4/93	12:48
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Disposal Method		
Disposed by: (Signature)	Date	Time

White Copy : Accompanies Samples

Yellow Copy : Sampler

APPENDIX C

SPREADSHEET CALCULATIONS FOR TOTAL SOIL VOC CONCENTRATIONS

TOTAL SOIL CONCENTRATION VALUES FOR THE OSCO SITE

Total soil concentration values are developed from gas concentration data and soil physical data using the following equation:

$$Ct = Cg[(KdPb + 0w)/Kh + (0t - 0w)]$$

Where,

Ct = Total soil concentration (ug/Kg)
Cg = Soil vapor concentration (ug/L)
Kd = Soil-water partition coefficient (ml/g)
Pb = Soil bulk density (g/cc)
Kh = Henry's Law constant (unitless)
0w = Volumetric water content (unitless)
0t = Total porosity (unitless)

And,

Kd = foc * Koc

Where,

foc = Organic carbon fraction
Koc = organic carbon partition coefficient

Parameters:	Freon 11	1,1,1 - TCA	TCE	PCE	1,1 - DCE	Toluene	EtBenz	m,p-Xyl	o-Xyl	Benz	Acetone	MEK	MIBK
foc = Organic carbon fraction	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Koc = Organic carbon partition coefficient	159	151.36	125.89	660.69	64.56	257.04	676.08	691.83	691.83	64.56	14.79	4.47	23.99
Kd = Soil-water partition coefficient	0.08	0.08	0.06	0.33	0.03	0.13	0.34	0.35	0.35	0.03	0.01	0.002	0.01
Pb = Soil bulk density	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73
Kh = Henry's Law constant	0.11	0.667	0.373	0.820	6.400	0.243	0.321	0.314	0.216	0.245	3.97E-05	4.66E-05	4.66E-05
0w = Volumetric water content	0.251	0.251	0.251	0.251	0.251	0.251	0.251	0.251	0.251	0.251	0.251	0.251	0.251
0t = Total porosity	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55

Soil vapor concentrations (Cg):		Freon 11	1,1,1 - TCA	TCE	PCE	1,1 - DCE	Toluene	EtBenz	m,p-Xyl	o-Xyl	Benz	Acetone	MEK	MIBK
B-2	SHALLOW	61	49	7.3	43	5	130	190	1000	580	5	2.5	210	2.5
B-8	SHALLOW	18	190	50	980	22	5	5	5	5	5	46	29	2.5
B-8R	SHALLOW	18	230	50	1000	34	5	5	5	5	5	51	41	2.5
B-1	MEDIUM	28	820	260	8600	27	44	5	48	68	5	2.5	370	2.5
B-2R	MEDIUM	16	160	34	180	630	2300	1200	4400	1600	5	290	1100	200
B-3	MEDIUM	2.4	19	5	110	5	5	5	5	5	5	2.5	2.5	2.5
B-4	MEDIUM	14	850	93	16000	750	520	470	1400	630	22	850	430	100
B-5	MEDIUM	5.4	120	17	780	30	5	5	5	5	5	50	18	2.5
B-6	MEDIUM	5.3	550	110	7200	31	5	5	5	5	5	91	45	2.5
B-8R	MEDIUM	9.8	290	140	6700	22	5	5	5	5	5	43	180	2.5
B-1	DEEP	19	520	31	740	2800	480	77	310	180	5	1400	1300	260
B-2R	DEEP	6.1	91	44	270	130	49	5	15	5	5	120	390	45
B-3	DEEP	0.32	0.27	0.05	0.55	0.5	0.5	0.5	0.5	0.5	0.5	2.5	2.5	2.5
B-4	DEEP	16	370	280	2100	140	5	5	5	5	5	230	460	2.5
B-5	DEEP	9.7	110	230	620	230	5	5	5	5	5	190	39	2.5
B-6	DEEP	440	1400	500	10000	110	5	5	5	5	5	180	310	2.5
B-8R	DEEP	26	240	50	1400	180	5	5	5	5	5	220	170	2.5

Total soil concentrations (Ct):		Freon 11	1,1,1 - TCA	TCE	PCE	1,1 - DCE	Toluene	EtBenz	m,p-Xyl	o-Xyl	Benz	Acetone	MEK	MIBK
B-2	SHALLOW	234	43	9	56	2	292	552	3004	2454	8	16612	1148603	14580
B-8	SHALLOW	69	166	63	1276	8	11	15	15	21	8	305669	158617	14580
B-8R	SHALLOW	69	200	63	1302	12	11	15	15	21	8	338893	224251	14580
B-1	MEDIUM	107	715	329	11198	9	99	15	144	288	8	16612	2023729	14580
B-2R	MEDIUM	61	139	43	234	219	5168	3483	13218	6770	8	1927041	6016492	1166375
B-3	MEDIUM	9	17	6	143	2	11	15	15	21	8	16612	13674	14580
B-4	MEDIUM	54	741	118	20833	260	1168	1364	4206	2666	34	5648223	2351901	583187
B-5	MEDIUM	21	105	21	1016	10	11	15	15	21	8	332248	98452	14580
B-6	MEDIUM	20	479	139	9375	11	11	15	15	21	8	604692	246129	14580
B-8R	MEDIUM	38	253	177	8724	8	11	15	15	21	8	285734	984517	14580
B-1	DEEP	73	453	39	964	971	1079	224	931	762	8	9302955	7110400	1516287
B-2R	DEEP	23	79	56	352	45	110	15	45	21	8	797396	2133120	262434
B-3	DEEP	1	0	0	1	0	1	1	2	2	1	16612	13674	14580
B-4	DEEP	61	322	354	2734	49	11	15	15	21	8	1528343	2515988	14580
B-5	DEEP	37	96	291	807	80	11	15	15	21	8	1262544	213312	14580
B-6	DEEP	1686	1220	632	13020	38	11	15	15	21	8	1196094	1695557	14580
B-8R	DEEP	100	209	63	1823	62	11	15	15	21	8	1461893	929822	14580

APPENDIX D

SOIL PROPERTIES DATA FOR THE OSCO SITE

```
************************************************
*              S O I L P R O P                 *
*A program to estimate soil hydraulic properties*
*     from particle size distribution data      *
*                                              *
*       COPYRIGHT  1990  Version 2.1           *
*  Environmental Systems and Technologies, Inc. *
*  P.O. Box 10457, Virginia 24062-0457         *
*               (703) 552-0685                 *
************************************************
```

```
************************************************
*                 OSCO -- SVMS                 *
************************************************
```

-------- PARTICLE SIZE DISTRIBUTION DATA --------

```
 % mtl in class with max dia   .0375 mm  => 16.00
 % mtl in class with max dia   .0750 mm  => 10.00
 % mtl in class with max dia   .1500 mm  => 12.00
 % mtl in class with max dia   .2500 mm  => 13.00
 % mtl in class with max dia   .4500 mm  =>  9.00
 % mtl in class with max dia   .8500 mm  =>  8.00
 % mtl in class with max dia  2.0000 mm  =>  6.00
 % mtl in class with max dia  4.5000 mm  =>  9.00
 % mtl in class with max dia  9.5000 mm  => 13.00
          % cobbles           =>  4.00

          R^2 for log-normal fit => .9843


          theta_s (cc/cc)     =>   .55
          % error in theta_s  =>  5.00
          bulk density (g/cc) =>  1.73
          % error in bulk den =>  5.00

          R^2 for V_G model  fit => .8920

    Irreducible water saturation / water content
     set equal to theta at which capillary head
        equals user-specified critical value
```

------ VAN GENUCHTEN RETENTION PARAMETERS -------

	Estimated value	Standard deviation
alpha (1/cm)	3.73	2.35
n	1.29	.756E-01
theta_r(cc/cc)	.251	.333E-01
K_s (cm/d)	.964E+04	.171E+05

--------- PARAMETER CORRELATION MATRIX ----------

	alpha	n
alpha	.100E+01	
n	-.968E+00	.100E+01

Irreducible water saturation / water content
set equal to theta at which capillary head
equals user-specified critical value

------ BROOKS-COREY RETENTION PARAMETERS -------

	Estimated value	Standard deviation
h_d (cm)	.212	.117
lambda	.278	.638E-01
theta_r(cc/cc)	.251	.333E-01
K_s (cm/d)	.964E+04	.171E+05

--------- PARAMETER CORRELATION MATRIX ----------

	h_d	lambda
h_d	.100E+01	
lambda	.958E+00	.100E+01

SMITH-EMERY COMPANY
The Full Service Independent Testing Laboratory, Established 1904

781 East Washington Boulevard
Los Angeles, California 90021
(213) 749-5411
Fax (213) 746-7208

Hunters Point Shipyard, Bldg. 114
P.O. Box 880490
San Francisco, California 94188
(415) 822-8810
Fax (415) 822-3864

3148-Q East La Palma Avenue
Anaheim, California 92806
(714) 630-6010
Fax (714) 632-1741

May 2, 1989

SECo File No. 19232
SECo Report No. G-89-5420

Oil & Solvent Process Company
1704 West First Street
Azusa, California 90049

Attention: Mr. George Oney
Operation Managers

Gentlemen:

We herewith submit six (6) copies of our "Report of Geotechnical Investigation, Proposed Locker Room and Pipe Support Rack at the referenced site.

Results of the investigation indicate that the site is suitable for the proposed development. The proposed construction maybe satisfactorily supported on the conventional shallow foundations.

It has been a pleasure to assist you on this project. Please contact us if you have any question or require additional information.

Respectfully submitted,

SMITH - EMERY COMPANY

Reviewed and Approved By

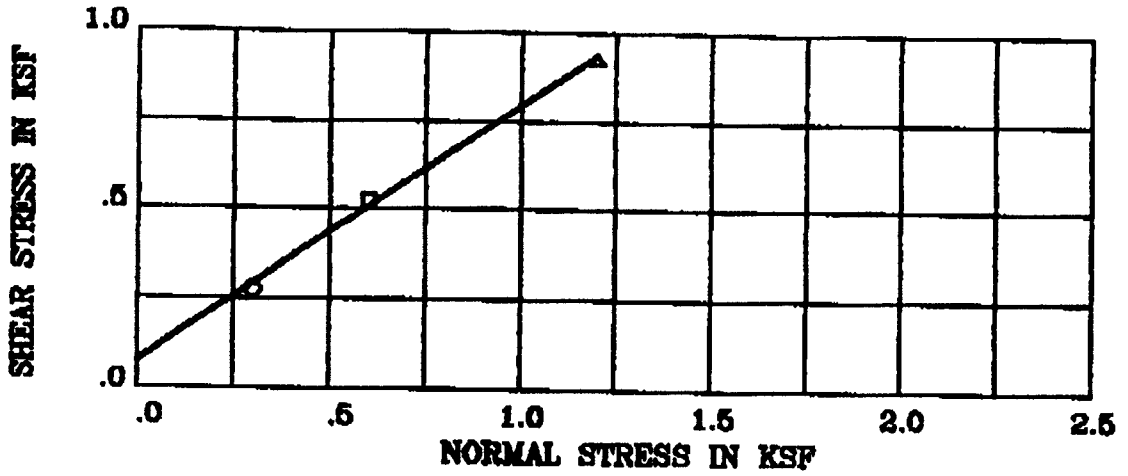
DAVID SHEEN
Staff Engineer

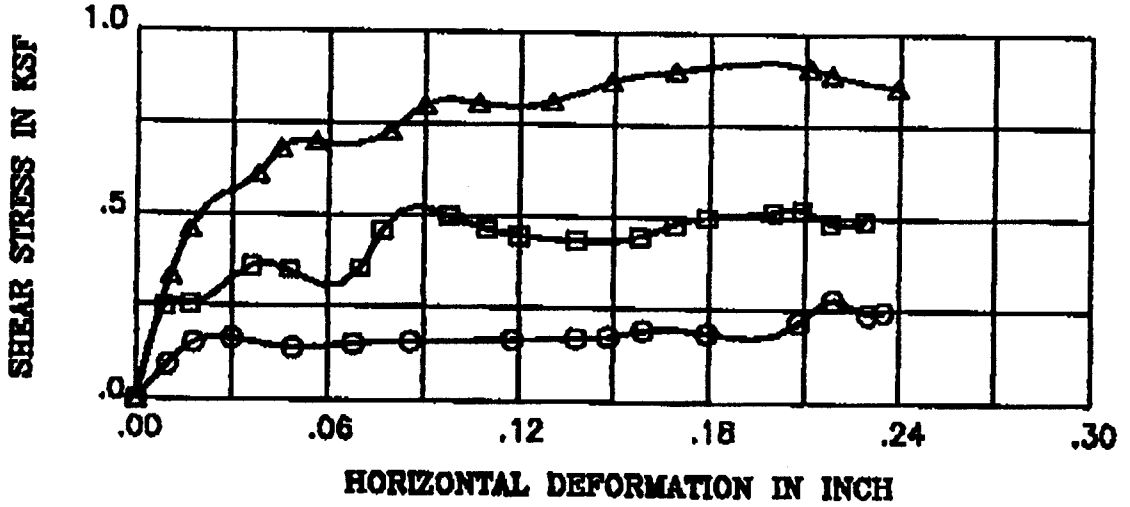
LUTZ KUNZE, R.G.E. 493
Vice President

DS/cc

REGISTERED PROFESSIONAL ENGINEER
LUTZ KUNZE
No. GE 493
Exp. 12-31-89
GEOTECHNICAL
STATE OF CALIFORNIA

ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS. AUTHORIZATION FOR PUBLICATION OF OUR REPORTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING THEM IS RESERVED PENDING OUR WRITTEN APPROVAL AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES.



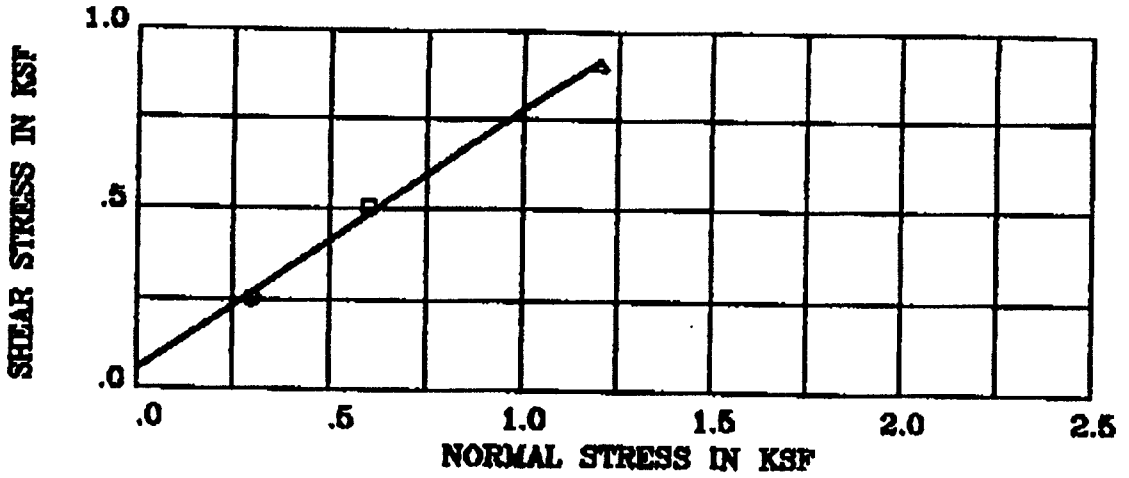


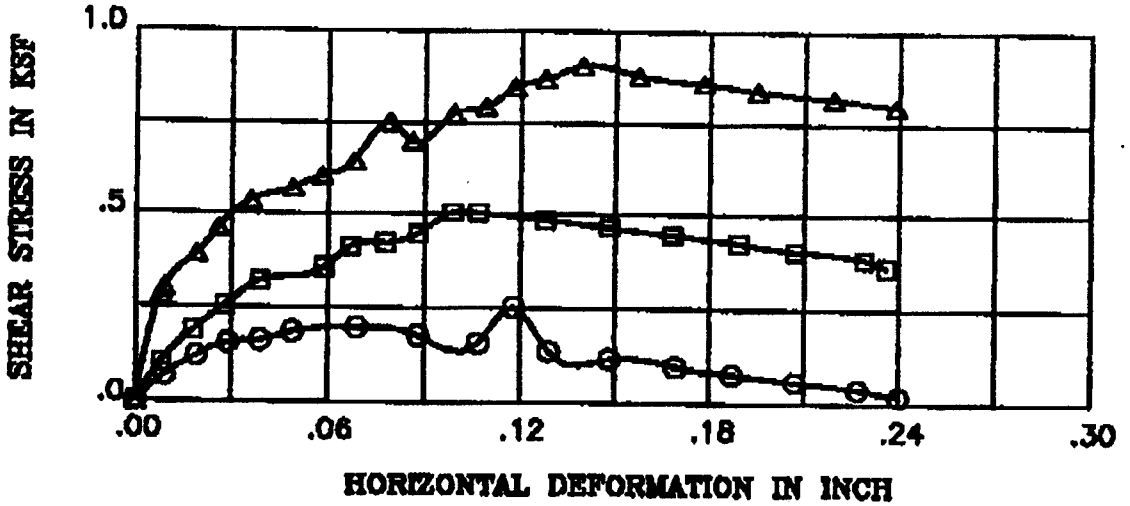
BORING/SAMPLE : 1 / 1 DEPTH (ft) : 2.5
DESCRIPTION : Brown Sand and Gravel
STRENGTH INTERCEPT (C) : .077 KSF
FRICTION ANGLE (PHI) : 35.5 DEG (PEAK STRENGTH)

SYMBOL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	VOID RATIO	NORMAL STRESS (ksf)	PEAK SHEAR (ksf)	RESIDUAL SHEAR (ksf)
○	5.1	108.3	.555	.30	.28	.24
□	5.2	108.3	.555	.60	.53	.48
△	5.2	108.6	.552	1.20	.93	.86

Remark : Consolidated Undrained Test

[illegible]	OIL AND SOLVENT PROCESS CO.
Smith-Emery Company	DIRECT SHEAR TEST PLATE NO. 8





BORING/SAMPLE : 1/2 DEPTH (ft) : 4.5
DESCRIPTION : Brown Sand and Gravel
STRENGTH INTERCEPT (C) : .053 KSF
FRICTION ANGLE (PHI) : 35.7 DEG (PEAK STRENGTH)

SYMBOL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	VOID RATIO	NORMAL STRESS (ksf)	PEAK SHEAR (ksf)	RESIDUAL SHEAR (ksf)
○	4.3	105.0	.560	.30	.25	.02
□	3.7	109.3	.541	.60	.51	.36
△	4.8	105.8	.548	1.20	.91	.80

Remark : CONSOLIDATED UNDRAINED TEST

Project No.19232	OIL & SOLVENT PROCESS CO.
Smith-Emery Company	DIRECT SHEAR TEST Plate No. 9

The Earth Technology Corporation

18411 Gothard Street, Unit F
Huntington Beach, California 92648
Telephone: (714) 842-7011 / Fax (714) 842-3735

July 17, 1991

Knight Piésold and Co.
30 Hughes, Suite 205
Irvine, CA 92718

Attention: Mr. Frank J. Hagar

Subject: Report/Laboratory Testing Results
Project: Osco, Azusa
TETC Project No.: 91-211-3201

Dear Mr. Hagar:

Enclosed is results of laboratory testing conducted on samples from the Osco, Azusa project. The testing performed for this program was completed in general accordance with ASTM and ASA-SSSA procedures as follows:

TEST TYPE	TEST PROCEDURE
Sieve Analysis	ASTM D 422
Atterberg Limits	ASTM D 4318
Total Organic Carbon	ASA-SSSA, Chapter 29

ASTM: American Society for Testing and Materials, Annual Book of ASTM Standards, Section 4, Volume 04.08, Soil and Rock; Dimension Stone; Geosynthetics, 1991.

ASA-SSSA: American Society of Agronomy, Inc./Soil Science Society of America, Inc., Methods of Soil Analysis, Part 2, Chemical and Microbiological Properties, Second Edition, 1982.

We appreciate the opportunity to provide testing services to Knight Piésold and Co. If you have any questions regarding the test results, please contact us.

Very truly yours,

THE EARTH TECHNOLOGY CORPORATION (Commercial).

Kean Tan
Supervisor, Geomechanics Laboratory

RECEIVED 9/22/91

KT/mgw
Enclosures

SUMMARY OF TEST RESULTS

PROJECT NAME: OSCO, AZUSA

TETC NO.: 91-211-3201

PROJECT NO.:

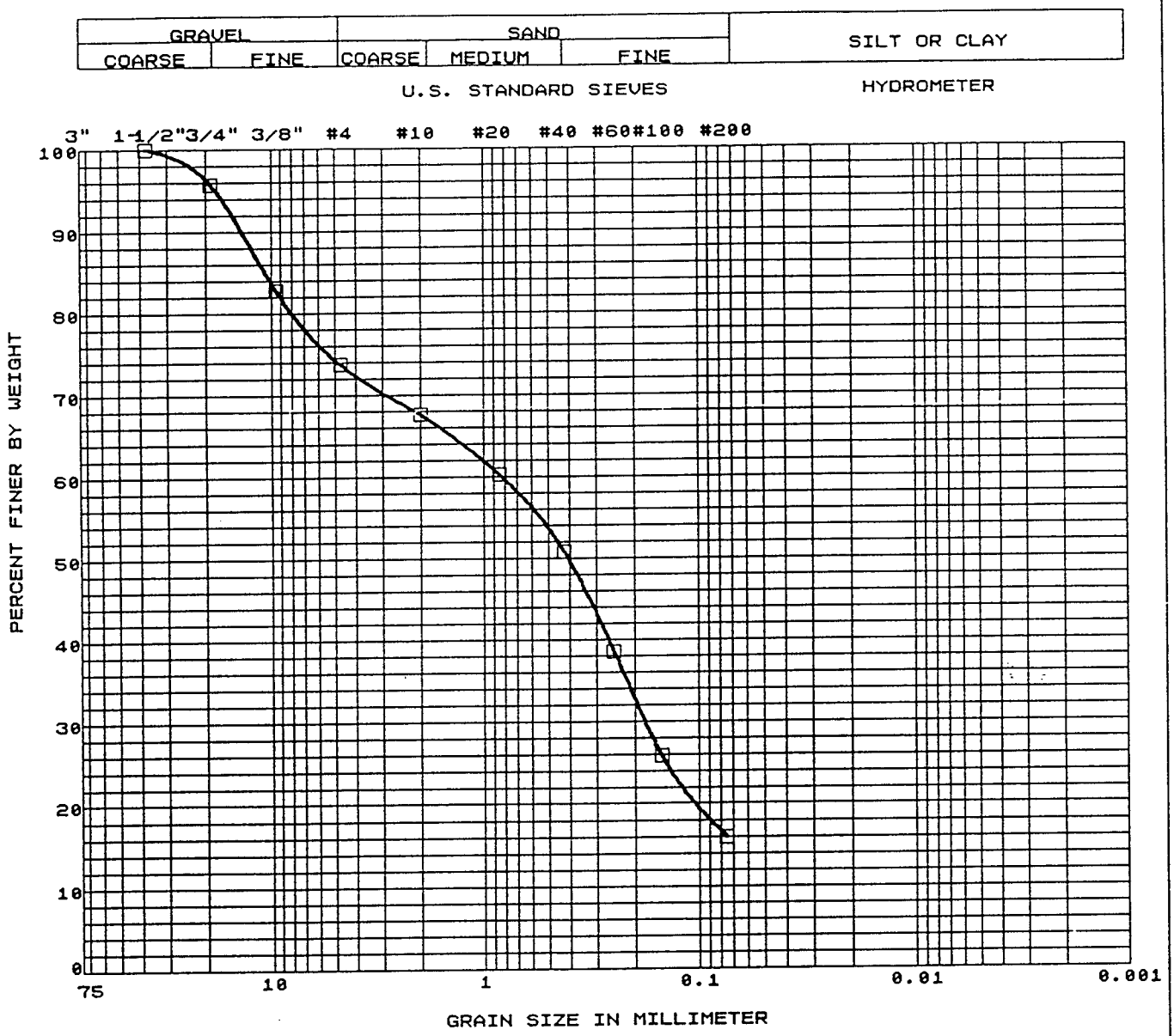
CLIENT: KNIGHT PIESOLD AND CO.

DATE: 7/18/91

SUMMARIZED BY: KEAN TAN

BORING NO.	SAMPLE NO.	DEPTH (FT)	USCS CLASS.	GRAIN SIZE DIST. (GR:SA:FI)	ATTERBERG LIMITS			TOTAL ORGANIC CARBON (%)
					LIQUID LIMITS	PLASTIC LIMITS	PI	
-	B5-65	-	SP-SM	40:49:11			NP	ND*
-	B6-86	-	SM	26:58:16			NP	ND*
-	B6-97	-	SW-SM	31:59:10			NP	ND*

* DETECTION LIMIT 0.1%



SYMBOL	BORING NO.	SAMPLE NO.	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTI-CITY INDEX
□		B6-86		BAG	SM	NP	NP

The Earth Technology Corporation

PROJECT NAME: OSCO, AZUSA

GRAIN SIZE DISTRIBUTION CURVE

7/91

FIGURE 2

APPENDIX E

HELP MODEL RESULTS

```
******************************************************************************
******************************************************************************

OSCO FACILITY
Azusa, California
HELP MODEL SIMULATION

******************************************************************************
******************************************************************************
```

BARE GROUND

LAYER 1

VERTICAL PERCOLATION LAYER

THICKNESS	=	2.00 INCHES
POROSITY	=	0.3325 VOL/VOL
FIELD CAPACITY	=	0.2173 VOL/VOL
WILTING POINT	=	0.1361 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2443 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000006000000 CM/SEC

LAYER 2

VERTICAL PERCOLATION LAYER

THICKNESS	=	58.00 INCHES
POROSITY	=	0.4370 VOL/VOL
FIELD CAPACITY	=	0.0624 VOL/VOL
WILTING POINT	=	0.0245 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0624 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.005800000000 CM/SEC

GENERAL SIMULATION DATA

SCS RUNOFF CURVE NUMBER	=	93.78
TOTAL AREA OF COVER	=	237877 SQ FT
EVAPORATIVE ZONE DEPTH	=	16.00 INCHES

UPPER LIMIT VEG. STORAGE = 6.7830 INCHES
INITIAL VEG. STORAGE = 1.3576 INCHES
INITIAL SNOW WATER CONTENT = 0.0000 INCHES
INITIAL TOTAL WATER STORAGE IN
SOIL AND WASTE LAYERS = 4.1078 INCHES

SOIL WATER CONTENT INITIALIZED BY PROGRAM.

CLIMATOLOGICAL DATA

DEFAULT RAINFALL WITH SYNTHETIC DAILY TEMPERATURES AND
SOLAR RADIATION FOR LOS ANGELES CALIFORNIA

MAXIMUM LEAF AREA INDEX = 0.00
START OF GROWING SEASON (JULIAN DATE) = 67
END OF GROWING SEASON (JULIAN DATE) = 16

NORMAL MEAN MONTHLY TEMPERATURES, DEGREES FAHRENHEIT

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
56.00	57.10	57.40	59.50	62.40	65.60
69.00	70.30	69.50	66.30	61.20	57.00

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 74 THROUGH 89

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	3.54	3.37	3.58	1.07	0.29	0.09
	0.04	0.19	0.59	0.99	2.48	2.68
STD. DEVIATIONS	2.46	2.93	2.43	1.19	0.64	0.11
	0.09	0.62	0.89	0.91	2.49	1.78
RUNOFF						
TOTALS	2.094	1.925	1.703	0.389	0.128	0.007
	0.006	0.129	0.287	0.504	1.378	1.504
STD. DEVIATIONS	1.687	2.085	1.404	0.623	0.390	0.019
	0.019	0.504	0.557	0.567	1.587	1.156

EVAPOTRANSPIRATION

TOTALS	1.508	1.407	1.974	0.753	0.230	0.088
	0.039	0.051	0.143	0.360	0.814	0.969
STD. DEVIATIONS	0.626	0.902	1.191	0.722	0.278	0.104
	0.067	0.118	0.269	0.380	0.723	0.784

PERCOLATION FROM LAYER 2

TOTALS	0.0586	0.0664	0.0752	0.0604	0.0518	0.0431
	0.0392	0.0351	0.0308	0.0291	0.0283	0.0427
STD. DEVIATIONS	0.0556	0.0713	0.0872	0.0568	0.0426	0.0321
	0.0269	0.0223	0.0184	0.0165	0.0175	0.0468

****

****

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 74 THROUGH 89

	(INCHES)		(CU. FT.)	PERCENT
PRECIPITATION	18.9138	(8.217)	374929	100.00
RUNOFF	10.0548	(4.876)	199317	53.16
EVAPOTRANSPIRATION	8.3360	(3.294)	165244	44.07
PERCOLATION FROM LAYER 2	0.5606	(0.4496)	11113	2.96
NET INFILTRATION WASTE LAYER 1	0.5230			
CHANGE IN WATER STORAGE	-0.038	(0.818)	-745	-0.20

****

APPENDIX F

VLEACH MODEL RESULTS

V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89; M. Sukop and P. Lawson, 1/90
)SCO -- 1,1-Dichloroethene (1,1-DCE)

GROUNDWATER IMPACT OF POLYGON 1

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.66972E-03	23.037
100.00	.49662E-03	17.083
150.00	.46438E-03	15.974
200.00	.45706E-03	15.722
250.00	.45385E-03	15.612
300.00	.45133E-03	15.525
350.00	.44894E-03	15.442
400.00	.44657E-03	15.361
450.00	.44422E-03	15.280
500.00	.44189E-03	15.200
550.00	.43956E-03	15.120
600.00	.43725E-03	15.041
650.00	.43495E-03	14.961
700.00	.43266E-03	14.883
750.00	.43039E-03	14.804
800.00	.42812E-03	14.727
850.00	.42587E-03	14.649
900.00	.42363E-03	14.572
950.00	.42141E-03	14.496
1000.00	.41919E-03	14.419

****

GROUNDWATER IMPACT OF POLYGON 2

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.10047E-04	.36682
100.00	.10115E-04	.36933
150.00	.10241E-04	.37392
200.00	.10425E-04	.38062
250.00	.10660E-04	.38923
300.00	.10940E-04	.39943
350.00	.11254E-04	.41089
400.00	.11592E-04	.42322
450.00	.11944E-04	.43609
500.00	.12303E-04	.44919
550.00	.12661E-04	.46228
600.00	.13014E-04	.47516
650.00	.13357E-04	.48766
700.00	.13686E-04	.49968
750.00	.14000E-04	.51114
800.00	.14297E-04	.52200
850.00	.14577E-04	.53222
900.00	.14839E-04	.54180
950.00	.15085E-04	.55075
1000.00	.15313E-04	.55909

****

GROUNDWATER IMPACT OF POLYGON 3

Time	Mass per area (g/sq.ft.)	Total Mass (g)

50.00	.33097E-03	10.149
100.00	.24964E-03	7.6547
150.00	.23392E-03	7.1726
200.00	.23029E-03	7.0615
250.00	.22867E-03	7.0116
300.00	.22738E-03	6.9721
350.00	.22615E-03	6.9344
400.00	.22493E-03	6.8971
450.00	.22373E-03	6.8602
500.00	.22253E-03	6.8234
550.00	.22134E-03	6.7868
600.00	.22015E-03	6.7504
650.00	.21897E-03	6.7142
700.00	.21780E-03	6.6783
750.00	.21663E-03	6.6425
800.00	.21547E-03	6.6068
850.00	.21431E-03	6.5714
900.00	.21316E-03	6.5362
950.00	.21202E-03	6.5012
1000.00	.21088E-03	6.4663

****

GROUNDWATER IMPACT OF POLYGON 4

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.10984E-04	.33196
100.00	.27524E-04	.83179
150.00	.30711E-04	.92811
200.00	.31097E-04	.93977
250.00	.31021E-04	.93748
300.00	.30869E-04	.93291
350.00	.30706E-04	.92798
400.00	.30542E-04	.92302
450.00	.30379E-04	.91807
500.00	.30216E-04	.91315
550.00	.30054E-04	.90825
600.00	.29893E-04	.90339
650.00	.29732E-04	.89854
700.00	.29573E-04	.89373
750.00	.29415E-04	.88894
800.00	.29257E-04	.88417
850.00	.29100E-04	.87943
900.00	.28944E-04	.87472
950.00	.28789E-04	.87003
1000.00	.28635E-04	.86536

****

GROUNDWATER IMPACT OF POLYGON 5

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.53121E-03	17.881
100.00	.39795E-03	13.395
150.00	.37315E-03	12.560
200.00	.36741E-03	12.367
250.00	.36482E-03	12.280
300.00	.36277E-03	12.211
350.00	.36081E-03	12.145
400.00	.35887E-03	12.080
450.00	.35694E-03	12.015
500.00	.35503E-03	11.951

550.00	.35313E-03	11.887
600.00	.35124E-03	11.823
650.00	.34935E-03	11.760
700.00	.34748E-03	11.697
750.00	.34562E-03	11.634
800.00	.34376E-03	11.571
850.00	.34192E-03	11.509
900.00	.34009E-03	11.448
950.00	.33827E-03	11.386
1000.00	.33645E-03	11.325

****

GROUNDWATER IMPACT OF POLYGON 6

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.80271E-02	126.23
100.00	.55959E-02	87.996
150.00	.51484E-02	80.959
200.00	.50520E-02	79.443
250.00	.50136E-02	78.839
300.00	.49848E-02	78.387
350.00	.49578E-02	77.961
400.00	.49312E-02	77.543
450.00	.49047E-02	77.127
500.00	.48784E-02	76.713
550.00	.48523E-02	76.302
600.00	.48263E-02	75.893
650.00	.48004E-02	75.486
700.00	.47747E-02	75.082
750.00	.47491E-02	74.679
800.00	.47236E-02	74.279
850.00	.46983E-02	73.881
900.00	.46731E-02	73.485
950.00	.46481E-02	73.091
1000.00	.46231E-02	72.699

****

GROUNDWATER IMPACT OF POLYGON 7

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.68703E-03	38.960
100.00	.80364E-03	45.573
150.00	.80857E-03	45.852
200.00	.80573E-03	45.692
250.00	.80166E-03	45.461
300.00	.79741E-03	45.219
350.00	.79314E-03	44.977
400.00	.78889E-03	44.736
450.00	.78466E-03	44.496
500.00	.78045E-03	44.258
550.00	.77627E-03	44.021
600.00	.77211E-03	43.785
650.00	.76797E-03	43.550
700.00	.76385E-03	43.316
750.00	.75976E-03	43.084
800.00	.75568E-03	42.853
850.00	.75163E-03	42.624
900.00	.74760E-03	42.395
950.00	.74360E-03	42.168
1000.00	.73961E-03	41.942

****

****

TOTAL GROUNDWATER IMPACT

Time (yr)	Mass (g)	Cumulative Mass (g)
50.00	216.95	216.95
100.00	172.90	389.85
150.00	163.82	553.67
200.00	161.61	715.28
250.00	160.53	875.81
300.00	159.65	1035.5
350.00	158.80	1194.3
400.00	157.96	1352.2
450.00	157.13	1509.4
500.00	156.31	1665.7
550.00	155.49	1821.1
600.00	154.67	1975.8
650.00	153.86	2129.7
700.00	153.05	2282.7
750.00	152.24	2435.0
800.00	151.44	2586.4
850.00	150.65	2737.1
900.00	149.85	2886.9
950.00	149.06	3036.0
1000.00	148.28	3184.2

```
V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89;  M. Sukop and P. Lawson, 1/90
)SCO -- Freon 11 (F11)
7 polygons.
Timestep =   1.00 years.  Simulation length = 1000.00 years.
'rintout every  50.00 years.  Vertical profile stored every ****** years.
:oc =      159.00    ml/g,       .56150E-02cu.ft./g
Kh =      .11000     (dimensionless).
Aqueous solubility =     1100.0     mg/l,      31.149     g/cu.ft
'ree air diffusion coefficient = .71960     sq. m/day,  2827.3     sq.ft./yr

Polygon   1
'olygon A1
'olygon area =      34398.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2510
Organic carbon content =  .00050000
!echarge Rate =  .04670000 ft/yr
:onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   2
Polygon A2
'olygon area =      36511.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2500
Organic carbon content = 1.00050000
Recharge Rate =  .04760000 ft/yr
:onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

'olygon   3
Polygon A3
Polygon area =      30663.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2510
Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

'olygon   4
'olygon A4
Polygon area =      30221.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2510
Organic carbon content =  .00050000
!echarge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.
```

```
Polygon   5
Polygon A5
Polygon area =      33661.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   6
Polygon A6
Polygon area =      15725.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   7
Polygon A7
Polygon area =      56708.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.
```

```
OSCO -- Freon 11 (F11)
  7
      1.0     1000.      50.     1000.
    159.00     .110     1100.     .7196
Polygon A1
    34398.      5.     .0467     1.73      .550      .251     .0005
       0.      -1.      -1.
   40
    1   10      69
   11   20      21
   21   40      37
Polygon A2
    36511.      5.     .0476     1.73      .550      .251     .0005
       0.      -1.      -1.
   40
    1   10      69
   11   20      54
   21   40      61
Polygon A3
    30663.      5.     .0476     1.73      .550      .251     .0005
       0.      -1.      -1.
   40
    1   10     234
   11   20      20
   21   40    1686
Polygon A4
    30221.      5.     .0476     1.73      .550      .251     .0005
       0.      -1.      -1.
   40
    1   10      64
   11   20       9
   21   40       1
Polygon A5
    33661.      5.     .0476     1.73      .550      .251     .0005
       0.      -1.      -1.
   40
    1   10      69
   11   20      38
   21   40     100
Polygon A6
    15725.      5.     .0476     1.73      .550      .251     .0005
       0.      -1.      -1.
   40
    1   10     234
   11   20     107
   21   40      73
Polygon A7
    56708.      5.     .0476     1.73      .550      .251     .0005
       0.      -1.      -1.
   40
    1   10     234
   11   20      61
   21   40      23
```

V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89; M. Sukop and P. Lawson, 1/90
DSCO -- Freon 11 (F11)

GROUNDWATER IMPACT OF POLYGON 1

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.20043E-02	68.945
100.00	.19829E-02	68.206
150.00	.19613E-02	67.465
200.00	.19586E-02	67.370
250.00	.19721E-02	67.835
300.00	.19905E-02	68.471
350.00	.20046E-02	68.954
400.00	.20093E-02	69.115
450.00	.20031E-02	68.902
500.00	.19865E-02	68.330
550.00	.19608E-02	67.447
600.00	.19277E-02	66.309
650.00	.18888E-02	64.971
700.00	.18456E-02	63.483
750.00	.17992E-02	61.887
800.00	.17506E-02	60.217
850.00	.17007E-02	58.502
900.00	.16502E-02	56.762
950.00	.15994E-02	55.017
1000.00	.15489E-02	53.280

****

GROUNDWATER IMPACT OF POLYGON 2

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.51631E-05	.18851
100.00	.51631E-05	.18851
150.00	.51631E-05	.18851
200.00	.51631E-05	.18851
250.00	.51631E-05	.18851
300.00	.51631E-05	.18851
350.00	.51631E-05	.18851
400.00	.51631E-05	.18851
450.00	.51631E-05	.18851
500.00	.51631E-05	.18851
550.00	.51631E-05	.18851
600.00	.51631E-05	.18851
650.00	.51631E-05	.18851
700.00	.51631E-05	.18851
750.00	.51631E-05	.18851
800.00	.51631E-05	.18851
850.00	.51631E-05	.18851
900.00	.51631E-05	.18851
950.00	.51631E-05	.18851
1000.00	.51631E-05	.18851

****

GROUNDWATER IMPACT OF POLYGON 3

Time	Mass per area (g/sq.ft.)	Total Mass (g)

50.00	.92739E-01	2843.6
100.00	.89118E-01	2732.6
150.00	.82640E-01	2534.0
200.00	.75439E-01	2313.2
250.00	.68756E-01	2108.3
300.00	.62939E-01	1929.9
350.00	.57965E-01	1777.4
400.00	.53710E-01	1646.9
450.00	.50048E-01	1534.6
500.00	.46868E-01	1437.1
550.00	.44082E-01	1351.7
600.00	.41617E-01	1276.1
650.00	.39416E-01	1208.6
700.00	.37436E-01	1147.9
750.00	.35638E-01	1092.8
800.00	.33995E-01	1042.4
850.00	.32481E-01	995.97
900.00	.31079E-01	952.98
950.00	.29773E-01	912.93
1000.00	.28550E-01	875.43

****

GROUNDWATER IMPACT OF POLYGON 4

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.59164E-04	1.7880
100.00	.92189E-04	2.7860
150.00	.17289E-03	5.2250
200.00	.29067E-03	8.7842
250.00	.42275E-03	12.776
300.00	.54972E-03	16.613
350.00	.66026E-03	19.954
400.00	.74995E-03	22.664
450.00	.81860E-03	24.739
500.00	.86814E-03	26.236
550.00	.90132E-03	27.239
600.00	.92099E-03	27.833
650.00	.92974E-03	28.098
700.00	.92985E-03	28.101
750.00	.92321E-03	27.900
800.00	.91138E-03	27.543
850.00	.89562E-03	27.066
900.00	.87693E-03	26.502
950.00	.85613E-03	25.873
1000.00	.83385E-03	25.200

****

GROUNDWATER IMPACT OF POLYGON 5

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.55131E-02	185.58
100.00	.53846E-02	181.25
150.00	.51626E-02	173.78
200.00	.49242E-02	165.75
250.00	.47066E-02	158.43
300.00	.45143E-02	151.96
350.00	.43415E-02	146.14
400.00	.41820E-02	140.77
450.00	.40318E-02	135.71
500.00	.38884E-02	130.89

550.00	.37505E-02	126.25
600.00	.36174E-02	121.77
650.00	.34888E-02	117.44
700.00	.33644E-02	113.25
750.00	.32442E-02	109.20
800.00	.31279E-02	105.29
850.00	.30156E-02	101.51
900.00	.29070E-02	97.854
950.00	.28023E-02	94.327
1000.00	.27011E-02	90.922

****

GROUNDWATER IMPACT OF POLYGON 6

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.40531E-02	63.735
100.00	.41632E-02	65.466
150.00	.44081E-02	69.318
200.00	.47383E-02	74.510
250.00	.50836E-02	79.940
300.00	.53921E-02	84.790
350.00	.56368E-02	88.638
400.00	.58099E-02	91.360
450.00	.59146E-02	93.007
500.00	.59593E-02	93.710
550.00	.59539E-02	93.626
600.00	.59082E-02	92.907
650.00	.58307E-02	91.688
700.00	.57289E-02	90.087
750.00	.56088E-02	88.199
800.00	.54755E-02	86.101
850.00	.53328E-02	83.858
900.00	.51839E-02	81.517
950.00	.50314E-02	79.119
1000.00	.48772E-02	76.694

****

ROUNDWATER IMPACT OF POLYGON 7

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.12889E-02	73.092
100.00	.14210E-02	80.580
150.00	.17248E-02	97.812
200.00	.21487E-02	121.85
250.00	.26090E-02	147.95
300.00	.30400E-02	172.39
350.00	.34059E-02	193.14
400.00	.36940E-02	209.48
450.00	.39057E-02	221.48
500.00	.40490E-02	229.61
550.00	.41343E-02	234.45
600.00	.41721E-02	236.59
650.00	.41718E-02	236.58
700.00	.41416E-02	234.86
750.00	.40884E-02	231.84
800.00	.40176E-02	227.83
850.00	.39337E-02	223.07
900.00	.38404E-02	217.78
950.00	.37405E-02	212.11
1000.00	.36362E-02	206.20

****

****

TOTAL GROUNDWATER IMPACT

Time (yr)	Mass (g)	Cumulative Mass (g)
50.00	3237.0	3237.0
100.00	3131.1	6368.1
150.00	2947.8	9315.9
200.00	2751.7	12068.
250.00	2575.4	14643.
300.00	2424.3	17067.
350.00	2294.4	19362.
400.00	2180.5	21542.
450.00	2078.7	23621.
500.00	1986.1	25607.
550.00	1900.9	27508.
600.00	1821.7	29329.
650.00	1747.6	31077.
700.00	1677.9	32755.
750.00	1612.0	34367.
800.00	1549.5	35916.
850.00	1490.2	37407.
900.00	1433.6	38840.
950.00	1379.6	40220.
1000.00	1327.9	41548.

```
V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89;  M. Sukop and P. Lawson, 1/90
SCO -- Methyl Isobutyl Ketone (MIBK)
 7 polygons.
Timestep =   1.00 years.  Simulation length = 1000.00 years.
rintout every  50.00 years.  Vertical profile stored every ****** years.
oc =      23.990    ml/g,       .84719E-03cu.ft./g
Kh =      .46600E-04 (dimensionless).
queous solubility =     19000.     mg/l,      538.02     g/cu.ft
ree air diffusion coefficient = .81950     sq. m/day,  3219.8     sq.ft./yr


olygon   1
olygon A1
olygon area =      34398.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
oil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
echarge Rate =  .04670000 ft/yr
onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.


Polygon   2
olygon A2
olygon area =      36511.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2500
 Organic carbon content = 1.00050000
Recharge Rate =  .04760000 ft/yr
onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.


olygon   3
Polygon A3
olygon area =      30663.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.


olygon   4
Polygon A4
Polygon area =      30221.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
oil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
echarge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.
```

'olygon 5
Polygon A5
Polygon area = 33661. sq. ft.
40 cells, each cell 5.000 ft. thick.
;oil Properties:
Bulk density = 1.7300 g/ml, 48988. g/cu.ft.
Porosity = .5500 Volumetric water content = .2510
Organic carbon content = .00050000
!echarge Rate = .04760000 ft/yr
Conc. in recharge water = .00000 mg/l, .00000 g/cu.ft
Atmospheric concentration = -1.0000 mg/l, -.28317E-01g/cu.ft
/ater table is impermeable to gas diffusion.

'olygon 6
'olygon A6
Polygon area = 15725. sq. ft.
40 cells, each cell 5.000 ft. thick.
;oil Properties:
Bulk density = 1.7300 g/ml, 48988. g/cu.ft.
Porosity = .5500 Volumetric water content = .2510
Organic carbon content = .00050000
!echarge Rate = .04760000 ft/yr
;onc. in recharge water = .00000 mg/l, .00000 g/cu.ft
Atmospheric concentration = -1.0000 mg/l, -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon 7
'olygon A7
'olygon area = 56708. sq. ft.
40 cells, each cell 5.000 ft. thick.
Soil Properties:
Bulk density = 1.7300 g/ml, 48988. g/cu.ft.
Porosity = .5500 Volumetric water content = .2510
Organic carbon content = .00050000
Recharge Rate = .04760000 ft/yr
;onc. in recharge water = .00000 mg/l, .00000 g/cu.ft
tmospheric concentration = -1.0000 mg/l, -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

```
OSCO -- Methyl Isobutyl Ketone (MIBK)
  7
      1.0     1000.       50.     1000.
    23.99  .0000466    19000.     .8195
Polygon A1
   34398.        5.     .0467      1.73      .550      .251     .0005
       0.       -1.       -1.
  40
   1   10     14580
  11   20     14580
  21   40     14580
Polygon A2
   36511.        5.     .0476      1.73      .550      .251     .0005
       0.       -1.       -1.
  40
   1   10     14580
  11   20    583187
  21   40     14580
Polygon A3
   30663.        5.     .0476      1.73      .550      .251     .0005
       0.       -1.       -1.
  40
   1   10     14580
  11   20     14580
  21   40     14580
Polygon A4
   30221.        5.     .0476      1.73      .550      .251     .0005
       0.       -1.       -1.
  40
   1   10     14580
  11   20     14580
  21   40     14580
Polygon A5
   33661.        5.     .0476      1.73      .550      .251     .0005
       0.       -1.       -1.
  40
   1   10     14580
  11   20     14580
  21   40     14580
Polygon A6
   15725.        5.     .0476      1.73      .550      .251     .0005
       0.       -1.       -1.
  40
   1   10     14580
  11   20     14580
  21   40   1516287
Polygon A7
   56708.        5.     .0476      1.73      .550      .251     .0005
       0.       -1.       -1.
  40
   1   10     14580
  11   20   1166375
  21   40    262434
```

V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89; M. Sukop and P. Lawson, 1/90
)SCO -- Methyl Isobutyl Ketone (MIBK)

GROUNDWATER IMPACT OF POLYGON 1

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	1.2273	42217.
100.00	1.2273	42217.
150.00	1.2273	42217.
200.00	1.2273	42217.
250.00	1.2273	42217.
300.00	1.2273	42217.
350.00	1.2273	42217.
400.00	1.2273	42216.
450.00	1.2273	42215.
500.00	1.2272	42215.
550.00	1.2272	42214.
600.00	1.2271	42211.
650.00	1.2268	42200.
700.00	1.2257	42162.
750.00	1.2225	42052.
800.00	1.2145	41778.
850.00	1.1975	41191.
900.00	1.1658	40103.
950.00	1.1141	38322.
1000.00	1.0386	35726.

****

ROUNDWATER IMPACT OF POLYGON 2

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.81385E-02	297.14
100.00	.81385E-02	297.14
150.00	.81385E-02	297.14
200.00	.81385E-02	297.14
250.00	.81385E-02	297.14
300.00	.81385E-02	297.14
350.00	.81385E-02	297.14
400.00	.81385E-02	297.14
450.00	.81385E-02	297.14
500.00	.81385E-02	297.14
550.00	.81385E-02	297.14
600.00	.81385E-02	297.14
650.00	.81385E-02	297.14
700.00	.81385E-02	297.14
750.00	.81385E-02	297.14
800.00	.81385E-02	297.14
850.00	.81385E-02	297.14
900.00	.81385E-02	297.14
950.00	.81385E-02	297.14
1000.00	.81385E-02	297.14

****

GROUNDWATER IMPACT OF POLYGON 3

Time	Mass per area (g/sq.ft.)	Total Mass (g)

50.00	1.2510	38359.
100.00	1.2510	38359.
150.00	1.2510	38359.
200.00	1.2510	38359.
250.00	1.2510	38359.
300.00	1.2510	38358.
350.00	1.2509	38358.
400.00	1.2509	38357.
450.00	1.2509	38357.
500.00	1.2509	38356.
550.00	1.2509	38355.
600.00	1.2507	38352.
650.00	1.2503	38338.
700.00	1.2488	38291.
750.00	1.2444	38158.
800.00	1.2339	37837.
850.00	1.2122	37169.
900.00	1.1730	35969.
950.00	1.1110	34066.
1000.00	1.0233	31378.

****

GROUNDWATER IMPACT OF POLYGON 4

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	1.2510	37806.
100.00	1.2510	37806.
150.00	1.2510	37806.
200.00	1.2510	37806.
250.00	1.2510	37806.
300.00	1.2510	37805.
350.00	1.2509	37805.
400.00	1.2509	37804.
450.00	1.2509	37804.
500.00	1.2509	37803.
550.00	1.2509	37802.
600.00	1.2507	37799.
650.00	1.2503	37785.
700.00	1.2488	37739.
750.00	1.2444	37608.
800.00	1.2339	37291.
850.00	1.2122	36634.
900.00	1.1730	35450.
950.00	1.1110	33575.
1000.00	1.0233	30926.

****

GROUNDWATER IMPACT OF POLYGON 5

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	1.2510	42109.
100.00	1.2510	42109.
150.00	1.2510	42109.
200.00	1.2510	42109.
250.00	1.2510	42109.
300.00	1.2510	42109.
350.00	1.2509	42108.
400.00	1.2509	42108.
450.00	1.2509	42107.
500.00	1.2509	42106.

550.00	1.2509	42105.
600.00	1.2507	42101.
650.00	1.2503	42086.
700.00	1.2488	42035.
750.00	1.2444	41889.
800.00	1.2339	41536.
850.00	1.2122	40804.
900.00	1.1730	39486.
950.00	1.1110	37397.
1000.00	1.0233	34446.

****

GROUNDWATER IMPACT OF POLYGON 6

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	130.10	.20458E+07
100.00	130.10	.20458E+07
150.00	130.09	.20457E+07
200.00	130.09	.20456E+07
250.00	130.04	.20448E+07
300.00	129.70	.20395E+07
350.00	128.18	.20156E+07
400.00	123.69	.19450E+07
450.00	114.30	.17973E+07
500.00	99.368	.15626E+07
550.00	80.370	.12638E+07
600.00	60.237	.94722E+06
650.00	41.921	.65920E+06
700.00	27.276	.42891E+06
750.00	16.786	.26396E+06
800.00	9.9474	.15642E+06
850.00	5.8297	91672.
900.00	3.5025	55076.
950.00	2.2384	35199.
1000.00	1.5515	24397.

****

GROUNDWATER IMPACT OF POLYGON 7

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	22.517	.12769E+07
100.00	22.517	.12769E+07
150.00	22.519	.12770E+07
200.00	22.523	.12772E+07
250.00	22.551	.12788E+07
300.00	22.754	.12903E+07
350.00	23.668	.13422E+07
400.00	26.361	.14949E+07
450.00	31.967	.18128E+07
500.00	40.757	.23113E+07
550.00	51.553	.29235E+07
600.00	62.025	.35173E+07
650.00	69.624	.39483E+07
700.00	72.530	.41130E+07
750.00	70.175	.39795E+07
800.00	63.253	.35870E+07
850.00	53.317	.30235E+07
900.00	42.199	.23930E+07
950.00	31.496	.17861E+07
1000.00	22.270	.12629E+07

****

****

TOTAL GROUNDWATER IMPACT

Time (yr)	Mass (g)	Cumulative Mass (g)
50.00	.34835E+07	.34835E+07
100.00	.34835E+07	.69670E+07
150.00	.34835E+07	.10450E+08
200.00	.34836E+07	.13934E+08
250.00	.34845E+07	.17419E+08
300.00	.34906E+07	.20909E+08
350.00	.35185E+07	.24428E+08
400.00	.36006E+07	.28028E+08
450.00	.37709E+07	.31799E+08
500.00	.40346E+07	.35834E+08
550.00	.43481E+07	.40182E+08
600.00	.46253E+07	.44807E+08
650.00	.47682E+07	.49575E+08
700.00	.47024E+07	.54278E+08
750.00	.44034E+07	.58681E+08
800.00	.39021E+07	.62583E+08
850.00	.32713E+07	.65855E+08
900.00	.25994E+07	.68454E+08
950.00	.19649E+07	.70419E+08
1000.00	.14200E+07	.71839E+08

```
V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89;  M. Sukop and P. Lawson, 1/90
OSCO -- Methyl Ethyl Ketone (MEK)
 7 polygons.
Timestep =   1.00 years.  Simulation length = 1000.00 years.
Printout every  50.00 years.  Vertical profile stored every ****** years.
Koc =      4.4700    ml/g,       .15786E-03cu.ft./g
Kh =      .46600E-04 (dimensionless).
Aqueous solubility =     .35300E+06 mg/l,      9995.9     g/cu.ft
Free air diffusion coefficient = .81950     sq. m/day,  3219.8     sq.ft./yr

Polygon   1
Polygon A1
Polygon area =      34398.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04670000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   2
Polygon A2
Polygon area =      36511.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2500
 Organic carbon content = 1.00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   3
Polygon A3
Polygon area =      30663.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   4
Polygon A4
Polygon area =      30221.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.
```

```
Polygon   5
Polygon A5
Polygon area =      33661.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   6
Polygon A6
Polygon area =      15725.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   7
Polygon A7
Polygon area =      56708.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.
```

```
?SCO -- Methyl Ethyl Ketone (MEK)
  7
      1.0     1000.       50.     1000.
     4.47  .0000466   353000.     .8195
?olygon A1
  34398.        5.     .0467      1.73      .550      .251     .0005
      0.       -1.       -1.
  40
   1   10    191434
  11   20     98452
  21   40    213312
?olygon A2
  36511.        5.     .0476      1.73      .550      .251     .0005
      0.       -1.       -1.
  40
   1   10    191434
  11   20   2351901
  21   40   2515988
?olygon A3
  30663.        5.     .0476      1.73      .550      .251     .0005
      0.       -1.       -1.
  40
   1   10   1148603
  11   20    246129
  21   40   1695557
?olygon A4
  30221.        5.     .0476      1.73      .550      .251     .0005
      0.       -1.       -1.
  40
   1   10    191434
  11   20     13674
  21   40     13674
?olygon A5
  33661.        5.     .0476      1.73      .550      .251     .0005
      0.       -1.       -1.
  40
   1   10    191434
  11   20    984517
  21   40    929822
?olygon A6
  15725.        5.     .0476      1.73      .550      .251     .0005
      0.       -1.       -1.
  40
   1   10   1148603
  11   20   2023729
  21   40   7110400
?olygon A7
  56708.        5.     .0476      1.73      .550      .251     .0005
      0.       -1.       -1.
  40
   1   10   1148603
  11   20   6016492
  21   40   2133120
```

V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89; M. Sukop and P. Lawson, 1/90
ISCO -- Methyl Ethyl Ketone (MEK)

GROUNDWATER IMPACT OF POLYGON 1

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	19.146	.65858E+06
100.00	19.146	.65858E+06
150.00	19.145	.65857E+06
200.00	19.145	.65854E+06
250.00	19.139	.65833E+06
300.00	19.097	.65689E+06
350.00	18.918	.65073E+06
400.00	18.426	.63381E+06
450.00	17.474	.60106E+06
500.00	16.088	.55341E+06
550.00	14.511	.49913E+06
600.00	13.089	.45023E+06
650.00	12.119	.41686E+06
700.00	11.729	.40345E+06
750.00	11.852	.40768E+06
800.00	12.262	.42179E+06
850.00	12.660	.43546E+06
900.00	12.761	.43896E+06
950.00	12.379	.42581E+06
1000.00	11.461	.39423E+06

****

GROUNDWATER IMPACT OF POLYGON 2

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	7.3453	.26819E+06
100.00	7.3453	.26819E+06
150.00	7.3453	.26819E+06
200.00	7.3453	.26819E+06
250.00	7.3453	.26819E+06
300.00	7.3453	.26819E+06
350.00	7.3453	.26819E+06
400.00	7.3453	.26819E+06
450.00	7.3453	.26819E+06
500.00	7.3453	.26819E+06
550.00	7.3453	.26819E+06
600.00	7.3453	.26819E+06
650.00	7.3453	.26819E+06
700.00	7.3453	.26819E+06
750.00	7.3453	.26819E+06
800.00	7.3453	.26819E+06
850.00	7.3453	.26819E+06
900.00	7.3453	.26819E+06
950.00	7.3453	.26819E+06
1000.00	7.3453	.26819E+06

****

GROUNDWATER IMPACT OF POLYGON 3

Time	Mass per area (g/sq.ft.)	Total Mass (g)

50.00	155.12	.47564E+07
100.00	155.12	.47563E+07
150.00	155.11	.47562E+07
200.00	155.10	.47559E+07
250.00	155.01	.47530E+07
300.00	154.36	.47330E+07
350.00	151.66	.46502E+07
400.00	144.46	.44297E+07
450.00	130.98	.40164E+07
500.00	111.99	.34341E+07
550.00	91.033	.27913E+07
600.00	72.657	.22279E+07
650.00	60.332	.18500E+07
700.00	55.240	.16938E+07
750.00	56.282	.17258E+07
800.00	60.851	.18659E+07
850.00	65.879	.20200E+07
900.00	68.774	.21088E+07
950.00	68.019	.20857E+07
1000.00	63.338	.19421E+07

****

GROUNDWATER IMPACT OF POLYGON 4

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	1.2510	37805.
100.00	1.2510	37805.
150.00	1.2510	37806.
200.00	1.2510	37806.
250.00	1.2511	37808.
300.00	1.2512	37814.
350.00	1.2519	37834.
400.00	1.2554	37939.
450.00	1.2733	38481.
500.00	1.3448	40643.
550.00	1.5594	47127.
600.00	2.0572	62171.
650.00	2.9789	90025.
700.00	4.3757	.13224E+06
750.00	6.1359	.18543E+06
800.00	7.9838	.24128E+06
850.00	9.5608	.28894E+06
900.00	10.547	.31873E+06
950.00	10.762	.32523E+06
1000.00	10.208	.30849E+06

****

GROUNDWATER IMPACT OF POLYGON 5

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	85.065	.28634E+07
100.00	85.065	.28634E+07
150.00	85.065	.28634E+07
200.00	85.065	.28634E+07
250.00	85.068	.28635E+07
300.00	85.091	.28642E+07
350.00	85.190	.28676E+07
400.00	85.446	.28762E+07
450.00	85.877	.28907E+07
500.00	86.287	.29045E+07

550.00	86.155	.29001E+07
600.00	84.697	.28510E+07
650.00	81.128	.27308E+07
700.00	75.045	.25261E+07
750.00	66.678	.22444E+07
800.00	56.839	.19133E+07
850.00	46.604	.15687E+07
900.00	36.937	.12433E+07
950.00	28.457	.95789E+06
1000.00	21.407	.72058E+06

****

GROUNDWATER IMPACT OF POLYGON 6

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	650.49	.10229E+08
100.00	650.49	.10229E+08
150.00	650.48	.10229E+08
200.00	650.43	.10228E+08
250.00	650.10	.10223E+08
300.00	647.81	.10187E+08
350.00	638.32	.10038E+08
400.00	613.00	.96394E+07
450.00	565.28	.88891E+07
500.00	497.02	.78156E+07
550.00	418.56	.65819E+07
600.00	342.72	.53893E+07
650.00	278.37	.43773E+07
700.00	228.30	.35900E+07
750.00	190.79	.30002E+07
800.00	162.32	.25525E+07
850.00	139.48	.21933E+07
900.00	119.74	.18829E+07
950.00	101.59	.15975E+07
1000.00	84.351	.13264E+07

****

GROUNDWATER IMPACT OF POLYGON 7

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	195.15	.11066E+08
100.00	195.15	.11067E+08
150.00	195.16	.11067E+08
200.00	195.19	.11069E+08
250.00	195.44	.11083E+08
300.00	197.18	.11181E+08
350.00	204.40	.11591E+08
400.00	223.62	.12681E+08
450.00	259.48	.14715E+08
500.00	309.36	.17543E+08
550.00	362.53	.20558E+08
600.00	404.73	.22951E+08
650.00	424.40	.24067E+08
700.00	416.77	.23634E+08
750.00	384.42	.21800E+08
800.00	335.12	.19004E+08
850.00	278.31	.15783E+08
900.00	222.08	.12594E+08
950.00	171.62	.97323E+07
1000.00	129.22	.73279E+07

****

****

TOTAL GROUNDWATER IMPACT

Time (yr)	Mass (g)	Cumulative Mass (g)
50.00	.29880E+08	.29880E+08
100.00	.29880E+08	.59760E+08
150.00	.29880E+08	.89639E+08
200.00	.29880E+08	.11952E+09
250.00	.29886E+08	.14941E+09
300.00	.29928E+08	.17933E+09
350.00	.30103E+08	.20944E+09
400.00	.30566E+08	.24000E+09
450.00	.31419E+08	.27142E+09
500.00	.32560E+08	.30398E+09
550.00	.33646E+08	.33763E+09
600.00	.34200E+08	.37183E+09
650.00	.33800E+08	.40563E+09
700.00	.32248E+08	.43788E+09
750.00	.29632E+08	.46751E+09
800.00	.26267E+08	.49378E+09
850.00	.22557E+08	.51633E+09
900.00	.18855E+08	.53519E+09
950.00	.15393E+08	.55058E+09
1000.00	.12288E+08	.56287E+09

```
 V-Leach, VER 1.02
 J. Turin, 6/89; F. Carlson, 7/89;  M. Sukop and P. Lawson, 1/90
SCO -- Acetone
  7 polygons.
Timestep =   1.00 years.  Simulation length = 1000.00 years.
rintout every  50.00 years.  Vertical profile stored every ****** years.
Koc =      14.790    ml/g,       .52230E-03cu.ft./g
Kh =      .37900E-04 (dimensionless).
queous solubility =     .10000E+07 mg/l,      28317.     g/cu.ft
ree air diffusion coefficient = .94430     sq. m/day,  3710.2     sq.ft./yr


olygon   1
olygon A1
Polygon area =      34398.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
oil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
 echarge Rate =  .04670000 ft/yr
onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.


Polygon   2
 olygon A2
olygon area =      36511.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2500
 Organic carbon content = 1.00050000
Recharge Rate =  .04760000 ft/yr
 onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.


Polygon   3
Polygon A3
 olygon area =      30663.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.


olygon   4
Polygon A4
Polygon area =      30221.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
oil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
 tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.
```

```
Polygon   5
Polygon A5
Polygon area =      33661.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.


Polygon   6
Polygon A6
Polygon area =      15725.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.


Polygon   7
Polygon A7
Polygon area =      56708.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.
```

```
OSCO -- Acetone
  7
      1.0     1000.       50.     1000.
    14.79  .0000379  1000000.     .9443
Polygon A1
    34398.       5.     .0467      1.73      .550      .251     .0005
        0.      -1.       -1.
   40
    1   10    322281
   11   20    332248
   21   40   1262544
Polygon A2
    36511.       5.     .0476      1.73      .550      .251     .0005
        0.      -1.       -1.
   40
    1   10    322281
   11   20   5648223
   21   40   1528343
Polygon A3
    30663.       5.     .0476      1.73      .550      .251     .0005
        0.      -1.       -1.
   40
    1   10     16612
   11   20    604692
   21   40   1461893
Polygon A4
    30221.       5.     .0476      1.73      .550      .251     .0005
        0.      -1.       -1.
   40
    1   10    322281
   11   20     16612
   21   40     16612
Polygon A5
    33661.       5.     .0476      1.73      .550      .251     .0005
        0.      -1.       -1.
   40
    1   10    322281
   11   20    285734
   21   40   1461893
Polygon A6
    15725.       5.     .0476      1.73      .550      .251     .0005
        0.      -1.       -1.
   40
    1   10     16612
   11   20     16612
   21   40   9302955
Polygon A7
    56708.       5.     .0476      1.73      .550      .251     .0005
        0.      -1.       -1.
   40
    1   10     16612
   11   20   1927041
   21   40    797396
```

```
V-Leach, VER 1.02
 J. Turin, 6/89; F. Carlson, 7/89;  M. Sukop and P. Lawson, 1/90
OSCO -- Tetrachloroethene (PCE)
  7 polygons.
Timestep =   1.00 years.  Simulation length = 1000.00 years.
Printout every  50.00 years.  Vertical profile stored every ****** years.
Koc =      660.69    ml/g,       .23332E-01cu.ft./g
Kh =      .82000     (dimensionless).
Aqueous solubility =     150.00     mg/l,      4.2476     g/cu.ft
Free air diffusion coefficient = .67840     sq. m/day,  2665.4     sq.ft./yr


Polygon   1
Polygon A1
Polygon area =      34398.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
Organic carbon content =  .00050000
Recharge Rate =  .04670000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.


Polygon   2
Polygon A2
Polygon area =      36511.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2500
 Organic carbon content = 1.00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.


Polygon   3
Polygon A3
Polygon area =      30663.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
 Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.


Polygon   4
Polygon A4
Polygon area =      30221.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
 Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.
```

Polygon 5
Polygon A5
Polygon area = 33661. sq. ft.
40 cells, each cell 5.000 ft. thick.
Soil Properties:
Bulk density = 1.7300 g/ml, 48988. g/cu.ft.
Porosity = .5500 Volumetric water content = .2510
Organic carbon content = .00050000
Recharge Rate = .04760000 ft/yr
Conc. in recharge water = .00000 mg/l, .00000 g/cu.ft
Atmospheric concentration = -1.0000 mg/l, -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon 6
Polygon A6
Polygon area = 15725. sq. ft.
40 cells, each cell 5.000 ft. thick.
Soil Properties:
Bulk density = 1.7300 g/ml, 48988. g/cu.ft.
Porosity = .5500 Volumetric water content = .2510
Organic carbon content = .00050000
Recharge Rate = .04760000 ft/yr
Conc. in recharge water = .00000 mg/l, .00000 g/cu.ft
Atmospheric concentration = -1.0000 mg/l, -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon 7
Polygon A7
Polygon area = 56708. sq. ft.
40 cells, each cell 5.000 ft. thick.
Soil Properties:
Bulk density = 1.7300 g/ml, 48988. g/cu.ft.
Porosity = .5500 Volumetric water content = .2510
Organic carbon content = .00050000
Recharge Rate = .04760000 ft/yr
Conc. in recharge water = .00000 mg/l, .00000 g/cu.ft
Atmospheric concentration = -1.0000 mg/l, -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

```
DSCO -- Tetrachloroethene (PCE)
  7
        1.0     1000.      50.     1000.
     660.69      .820     150.     .6784
Polygon A1
     34398.        5.     .0467     1.73      .550      .251     .0005
        0.        -1.      -1.
   40
    1   10       1289
   11   20       1016
   21   40        807
Polygon A2
     36511.        5.     .0476     1.73      .550      .251     .0005
        0.        -1.      -1.
   40
    1   10       1289
   11   20      20833
   21   40       2734
Polygon A3
     30663.        5.     .0476     1.73      .550      .251     .0005
        0.        -1.      -1.
   40
    1   10         56
   11   20       9375
   21   40      13020
Polygon A4
     30221.        5.     .0476     1.73      .550      .251     .0005
        0.        -1.      -1.
   40
    1   10       1289
   11   20        143
   21   40          1
Polygon A5
     33661.        5.     .0476     1.73      .550      .251     .0005
        0.        -1.      -1.
   40
    1   10       1289
   11   20       8724
   21   40       1823
Polygon A6
     15725.        5.     .0476     1.73      .550      .251     .0005
        0.        -1.      -1.
   40
    1   10         56
   11   20      11198
   21   40        964
Polygon A7
     56708.        5.     .0476     1.73      .550      .251     .0005
        0.        -1.      -1.
   40
    1   10         56
   11   20        234
   21   40        352
```

V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89; M. Sukop and P. Lawson, 1/90
OSCO -- Tetrachloroethene (PCE)

GROUNDWATER IMPACT OF POLYGON 1

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.17478E-01	601.19
100.00	.18338E-01	630.78
150.00	.19193E-01	660.22
200.00	.19738E-01	678.94
250.00	.20015E-01	688.48
300.00	.20110E-01	691.74
350.00	.20087E-01	690.95
400.00	.19989E-01	687.59
450.00	.19845E-01	682.64
500.00	.19673E-01	676.71
550.00	.19483E-01	670.18
600.00	.19284E-01	663.31
650.00	.19078E-01	656.26
700.00	.18871E-01	649.12
750.00	.18662E-01	641.95
800.00	.18454E-01	634.79
850.00	.18247E-01	627.68
900.00	.18042E-01	620.61
950.00	.17839E-01	613.61
1000.00	.17637E-01	606.68

****

GROUNDWATER IMPACT OF POLYGON 2

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.55724E-04	2.0345
100.00	.55725E-04	2.0346
150.00	.55727E-04	2.0346
200.00	.55728E-04	2.0347
250.00	.55729E-04	2.0347
300.00	.55731E-04	2.0348
350.00	.55733E-04	2.0349
400.00	.55734E-04	2.0349
450.00	.55736E-04	2.0350
500.00	.55738E-04	2.0350
550.00	.55739E-04	2.0351
600.00	.55741E-04	2.0352
650.00	.55743E-04	2.0352
700.00	.55745E-04	2.0353
750.00	.55747E-04	2.0354
800.00	.55749E-04	2.0355
850.00	.55751E-04	2.0355
900.00	.55754E-04	2.0356
950.00	.55756E-04	2.0357
1000.00	.55758E-04	2.0358

****

GROUNDWATER IMPACT OF POLYGON 3

Time	Mass per area (g/sq.ft.)	Total Mass (g)

50.00	.28055	8602.6
100.00	.26071	7994.1
150.00	.23759	7285.2
200.00	.21970	6736.8
250.00	.20706	6349.0
300.00	.19815	6076.0
350.00	.19171	5878.5
400.00	.18686	5729.8
450.00	.18303	5612.3
500.00	.17986	5515.0
550.00	.17711	5430.7
600.00	.17464	5354.8
650.00	.17235	5284.7
700.00	.17018	5218.4
750.00	.16811	5154.7
800.00	.16610	5093.1
850.00	.16413	5032.9
900.00	.16221	4973.9
950.00	.16032	4915.9
1000.00	.15846	4858.7

****

GROUNDWATER IMPACT OF POLYGON 4

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.25128E-03	7.5940
100.00	.17313E-02	52.322
150.00	.36702E-02	110.92
200.00	.51647E-02	156.08
250.00	.61440E-02	185.68
300.00	.67451E-02	203.85
350.00	.70961E-02	214.45
400.00	.72865E-02	220.21
450.00	.73752E-02	222.89
500.00	.73996E-02	223.62
550.00	.73836E-02	223.14
600.00	.73424E-02	221.89
650.00	.72855E-02	220.18
700.00	.72190E-02	218.17
750.00	.71469E-02	215.99
800.00	.70714E-02	213.70
850.00	.69942E-02	211.37
900.00	.69163E-02	209.02
950.00	.68382E-02	206.66
1000.00	.67603E-02	204.30

****

GROUNDWATER IMPACT OF POLYGON 5

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.44382E-01	1493.9
100.00	.58699E-01	1975.9
150.00	.66565E-01	2240.6
200.00	.69760E-01	2348.2
250.00	.71094E-01	2393.1
300.00	.71550E-01	2408.5
350.00	.71517E-01	2407.3
400.00	.71191E-01	2396.4
450.00	.70685E-01	2379.3
500.00	.70068E-01	2358.6

550.00	.69386E-01	2335.6
600.00	.68665E-01	2311.3
650.00	.67922E-01	2286.3
700.00	.67170E-01	2261.0
750.00	.66414E-01	2235.6
800.00	.65660E-01	2210.2
850.00	.64910E-01	2184.9
900.00	.64165E-01	2159.9
950.00	.63427E-01	2135.0
1000.00	.62696E-01	2110.4

****

GROUNDWATER IMPACT OF POLYGON 6

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.27817E-01	437.42
100.00	.48967E-01	770.01
150.00	.60582E-01	952.65
200.00	.65401E-01	1028.4
250.00	.67580E-01	1062.7
300.00	.68540E-01	1077.8
350.00	.68828E-01	1082.3
400.00	.68712E-01	1080.5
450.00	.68348E-01	1074.8
500.00	.67830E-01	1066.6
550.00	.67219E-01	1057.0
600.00	.66552E-01	1046.5
650.00	.65852E-01	1035.5
700.00	.65135E-01	1024.3
750.00	.64410E-01	1012.9
800.00	.63684E-01	1001.4
850.00	.62959E-01	990.03
900.00	.62239E-01	978.71
950.00	.61524E-01	967.47
1000.00	.60816E-01	956.33

****

GROUNDWATER IMPACT OF POLYGON 7

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.75775E-02	429.70
100.00	.70489E-02	399.73
150.00	.64737E-02	367.11
200.00	.60386E-02	342.44
250.00	.57307E-02	324.98
300.00	.55116E-02	312.55
350.00	.53505E-02	303.42
400.00	.52269E-02	296.41
450.00	.51273E-02	290.76
500.00	.50432E-02	285.99
550.00	.49691E-02	281.79
600.00	.49017E-02	277.97
650.00	.48388E-02	274.40
700.00	.47788E-02	271.00
750.00	.47211E-02	267.72
800.00	.46649E-02	264.54
850.00	.46100E-02	261.42
900.00	.45561E-02	258.36
950.00	.45030E-02	255.36
1000.00	.44507E-02	252.39

****

****

TOTAL GROUNDWATER IMPACT

Time (yr)	Mass (g)	Cumulative Mass (g)
50.00	11574.	11574.
100.00	11825.	23399.
150.00	11619.	35018.
200.00	11293.	46311.
250.00	11006.	57317.
300.00	10772.	68089.
350.00	10579.	78668.
400.00	10413.	89081.
450.00	10265.	99346.
500.00	10129.	.10947E+06
550.00	10000.	.11948E+06
600.00	9877.9	.12935E+06
650.00	9759.4	.13911E+06
700.00	9643.9	.14876E+06
750.00	9530.8	.15829E+06
800.00	9419.7	.16771E+06
850.00	9310.3	.17702E+06
900.00	9202.4	.18622E+06
950.00	9096.0	.19532E+06
1000.00	8990.9	.20431E+06

```
V-Leach, VER 1.02
 J. Turin, 6/89; F. Carlson, 7/89;  M. Sukop and P. Lawson, 1/90
OSCO -- Trichloroethene (TCE)
  7 polygons.
Timestep =   1.00 years.  Simulation length = 1000.00 years.
Printout every  50.00 years.  Vertical profile stored every ****** years.
Koc =      125.89    ml/g,       .44457E-02cu.ft./g
Kh =      .37300     (dimensionless).
Aqueous solubility =     1000.0     mg/l,      28.317     g/cu.ft
Free air diffusion coefficient = .74350     sq. m/day,  2921.2     sq.ft./yr

Polygon   1
Polygon A1
Polygon area =      34398.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04670000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   2
Polygon A2
Polygon area =      36511.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2500
 Organic carbon content = 1.00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   3
Polygon A3
Polygon area =      30663.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   4
Polygon A4
Polygon area =      30221.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.
```

```
Polygon   5
Polygon A5
Polygon area =      33661.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   6
Polygon A6
Polygon area =      15725.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   7
Polygon A7
Polygon area =      56708.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.
```

```
OSCO -- Trichloroethene (TCE)
  7
       1.0     1000.       50.     1000.
    125.89      .373     1000.     .7435
 Polygon A1
    34398.        5.     .0467      1.73      .550      .251     .0005
        0.       -1.       -1.
  40
   1   10        63
  11   20        21
  21   40       291
 Polygon A2
    36511.        5.     .0476      1.73      .550      .251     .0005
        0.       -1.       -1.
  40
   1   10        63
  11   20       118
  21   40       354
 Polygon A3
    30663.        5.     .0476      1.73      .550      .251     .0005
        0.       -1.       -1.
  40
   1   10         9
  11   20       139
  21   40       632
 Polygon A4
    30221.        5.     .0476      1.73      .550      .251     .0005
        0.       -1.       -1.
  40
   1   10        63
  11   20         6
  21   40         0
 Polygon A5
    33661.        5.     .0476      1.73      .550      .251     .0005
        0.       -1.       -1.
  40
   1   10        63
  11   20       177
  21   40        63
 Polygon A6
    15725.        5.     .0476      1.73      .550      .251     .0005
        0.       -1.       -1.
  40
   1   10         9
  11   20       329
  21   40        39
 Polygon A7
    56708.        5.     .0476      1.73      .550      .251     .0005
        0.       -1.       -1.
  40
   1   10         9
  11   20        43
  21   40        56
```

V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89; M. Sukop and P. Lawson, 1/90
)SCO -- Trichloroethene (TCE)

GROUNDWATER IMPACT OF POLYGON 1

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.13528E-01	465.34
100.00	.11435E-01	393.35
150.00	.98122E-02	337.52
200.00	.87853E-02	302.20
250.00	.81086E-02	278.92
300.00	.76359E-02	262.66
350.00	.72835E-02	250.54
400.00	.70032E-02	240.90
450.00	.67668E-02	232.77
500.00	.65579E-02	225.58
550.00	.63670E-02	219.01
600.00	.61882E-02	212.86
650.00	.60184E-02	207.02
700.00	.58555E-02	201.42
750.00	.56984E-02	196.01
800.00	.55462E-02	190.78
850.00	.53986E-02	185.70
900.00	.52551E-02	180.77
950.00	.51156E-02	175.97
1000.00	.49799E-02	171.30

****

GROUNDWATER IMPACT OF POLYGON 2

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.37819E-04	1.3808
100.00	.37819E-04	1.3808
150.00	.37819E-04	1.3808
200.00	.37818E-04	1.3808
250.00	.37818E-04	1.3808
300.00	.37817E-04	1.3808
350.00	.37817E-04	1.3807
400.00	.37817E-04	1.3807
450.00	.37816E-04	1.3807
500.00	.37816E-04	1.3807
550.00	.37815E-04	1.3807
600.00	.37814E-04	1.3806
650.00	.37814E-04	1.3806
700.00	.37813E-04	1.3806
750.00	.37813E-04	1.3806
800.00	.37812E-04	1.3805
850.00	.37811E-04	1.3805
900.00	.37810E-04	1.3805
950.00	.37810E-04	1.3805
1000.00	.37809E-04	1.3804

****

ROUNDWATER IMPACT OF POLYGON 3

Time	Mass per area (g/sq.ft.)	Total Mass (g)

50.00	.30080E-01	922.35
100.00	.25596E-01	784.85
150.00	.21792E-01	668.20
200.00	.19296E-01	591.68
250.00	.17653E-01	541.30
300.00	.16522E-01	506.62
350.00	.15695E-01	481.25
400.00	.15049E-01	461.46
450.00	.14514E-01	445.03
500.00	.14046E-01	430.70
550.00	.13623E-01	417.72
600.00	.13229E-01	405.65
650.00	.12857E-01	394.23
700.00	.12501E-01	383.31
750.00	.12158E-01	372.79
800.00	.11826E-01	362.62
850.00	.11504E-01	352.76
900.00	.11192E-01	343.19
950.00	.10889E-01	333.89
1000.00	.10594E-01	324.85

****

GROUNDWATER IMPACT OF POLYGON 4

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.34080E-04	1.0299
100.00	.24039E-03	7.2648
150.00	.48000E-03	14.506
200.00	.63953E-03	19.327
250.00	.72766E-03	21.991
300.00	.77012E-03	23.274
350.00	.78555E-03	23.740
400.00	.78541E-03	23.736
450.00	.77644E-03	23.465
500.00	.76258E-03	23.046
550.00	.74610E-03	22.548
600.00	.72834E-03	22.011
650.00	.71004E-03	21.458
700.00	.69166E-03	20.903
750.00	.67343E-03	20.352
800.00	.65549E-03	19.810
850.00	.63792E-03	19.279
900.00	.62076E-03	18.760
950.00	.60403E-03	18.254
1000.00	.58772E-03	17.762

****

GROUNDWATER IMPACT OF POLYGON 5

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.33370E-02	112.33
100.00	.39549E-02	133.13
150.00	.42350E-02	142.56
200.00	.43048E-02	144.90
250.00	.42874E-02	144.32
300.00	.42276E-02	142.31
350.00	.41457E-02	139.55
400.00	.40525E-02	136.41
450.00	.39538E-02	133.09
500.00	.38532E-02	129.70

550.00	.37527E-02	126.32
600.00	.36534E-02	122.98
650.00	.35558E-02	119.69
700.00	.34604E-02	116.48
750.00	.33672E-02	113.34
800.00	.32764E-02	110.29
850.00	.31879E-02	107.31
900.00	.31018E-02	104.41
950.00	.30180E-02	101.59
1000.00	.29364E-02	98.841

****

GROUNDWATER IMPACT OF POLYGON 6

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.24806E-02	39.007
100.00	.39829E-02	62.631
150.00	.46404E-02	72.971
200.00	.48357E-02	76.041
250.00	.48670E-02	76.534
300.00	.48256E-02	75.882
350.00	.47468E-02	74.644
400.00	.46484E-02	73.096
450.00	.45401E-02	71.393
500.00	.44275E-02	69.622
550.00	.43136E-02	67.831
600.00	.42004E-02	66.051
650.00	.40888E-02	64.296
700.00	.39793E-02	62.575
750.00	.38724E-02	60.893
800.00	.37681E-02	59.253
850.00	.36664E-02	57.654
900.00	.35674E-02	56.097
950.00	.34710E-02	54.581
1000.00	.33771E-02	53.105

****

ROUNDWATER IMPACT OF POLYGON 7

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.27277E-02	154.69
100.00	.25211E-02	142.97
150.00	.22957E-02	130.19
200.00	.21260E-02	120.56
250.00	.20033E-02	113.60
300.00	.19107E-02	108.35
350.00	.18366E-02	104.15
400.00	.17739E-02	100.59
450.00	.17183E-02	97.444
500.00	.16675E-02	94.559
550.00	.16198E-02	91.856
600.00	.15745E-02	89.287
650.00	.15311E-02	86.823
700.00	.14892E-02	84.447
750.00	.14486E-02	82.146
800.00	.14092E-02	79.915
850.00	.13710E-02	77.748
900.00	.13339E-02	75.642
950.00	.12978E-02	73.595
1000.00	.12627E-02	71.603

****

****

OTAL GROUNDWATER IMPACT

Time (yr)	Mass (g)	Cumulative Mass (g)
50.00	1696.1	1696.1
100.00	1525.6	3221.7
150.00	1367.3	4589.0
200.00	1256.1	5845.1
250.00	1178.0	7023.2
300.00	1120.5	8143.6
350.00	1075.3	9218.9
400.00	1037.6	10256.
450.00	1004.6	11261.
500.00	974.59	12236.
550.00	946.67	13182.
600.00	920.22	14103.
650.00	894.90	14997.
700.00	870.51	15868.
750.00	846.92	16715.
800.00	824.04	17539.
850.00	801.83	18341.
900.00	780.24	19121.
950.00	759.26	19880.
1000.00	738.84	20619.

```
                V-Leach, VER 1.02
 J. Turin, 6/89; F. Carlson, 7/89;  M. Sukop and P. Lawson, 1/90
ISCO -- 1,1,1-Trichloroethane (1,1,1-TCA)
 7 polygons.
Timestep =   1.00 years.  Simulation length = 1000.00 years.
Printout every  50.00 years.  Vertical profile stored every ****** years.
Koc =      151.36    ml/g,       .53452E-02cu.ft./g
Kh =      .66700     (dimensionless).
Aqueous solubility =     950.00     mg/l,      26.901     g/cu.ft
Free air diffusion coefficient = .72980     sq. m/day,  2867.4     sq.ft./yr

Polygon   1
Polygon A1
Polygon area =      34398.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04670000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   2
Polygon A2
 olygon area =      36511.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2500
Organic carbon content = 1.00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

olygon   3
Polygon A3
Polygon area =      30663.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
oil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
echarge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.

olygon   4
olygon A4
Polygon area =      30221.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
 oil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
 echarge Rate =  .04760000 ft/yr
onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.
```

```
Polygon   5
Polygon A5
Polygon area =      33661.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   6
Polygon A6
Polygon area =      15725.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   7
Polygon A7
Polygon area =      56708.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.
```

```
OSCO -- 1,1,1-Trichloroethane (1,1,1-TCA)
  7
       1.0     1000.      50.     1000.
    151.36      .667     950.     .7298
 Polygon A1
    34398.       5.     .0467     1.73     .550     .251     .0005
        0.      -1.      -1.
   40
    1   10      183
   11   20      105
   21   40       96
 Polygon A2
    36511.       5.     .0476     1.73     .550     .251     .0005
        0.      -1.      -1.
   40
    1   10      183
   11   20      741
   21   40      322
 Polygon A3
    30663.       5.     .0476     1.73     .550     .251     .0005
        0.      -1.      -1.
   40
    1   10       43
   11   20      479
   21   40     1220
 Polygon A4
    30221.       5.     .0476     1.73     .550     .251     .0005
        0.      -1.      -1.
   40
    1   10      183
   11   20      253
   21   40      209
 olygon A5
    33661.       5.     .0476     1.73     .550     .251     .0005
        0.      -1.      -1.
   40
    1   10      183
   11   20      253
   21   40      209
 olygon A6
    15725.       5.     .0476     1.73     .550     .251     .0005
        0.      -1.      -1.
   40
    1   10       43
   11   20      715
   21   40      453
 olygon A7
    56708.       5.     .0476     1.73     .550     .251     .0005
        0.      -1.      -1.
   40
    1   10       43
   11   20      139
   21   40       79
```

V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89; M. Sukop and P. Lawson, 1/90
)SCO -- 1,1,1-Trichloroethane (1,1,1-TCA)

GROUNDWATER IMPACT OF POLYGON 1

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.38531E-02	132.54
100.00	.41818E-02	143.84
150.00	.44122E-02	151.77
200.00	.44846E-02	154.26
250.00	.44707E-02	153.78
300.00	.44158E-02	151.89
350.00	.43421E-02	149.36
400.00	.42604E-02	146.55
450.00	.41759E-02	143.64
500.00	.40909E-02	140.72
550.00	.40067E-02	137.82
600.00	.39238E-02	134.97
650.00	.38423E-02	132.17
700.00	.37624E-02	129.42
750.00	.36841E-02	126.73
800.00	.36074E-02	124.09
850.00	.35323E-02	121.50
900.00	.34588E-02	118.97
950.00	.33867E-02	116.50
1000.00	.33162E-02	114.07

****

GROUNDWATER IMPACT OF POLYGON 2

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.28611E-04	1.0446
100.00	.28611E-04	1.0446
150.00	.28612E-04	1.0447
200.00	.28613E-04	1.0447
250.00	.28614E-04	1.0447
300.00	.28615E-04	1.0448
350.00	.28616E-04	1.0448
400.00	.28618E-04	1.0449
450.00	.28619E-04	1.0449
500.00	.28620E-04	1.0450
550.00	.28622E-04	1.0450
600.00	.28623E-04	1.0451
650.00	.28625E-04	1.0451
700.00	.28627E-04	1.0452
750.00	.28628E-04	1.0453
800.00	.28630E-04	1.0453
850.00	.28632E-04	1.0454
900.00	.28634E-04	1.0455
950.00	.28637E-04	1.0456
1000.00	.28639E-04	1.0456

****

GROUNDWATER IMPACT OF POLYGON 3

Time	Mass per area (g/sq.ft.)	Total Mass (g)

50.00	.46342E-01	1421.0
100.00	.38453E-01	1179.1
150.00	.33211E-01	1018.4
200.00	.30322E-01	929.77
250.00	.28629E-01	877.86
300.00	.27520E-01	843.83
350.00	.26695E-01	818.55
400.00	.26014E-01	797.65
450.00	.25406E-01	779.03
500.00	.24841E-01	761.69
550.00	.24300E-01	745.12
600.00	.23778E-01	729.12
650.00	.23271E-01	713.54
700.00	.22775E-01	698.35
750.00	.22291E-01	683.50
800.00	.21817E-01	668.97
850.00	.21353E-01	654.76
900.00	.20900E-01	640.85
950.00	.20456E-01	627.24
1000.00	.20021E-01	613.92

****

GROUNDWATER IMPACT OF POLYGON 4

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.84738E-02	256.09
100.00	.85647E-02	258.83
150.00	.84652E-02	255.83
200.00	.83166E-02	251.34
250.00	.81542E-02	246.43
300.00	.79878E-02	241.40
350.00	.78214E-02	236.37
400.00	.76568E-02	231.40
450.00	.74950E-02	226.51
500.00	.73361E-02	221.71
550.00	.71805E-02	217.00
600.00	.70281E-02	212.40
650.00	.68789E-02	207.89
700.00	.67328E-02	203.47
750.00	.65898E-02	199.15
800.00	.64499E-02	194.92
850.00	.63129E-02	190.78
900.00	.61788E-02	186.73
950.00	.60476E-02	182.76
1000.00	.59192E-02	178.88

****

GROUNDWATER IMPACT OF POLYGON 5

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.84738E-02	285.24
100.00	.85647E-02	288.30
150.00	.84652E-02	284.95
200.00	.83166E-02	279.95
250.00	.81542E-02	274.48
300.00	.79878E-02	268.88
350.00	.78214E-02	263.28
400.00	.76568E-02	257.74
450.00	.74950E-02	252.29
500.00	.73361E-02	246.94

550.00	.71805E-02	241.70
600.00	.70281E-02	236.57
650.00	.68789E-02	231.55
700.00	.67328E-02	226.63
750.00	.65898E-02	221.82
800.00	.64499E-02	217.11
850.00	.63129E-02	212.50
900.00	.61788E-02	207.99
950.00	.60476E-02	203.57
1000.00	.59192E-02	199.24

****

GROUNDWATER IMPACT OF POLYGON 6

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.18554E-01	291.77
100.00	.18314E-01	287.98
150.00	.17298E-01	272.01
200.00	.16538E-01	260.06
250.00	.15991E-01	251.47
300.00	.15558E-01	244.65
350.00	.15183E-01	238.75
400.00	.14839E-01	233.34
450.00	.14513E-01	228.22
500.00	.14200E-01	223.30
550.00	.13896E-01	218.52
600.00	.13600E-01	213.86
650.00	.13311E-01	209.31
700.00	.13028E-01	204.86
750.00	.12751E-01	200.51
800.00	.12480E-01	196.25
850.00	.12215E-01	192.08
900.00	.11956E-01	188.00
950.00	.11702E-01	184.01
1000.00	.11453E-01	180.10

****

ROUNDWATER IMPACT OF POLYGON 7

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.32937E-02	186.78
100.00	.34456E-02	195.39
150.00	.33978E-02	192.68
200.00	.33250E-02	188.55
250.00	.32530E-02	184.47
300.00	.31832E-02	180.51
350.00	.31153E-02	176.66
400.00	.30489E-02	172.90
450.00	.29841E-02	169.22
500.00	.29207E-02	165.63
550.00	.28586E-02	162.11
600.00	.27979E-02	158.66
650.00	.27385E-02	155.29
700.00	.26803E-02	152.00
750.00	.26234E-02	148.77
800.00	.25677E-02	145.61
850.00	.25132E-02	142.52
900.00	.24598E-02	139.49
950.00	.24075E-02	136.53
1000.00	.23564E-02	133.63

****

****

TOTAL GROUNDWATER IMPACT

Time (yr)	Mass (g)	Cumulative Mass (g)
50.00	2574.4	2574.4
100.00	2354.5	4928.9
150.00	2176.6	7105.5
200.00	2065.0	9170.5
250.00	1989.5	11160.
300.00	1932.2	13092.
350.00	1884.0	14976.
400.00	1840.6	16817.
450.00	1800.0	18617.
500.00	1761.0	20378.
550.00	1723.3	22101.
600.00	1686.6	23788.
650.00	1650.8	25439.
700.00	1615.8	27054.
750.00	1581.5	28636.
800.00	1548.0	30184.
850.00	1515.2	31699.
900.00	1483.1	33182.
950.00	1451.7	34634.
1000.00	1420.9	36055.

```
V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89;  M. Sukop and P. Lawson, 1/90
DSCO -- 1,1-Dichloroethene (1,1-DCE)
 7 polygons.
Timestep =   1.00 years.  Simulation length = 1000.00 years.
Printout every  50.00 years.  Vertical profile stored every ****** years.
Koc =      64.560    ml/g,       .22799E-02cu.ft./g
Kh =      6.4000     (dimensionless).
Aqueous solubility =     400.00     mg/l,      11.327     g/cu.ft
Free air diffusion coefficient = .74350     sq. m/day,  2921.2     sq.ft./yr

Polygon   1
Polygon A1
Polygon area =      34398.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04670000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   2
Polygon A2
Polygon area =      36511.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2500
 Organic carbon content = 1.00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   3
Polygon A3
Polygon area =      30663.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   4
Polygon A4
Polygon area =      30221.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.
```

Polygon 5
Polygon A5
Polygon area = 33661. sq. ft.
40 cells, each cell 5.000 ft. thick.
Soil Properties:
Bulk density = 1.7300 g/ml, 48988. g/cu.ft.
Porosity = .5500 Volumetric water content = .2510
Organic carbon content = .00050000
Recharge Rate = .04760000 ft/yr
Conc. in recharge water = .00000 mg/l, .00000 g/cu.ft
Atmospheric concentration = -1.0000 mg/l, -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon 6
Polygon A6
Polygon area = 15725. sq. ft.
40 cells, each cell 5.000 ft. thick.
Soil Properties:
Bulk density = 1.7300 g/ml, 48988. g/cu.ft.
Porosity = .5500 Volumetric water content = .2510
Organic carbon content = .00050000
Recharge Rate = .04760000 ft/yr
Conc. in recharge water = .00000 mg/l, .00000 g/cu.ft
Atmospheric concentration = -1.0000 mg/l, -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon 7
Polygon A7
Polygon area = 56708. sq. ft.
40 cells, each cell 5.000 ft. thick.
Soil Properties:
Bulk density = 1.7300 g/ml, 48988. g/cu.ft.
Porosity = .5500 Volumetric water content = .2510
Organic carbon content = .00050000
Recharge Rate = .04760000 ft/yr
Conc. in recharge water = .00000 mg/l, .00000 g/cu.ft
Atmospheric concentration = -1.0000 mg/l, -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

```
OSCO -- 1,1-Dichloroethene (1,1-DCE)
  7
        1.0     1000.      50.     1000.
      64.56      6.40     400.     .7435
 Polygon A1
     34398.        5.     .0467      1.73      .550      .251     .0005
         0.       -1.       -1.
   40
    1   10        10
   11   20        10
   21   40        80
 Polygon A2
     36511.        5.     .0476      1.73      .550      .251     .0005
         0.       -1.       -1.
   40
    1   10        10
   11   20       260
   21   40        49
 Polygon A3
     30663.        5.     .0476      1.73      .550      .251     .0005
         0.       -1.       -1.
   40
    1   10         2
   11   20        11
   21   40        38
 Polygon A4
     30221.        5.     .0476      1.73      .550      .251     .0005
         0.       -1.       -1.
   40
    1   10        10
   11   20         2
   21   40         0
 Polygon A5
     33661.        5.     .0476      1.73      .550      .251     .0005
         0.       -1.       -1.
   40
    1   10        10
   11   20         8
   21   40        62
 Polygon A6
     15725.        5.     .0476      1.73      .550      .251     .0005
         0.       -1.       -1.
   40
    1   10         2
   11   20         9
   21   40       971
 Polygon A7
     56708.        5.     .0476      1.73      .550      .251     .0005
         0.       -1.       -1.
   40
    1   10         2
   11   20       219
   21   40        45
```

V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89; M. Sukop and P. Lawson, 1/90
DSCO -- Acetone

GROUNDWATER IMPACT OF POLYGON 1

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	109.49	.37661E+07
100.00	109.49	.37661E+07
150.00	109.48	.37660E+07
200.00	109.48	.37658E+07
250.00	109.44	.37647E+07
300.00	109.21	.37566E+07
350.00	108.17	.37208E+07
400.00	105.14	.36166E+07
450.00	98.900	.34020E+07
500.00	89.144	.30664E+07
550.00	76.936	.26464E+07
600.00	64.213	.22088E+07
650.00	52.820	.18169E+07
700.00	43.817	.15072E+07
750.00	37.364	.12853E+07
800.00	32.996	.11350E+07
850.00	29.984	.10314E+07
900.00	27.616	.94995E+06
950.00	25.345	.87180E+06
1000.00	22.844	.78578E+06

****

GROUNDWATER IMPACT OF POLYGON 2

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	1.3787	50336.
100.00	1.3787	50336.
150.00	1.3787	50336.
200.00	1.3787	50336.
250.00	1.3787	50336.
300.00	1.3787	50336.
350.00	1.3787	50336.
400.00	1.3787	50336.
450.00	1.3787	50336.
500.00	1.3787	50336.
550.00	1.3787	50336.
600.00	1.3787	50336.
650.00	1.3787	50336.
700.00	1.3787	50336.
750.00	1.3787	50336.
800.00	1.3787	50336.
850.00	1.3787	50336.
900.00	1.3787	50336.
950.00	1.3787	50336.
1000.00	1.3787	50336.

****

GROUNDWATER IMPACT OF POLYGON 3

Time	Mass per area (g/sq.ft.)	Total Mass (g)

50.00	129.22	.39622E+07
100.00	129.22	.39621E+07
150.00	129.21	.39621E+07
200.00	129.21	.39619E+07
250.00	129.17	.39607E+07
300.00	128.90	.39525E+07
350.00	127.75	.39171E+07
400.00	124.48	.38169E+07
450.00	117.94	.36164E+07
500.00	107.94	.33098E+07
550.00	95.550	.29298E+07
600.00	82.377	.25259E+07
650.00	69.691	.21369E+07
700.00	58.020	.17791E+07
750.00	47.373	.14526E+07
800.00	37.653	.11545E+07
850.00	28.910	.88647E+06
900.00	21.329	.65401E+06
950.00	15.089	.46266E+06
1000.00	10.245	.31413E+06

****

GROUNDWATER IMPACT OF POLYGON 4

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	1.4683	44375.
100.00	1.4683	44375.
150.00	1.4683	44375.
200.00	1.4684	44376.
250.00	1.4685	44379.
300.00	1.4688	44388.
350.00	1.4696	44412.
400.00	1.4733	44524.
450.00	1.4920	45088.
500.00	1.5690	47417.
550.00	1.8126	54779.
600.00	2.4119	72890.
650.00	3.5928	.10858E+06
700.00	5.5055	.16638E+06
750.00	8.0999	.24479E+06
800.00	11.073	.33463E+06
850.00	13.930	.42097E+06
900.00	16.139	.48773E+06
950.00	17.296	.52270E+06
1000.00	17.237	.52091E+06

****

GROUNDWATER IMPACT OF POLYGON 5

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	129.22	.43496E+07
100.00	129.21	.43495E+07
150.00	129.21	.43494E+07
200.00	129.20	.43492E+07
250.00	129.15	.43474E+07
300.00	128.79	.43351E+07
350.00	127.20	.42818E+07
400.00	122.73	.41313E+07
450.00	113.81	.38309E+07
500.00	100.31	.33764E+07

550.00	83.978	.28268E+07
600.00	67.565	.22743E+07
650.00	53.447	.17991E+07
700.00	42.812	.14411E+07
750.00	35.636	.11996E+07
800.00	31.139	.10482E+07
850.00	28.286	.95213E+06
900.00	26.138	.87982E+06
950.00	24.024	.80866E+06
1000.00	21.587	.72663E+06

****

GROUNDWATER IMPACT OF POLYGON 6

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	822.29	.12930E+08
100.00	822.28	.12930E+08
150.00	822.26	.12930E+08
200.00	822.20	.12929E+08
250.00	821.79	.12923E+08
300.00	818.91	.12877E+08
350.00	806.40	.12681E+08
400.00	771.09	.12125E+08
450.00	700.63	.11017E+08
500.00	593.95	.93399E+07
550.00	464.80	.73089E+07
600.00	334.68	.52628E+07
650.00	222.21	.34943E+07
700.00	136.81	.21514E+07
750.00	78.742	.12382E+07
800.00	42.828	.67346E+06
850.00	22.347	.35141E+06
900.00	11.439	.17988E+06
950.00	5.9308	93262.
1000.00	3.2365	50894.

****

GROUNDWATER IMPACT OF POLYGON 7

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	70.482	.39969E+07
100.00	70.482	.39969E+07
150.00	70.484	.39970E+07
200.00	70.490	.39974E+07
250.00	70.539	.40001E+07
300.00	70.886	.40198E+07
350.00	72.402	.41058E+07
400.00	76.673	.43480E+07
450.00	85.127	.48274E+07
500.00	97.619	.55358E+07
550.00	111.80	.63400E+07
600.00	123.86	.70236E+07
650.00	130.05	.73749E+07
700.00	128.14	.72666E+07
750.00	118.04	.66939E+07
800.00	101.64	.57636E+07
850.00	81.934	.46463E+07
900.00	62.015	.35167E+07
950.00	44.232	.25083E+07
1000.00	29.856	.16931E+07

****

****

OTAL GROUNDWATER IMPACT

Time (yr)	Mass (g)	Cumulative Mass (g)
50.00	.29100E+08	.29100E+08
100.00	.29100E+08	.58199E+08
150.00	.29099E+08	.87299E+08
200.00	.29098E+08	.11640E+09
250.00	.29090E+08	.14549E+09
300.00	.29036E+08	.17452E+09
350.00	.28801E+08	.20332E+09
400.00	.28133E+08	.23146E+09
450.00	.26789E+08	.25825E+09
500.00	.24726E+08	.28297E+09
550.00	.22157E+08	.30513E+09
600.00	.19419E+08	.32455E+09
650.00	.16781E+08	.34133E+09
700.00	.14362E+08	.35569E+09
750.00	.12165E+08	.36786E+09
800.00	.10160E+08	.37802E+09
850.00	.83390E+07	.38635E+09
900.00	.67185E+07	.39307E+09
950.00	.53177E+07	.39839E+09
1000.00	.41418E+07	.40253E+09

```
V-Leach, VER 1.02
 J. Turin, 6/89; F. Carlson, 7/89;  M. Sukop and P. Lawson, 1/90
ISCO -- Benzene
 7 polygons.
Timestep =   1.00 years.  Simulation length = 1000.00 years.
Printout every  50.00 years.  Vertical profile stored every ****** years.
oc =      64.560    ml/g,       .22799E-02cu.ft./g
h =      .24500     (dimensionless).
Aqueous solubility =     178.00     mg/l,      5.0404     g/cu.ft
Free air diffusion coefficient = .79480     sq. m/day,  3122.8     sq.ft./yr

Polygon   1
olygon A1
olygon area =      34398.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04670000 ft/yr
onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.


Polygon   2
Polygon A2
olygon area =      36511.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2500
Organic carbon content = 1.00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.


olygon   3
Polygon A3
Polygon area =      30663.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
oil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
echarge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.


olygon   4
olygon A4
Polygon area =      30221.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
oil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
echarge Rate =  .04760000 ft/yr
onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.
```

olygon 5
olygon A5
Polygon area = 33661. sq. ft.
40 cells, each cell 5.000 ft. thick.
oil Properties:
Bulk density = 1.7300 g/ml, 48988. g/cu.ft.
Porosity = .5500 Volumetric water content = .2510
Organic carbon content = .00050000
echarge Rate = .04760000 ft/yr
onc. in recharge water = .00000 mg/l, .00000 g/cu.ft
Atmospheric concentration = -1.0000 mg/l, -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.

Polygon 6
olygon A6
olygon area = 15725. sq. ft.
40 cells, each cell 5.000 ft. thick.
Soil Properties:
Bulk density = 1.7300 g/ml, 48988. g/cu.ft.
Porosity = .5500 Volumetric water content = .2510
Organic carbon content = .00050000
echarge Rate = .04760000 ft/yr
onc. in recharge water = .00000 mg/l, .00000 g/cu.ft
tmospheric concentration = -1.0000 mg/l, -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon 7
Polygon A7
olygon area = 56708. sq. ft.
40 cells, each cell 5.000 ft. thick.
Soil Properties:
Bulk density = 1.7300 g/ml, 48988. g/cu.ft.
Porosity = .5500 Volumetric water content = .2510
Organic carbon content = .00050000
Recharge Rate = .04760000 ft/yr
onc. in recharge water = .00000 mg/l, .00000 g/cu.ft
tmospheric concentration = -1.0000 mg/l, -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

```
OSCO -- Benzene
  7
        1.0      1000.       50.      1000.
      64.56       .245      178.      .7948
 Polygon A1
     34398.         5.     .0467      1.73      .550      .251     .0005
         0.        -1.       -1.
  40
   1   10          8
  11   20          8
  21   40          8
Polygon A2
     36511.         5.     .0476      1.73      .550      .251     .0005
         0.        -1.       -1.
  40
   1   10          8
  11   20         34
  21   40          8
olygon A3
     30663.         5.     .0476      1.73      .550      .251     .0005
         0.        -1.       -1.
  40
   1   10          8
  11   20          8
  21   40          8
olygon A4
     30221.         5.     .0476      1.73      .550      .251     .0005
         0.        -1.       -1.
  40
   1   10          8
  11   20          8
  21   40          1
olygon A5
     33661.         5.     .0476      1.73      .550      .251     .0005
         0.        -1.       -1.
  40
   1   10          8
  11   20          8
  21   40          8
olygon A6
     15725.         5.     .0476      1.73      .550      .251     .0005
         0.        -1.       -1.
  40
   1   10          8
  11   20          8
  21   40          8
Polygon A7
     56708.         5.     .0476      1.73      .550      .251     .0005
         0.        -1.       -1.
  40
   1   10          8
  11   20          8
  21   40          8
```

V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89; M. Sukop and P. Lawson, 1/90
ISCO -- Benzene

GROUNDWATER IMPACT OF POLYGON 1

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.48146E-03	16.561
100.00	.48050E-03	16.528
150.00	.47637E-03	16.386
200.00	.46848E-03	16.115
250.00	.45784E-03	15.749
300.00	.44558E-03	15.327
350.00	.43247E-03	14.876
400.00	.41905E-03	14.414
450.00	.40560E-03	13.952
500.00	.39232E-03	13.495
550.00	.37932E-03	13.048
600.00	.36665E-03	12.612
650.00	.35434E-03	12.188
700.00	.34240E-03	11.778
750.00	.33085E-03	11.381
800.00	.31967E-03	10.996
850.00	.30886E-03	10.624
900.00	.29841E-03	10.265
950.00	.28832E-03	9.9175
1000.00	.27856E-03	9.5818

****

GROUNDWATER IMPACT OF POLYGON 2

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.16646E-05	.60776E-01
100.00	.16647E-05	.60781E-01
150.00	.16649E-05	.60786E-01
200.00	.16650E-05	.60791E-01
250.00	.16652E-05	.60797E-01
300.00	.16653E-05	.60803E-01
350.00	.16655E-05	.60810E-01
400.00	.16657E-05	.60817E-01
450.00	.16659E-05	.60824E-01
500.00	.16661E-05	.60832E-01
550.00	.16664E-05	.60840E-01
600.00	.16666E-05	.60849E-01
650.00	.16668E-05	.60858E-01
700.00	.16671E-05	.60868E-01
750.00	.16674E-05	.60878E-01
800.00	.16677E-05	.60888E-01
850.00	.16680E-05	.60899E-01
900.00	.16683E-05	.60911E-01
950.00	.16686E-05	.60923E-01
1000.00	.16689E-05	.60935E-01

****

GROUNDWATER IMPACT OF POLYGON 3

Time	Mass per area (g/sq.ft.)	Total Mass (g)

50.00	.49074E-03	15.048
100.00	.48974E-03	15.017
150.00	.48543E-03	14.885
200.00	.47721E-03	14.633
250.00	.46613E-03	14.293
300.00	.45336E-03	13.902
350.00	.43974E-03	13.484
400.00	.42580E-03	13.056
450.00	.41184E-03	12.628
500.00	.39807E-03	12.206
550.00	.38460E-03	11.793
600.00	.37148E-03	11.391
650.00	.35874E-03	11.000
700.00	.34640E-03	10.622
750.00	.33447E-03	10.256
800.00	.32293E-03	9.9019
850.00	.31178E-03	9.5601
900.00	.30101E-03	9.2298
950.00	.29061E-03	8.9109
1000.00	.28056E-03	8.6030

****

GROUNDWATER IMPACT OF POLYGON 4

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.77778E-04	2.3505
100.00	.14258E-03	4.3088
150.00	.19728E-03	5.9621
200.00	.22901E-03	6.9210
250.00	.24494E-03	7.4022
300.00	.25108E-03	7.5878
350.00	.25133E-03	7.5954
400.00	.24809E-03	7.4976
450.00	.24285E-03	7.3391
500.00	.23648E-03	7.1468
550.00	.22955E-03	6.9372
600.00	.22237E-03	6.7203
650.00	.21515E-03	6.5020
700.00	.20799E-03	6.2857
750.00	.20097E-03	6.0736
800.00	.19413E-03	5.8668
850.00	.18748E-03	5.6660
900.00	.18104E-03	5.4713
950.00	.17481E-03	5.2828
1000.00	.16878E-03	5.1006

****

GROUNDWATER IMPACT OF POLYGON 5

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.49074E-03	16.519
100.00	.48974E-03	16.485
150.00	.48543E-03	16.340
200.00	.47721E-03	16.063
250.00	.46613E-03	15.690
300.00	.45336E-03	15.261
350.00	.43974E-03	14.802
400.00	.42580E-03	14.333
450.00	.41184E-03	13.863
500.00	.39807E-03	13.400

550.00	.38460E-03	12.946
600.00	.37148E-03	12.504
650.00	.35874E-03	12.076
700.00	.34640E-03	11.660
750.00	.33447E-03	11.258
800.00	.32293E-03	10.870
850.00	.31178E-03	10.495
900.00	.30101E-03	10.132
950.00	.29061E-03	9.7822
1000.00	.28056E-03	9.4441

****

GROUNDWATER IMPACT OF POLYGON 6

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.49074E-03	7.7169
100.00	.48974E-03	7.7012
150.00	.48543E-03	7.6334
200.00	.47721E-03	7.5041
250.00	.46613E-03	7.3299
300.00	.45336E-03	7.1292
350.00	.43974E-03	6.9150
400.00	.42580E-03	6.6957
450.00	.41184E-03	6.4762
500.00	.39807E-03	6.2597
550.00	.38460E-03	6.0478
600.00	.37148E-03	5.8415
650.00	.35874E-03	5.6412
700.00	.34640E-03	5.4472
750.00	.33447E-03	5.2595
800.00	.32293E-03	5.0780
850.00	.31178E-03	4.9027
900.00	.30101E-03	4.7334
950.00	.29061E-03	4.5698
1000.00	.28056E-03	4.4119

****

ROUNDWATER IMPACT OF POLYGON 7

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.49074E-03	27.829
100.00	.48974E-03	27.772
150.00	.48543E-03	27.528
200.00	.47721E-03	27.061
250.00	.46613E-03	26.433
300.00	.45336E-03	25.709
350.00	.43974E-03	24.937
400.00	.42580E-03	24.146
450.00	.41184E-03	23.355
500.00	.39807E-03	22.574
550.00	.38460E-03	21.810
600.00	.37148E-03	21.066
650.00	.35874E-03	20.343
700.00	.34640E-03	19.644
750.00	.33447E-03	18.967
800.00	.32293E-03	18.313
850.00	.31178E-03	17.680
900.00	.30101E-03	17.070
950.00	.29061E-03	16.480
1000.00	.28056E-03	15.910

****

****

TOTAL GROUNDWATER IMPACT

Time (yr)	Mass (g)	Cumulative Mass (g)
50.00	86.084	86.084
100.00	87.874	173.96
150.00	88.795	262.75
200.00	88.358	351.11
250.00	86.958	438.07
300.00	84.976	523.05
350.00	82.670	605.72
400.00	80.203	685.92
450.00	77.674	763.59
500.00	75.142	838.74
550.00	72.642	911.38
600.00	70.195	981.57
650.00	67.811	1049.4
700.00	65.498	1114.9
750.00	63.256	1178.1
800.00	61.086	1239.2
850.00	58.989	1298.2
900.00	56.962	1355.2
950.00	55.004	1410.2
1000.00	53.113	1463.3

```
 V-Leach, VER 1.02
 J. Turin, 6/89; F. Carlson, 7/89;  M. Sukop and P. Lawson, 1/90
 SCO -- Toluene
 7 polygons.
 Timestep =   1.00 years.  Simulation length = 1000.00 years.
 rintout every  50.00 years.  Vertical profile stored every ****** years.
 oc =      257.04    ml/g,       .90772E-02cu.ft./g
 h =      .24300     (dimensionless).
 Aqueous solubility =     512.00     mg/l,      14.498     g/cu.ft
 ree air diffusion coefficient = .71720     sq. m/day,  2817.9     sq.ft./yr

 Polygon   1
 olygon A1
 olygon area =      34398.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
 Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
 echarge Rate =  .04670000 ft/yr
 onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
 tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
 Water table is impermeable to gas diffusion.

 olygon   2
 Polygon A2
 olygon area =      36511.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
 Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2500
 Organic carbon content = 1.00050000
 Recharge Rate =  .04760000 ft/yr
 onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
 tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
 ater table is impermeable to gas diffusion.

 olygon   3
 Polygon A3
 Polygon area =      30663.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
 oil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
 echarge Rate =  .04760000 ft/yr
 Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
 tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
 ater table is impermeable to gas diffusion.

 olygon   4
 olygon A4
 Polygon area =      30221.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
 oil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
 echarge Rate =  .04760000 ft/yr
 Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
 Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
 ater table is impermeable to gas diffusion.
```

```
'olygon   5
'olygon A5
 Polygon area =      33661.    sq. ft.
  40 cells, each cell  5.000 ft. thick.
 :oil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
  Porosity =  .5500 Volumetric water content =  .2510
  Organic carbon content =  .00050000
 :echarge Rate =  .04760000 ft/yr
 Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
 Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
 Water table is impermeable to gas diffusion.

 Polygon   6
 'olygon A6
 'olygon area =      15725.    sq. ft.
  40 cells, each cell  5.000 ft. thick.
 Soil Properties:
  Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
  Organic carbon content =  .00050000
 Recharge Rate =  .04760000 ft/yr
 :onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
 Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
 Water table is impermeable to gas diffusion.

 Polygon   7
 Polygon A7
 'olygon area =      56708.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
 Soil Properties:
  Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
  Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
 Recharge Rate =  .04760000 ft/yr
 Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
 tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
 Water table is impermeable to gas diffusion.
```

```
OSCO -- Toluene
  7
       1.0     1000.      50.     1000.
    257.04      .243     512.     .7172
Polygon A1
    34398.       5.     .0467     1.73      .550      .251     .0005
        0.      -1.      -1.
   40
    1   10       11
   11   20       11
   21   40       11
Polygon A2
    36511.       5.     .0476     1.73      .550      .251     .0005
        0.      -1.      -1.
   40
    1   10       11
   11   20     1168
   21   40       11
Polygon A3
    30663.       5.     .0476     1.73      .550      .251     .0005
        0.      -1.      -1.
   40
    1   10      292
   11   20       11
   21   40       11
Polygon A4
    30221.       5.     .0476     1.73      .550      .251     .0005
        0.      -1.      -1.
   40
    1   10       11
   11   20       11
   21   40        1
Polygon A5
    33661.       5.     .0476     1.73      .550      .251     .0005
        0.      -1.      -1.
   40
    1   10       11
   11   20       11
   21   40       11
Polygon A6
    15725.       5.     .0476     1.73      .550      .251     .0005
        0.      -1.      -1.
   40
    1   10      292
   11   20       99
   21   40     1079
Polygon A7
    56708.       5.     .0476     1.73      .550      .251     .0005
        0.      -1.      -1.
   40
    1   10      292
   11   20     5168
   21   40      110
```

V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89; M. Sukop and P. Lawson, 1/90
)SCO -- Toluene

GROUNDWATER IMPACT OF POLYGON 1

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.46089E-03	15.854
100.00	.46073E-03	15.848
150.00	.45976E-03	15.815
200.00	.45729E-03	15.730
250.00	.45311E-03	15.586
300.00	.44742E-03	15.390
350.00	.44055E-03	15.154
400.00	.43284E-03	14.889
450.00	.42456E-03	14.604
500.00	.41592E-03	14.307
550.00	.40708E-03	14.003
600.00	.39814E-03	13.695
650.00	.38920E-03	13.388
700.00	.38030E-03	13.082
750.00	.37151E-03	12.779
800.00	.36283E-03	12.481
850.00	.35431E-03	12.187
900.00	.34594E-03	11.899
950.00	.33773E-03	11.617
1000.00	.32970E-03	11.341

****

GROUNDWATER IMPACT OF POLYGON 2

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.57621E-06	.21038E-01
100.00	.57645E-06	.21047E-01
150.00	.57668E-06	.21055E-01
200.00	.57693E-06	.21064E-01
250.00	.57718E-06	.21073E-01
300.00	.57743E-06	.21083E-01
350.00	.57769E-06	.21092E-01
400.00	.57796E-06	.21102E-01
450.00	.57823E-06	.21112E-01
500.00	.57850E-06	.21122E-01
550.00	.57878E-06	.21132E-01
600.00	.57907E-06	.21142E-01
650.00	.57936E-06	.21153E-01
700.00	.57966E-06	.21164E-01
750.00	.57997E-06	.21175E-01
800.00	.58028E-06	.21186E-01
850.00	.58059E-06	.21198E-01
900.00	.58091E-06	.21210E-01
950.00	.58124E-06	.21222E-01
1000.00	.58157E-06	.21234E-01

****

GROUNDWATER IMPACT OF POLYGON 3

Time	Mass per area (g/sq.ft.)	Total Mass (g)

50.00	.48724E-03	14.940
100.00	.68773E-03	21.088
150.00	.11467E-02	35.160
200.00	.16850E-02	51.666
250.00	.21594E-02	66.213
300.00	.25241E-02	77.398
350.00	.27830E-02	85.335
400.00	.29549E-02	90.606
450.00	.30601E-02	93.831
500.00	.31156E-02	95.535
550.00	.31350E-02	96.128
600.00	.31282E-02	95.921
650.00	.31028E-02	95.141
700.00	.30642E-02	93.959
750.00	.30165E-02	92.496
800.00	.29627E-02	90.844
850.00	.29047E-02	89.067
900.00	.28442E-02	87.213
950.00	.27824E-02	85.316
1000.00	.27199E-02	83.401

****

ROUNDWATER IMPACT OF POLYGON 4

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.49369E-04	1.4920
100.00	.85115E-04	2.5723
150.00	.13001E-03	3.9292
200.00	.16657E-03	5.0339
250.00	.19287E-03	5.8286
300.00	.21072E-03	6.3682
350.00	.22218E-03	6.7145
400.00	.22893E-03	6.9185
450.00	.23225E-03	7.0187
500.00	.23308E-03	7.0440
550.00	.23215E-03	7.0157
600.00	.22995E-03	6.9493
650.00	.22687E-03	6.8561
700.00	.22317E-03	6.7445
750.00	.21907E-03	6.6205
800.00	.21470E-03	6.4884
850.00	.21017E-03	6.3514
900.00	.20555E-03	6.2119
950.00	.20090E-03	6.0715
1000.00	.19627E-03	5.9314

****

GROUNDWATER IMPACT OF POLYGON 5

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.46977E-03	15.813
100.00	.46960E-03	15.807
150.00	.46859E-03	15.773
200.00	.46602E-03	15.687
250.00	.46165E-03	15.540
300.00	.45572E-03	15.340
350.00	.44857E-03	15.099
400.00	.44054E-03	14.829
450.00	.43192E-03	14.539
500.00	.42294E-03	14.237

550.00	.41374E-03	13.927
600.00	.40446E-03	13.615
650.00	.39518E-03	13.302
700.00	.38595E-03	12.992
750.00	.37683E-03	12.685
800.00	.36785E-03	12.382
850.00	.35901E-03	12.085
900.00	.35035E-03	11.793
950.00	.34186E-03	11.507
1000.00	.33356E-03	11.228

****

GROUNDWATER IMPACT OF POLYGON 6

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.45439E-01	714.53
100.00	.42056E-01	661.33
150.00	.37864E-01	595.41
200.00	.34377E-01	540.58
250.00	.31662E-01	497.89
300.00	.29532E-01	464.39
350.00	.27826E-01	437.57
400.00	.26430E-01	415.61
450.00	.25261E-01	397.23
500.00	.24262E-01	381.51
550.00	.23389E-01	367.80
600.00	.22613E-01	355.59
650.00	.21911E-01	344.55
700.00	.21266E-01	334.40
750.00	.20665E-01	324.96
800.00	.20101E-01	316.09
850.00	.19566E-01	307.68
900.00	.19056E-01	299.66
950.00	.18567E-01	291.96
1000.00	.18095E-01	284.55

****

GROUNDWATER IMPACT OF POLYGON 7

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.77647E-02	440.32
100.00	.22369E-01	1268.5
150.00	.37134E-01	2105.8
200.00	.46331E-01	2627.3
250.00	.51481E-01	2919.4
300.00	.54292E-01	3078.8
350.00	.55731E-01	3160.4
400.00	.56311E-01	3193.3
450.00	.56324E-01	3194.0
500.00	.55951E-01	3172.9
550.00	.55313E-01	3136.7
600.00	.54492E-01	3090.1
650.00	.53547E-01	3036.5
700.00	.52519E-01	2978.3
750.00	.51441E-01	2917.1
800.00	.50333E-01	2854.3
850.00	.49211E-01	2790.6
900.00	.48086E-01	2726.9
950.00	.46968E-01	2663.4
1000.00	.45860E-01	2600.6

****

****

OTAL GROUNDWATER IMPACT

Time (yr)	Mass (g)	Cumulative Mass (g)
50.00	1203.0	1203.0
100.00	1985.2	3188.1
150.00	2771.9	5960.1
200.00	3256.1	9216.1
250.00	3520.5	12737.
300.00	3657.7	16394.
350.00	3720.3	20115.
400.00	3736.1	23851.
450.00	3721.3	27572.
500.00	3685.5	31258.
550.00	3635.6	34893.
600.00	3575.9	38469.
650.00	3509.8	41979.
700.00	3439.5	45418.
750.00	3366.7	48785.
800.00	3292.6	52078.
850.00	3218.0	55296.
900.00	3143.7	58439.
950.00	3069.9	61509.
1000.00	2997.1	64506.

```
V-Leach, VER 1.02
 J. Turin, 6/89; F. Carlson, 7/89;  M. Sukop and P. Lawson, 1/90
SCO -- o-Xylene
 7 polygons.
Timestep =   1.00 years.  Simulation length = 1000.00 years.
Printout every  50.00 years.  Vertical profile stored every ****** years.
oc =      691.83    ml/g,       .24432E-01cu.ft./g
h =      .21600     (dimensionless).
Aqueous solubility =     213.00     mg/l,      6.0315     g/cu.ft
ree air diffusion coefficient = .65630     sq. m/day,  2578.6     sq.ft./yr

Polygon   1
olygon A1
olygon area =      34398.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2510
Organic carbon content =  .00050000
Recharge Rate =  .04670000 ft/yr
onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

olygon   2
Polygon A2
olygon area =      36511.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2500
Organic carbon content = 1.00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.

olygon   3
Polygon A3
Polygon area =      30663.    sq. ft.
40 cells, each cell  5.000 ft. thick.
oil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2510
Organic carbon content =  .00050000
echarge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.

olygon   4
olygon A4
Polygon area =      30221.    sq. ft.
40 cells, each cell  5.000 ft. thick.
oil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2510
Organic carbon content =  .00050000
echarge Rate =  .04760000 ft/yr
onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.
```

olygon 5
olygon A5
Polygon area = 33661. sq. ft.
40 cells, each cell 5.000 ft. thick.
oil Properties:
Bulk density = 1.7300 g/ml, 48988. g/cu.ft.
Porosity = .5500 Volumetric water content = .2510
Organic carbon content = .00050000
echarge Rate = .04760000 ft/yr
onc. in recharge water = .00000 mg/l, .00000 g/cu.ft
Atmospheric concentration = -1.0000 mg/l, -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.

Polygon 6
olygon A6
olygon area = 15725. sq. ft.
40 cells, each cell 5.000 ft. thick.
Soil Properties:
Bulk density = 1.7300 g/ml, 48988. g/cu.ft.
Porosity = .5500 Volumetric water content = .2510
Organic carbon content = .00050000
echarge Rate = .04760000 ft/yr
onc. in recharge water = .00000 mg/l, .00000 g/cu.ft
tmospheric concentration = -1.0000 mg/l, -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon 7
Polygon A7
olygon area = 56708. sq. ft.
40 cells, each cell 5.000 ft. thick.
Soil Properties:
Bulk density = 1.7300 g/ml, 48988. g/cu.ft.
Porosity = .5500 Volumetric water content = .2510
Organic carbon content = .00050000
Recharge Rate = .04760000 ft/yr
onc. in recharge water = .00000 mg/l, .00000 g/cu.ft
tmospheric concentration = -1.0000 mg/l, -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.

```
OSCO -- o-Xylene
  7
       1.0     1000.      50.     1000.
    691.83     .216     213.     .6563
Polygon A1
    34398.       5.     .0467     1.73     .550     .251     .0005
        0.      -1.      -1.
   40
    1   10       21
   11   20       21
   21   40       21
Polygon A2
    36511.       5.     .0476     1.73     .550     .251     .0005
        0.      -1.      -1.
   40
    1   10       21
   11   20     2666
   21   40       15
Polygon A3
    30663.       5.     .0476     1.73     .550     .251     .0005
        0.      -1.      -1.
   40
    1   10     2454
   11   20       21
   21   40       21
Polygon A4
    30221.       5.     .0476     1.73     .550     .251     .0005
        0.      -1.      -1.
   40
    1   10       21
   11   20       21
   21   40        2
Polygon A5
    33661.       5.     .0476     1.73     .550     .251     .0005
        0.      -1.      -1.
   40
    1   10       21
   11   20       21
   21   40       21
Polygon A6
    15725.       5.     .0476     1.73     .550     .251     .0005
        0.      -1.      -1.
   40
    1   10     2454
   11   20      288
   21   40      762
Polygon A7
    56708.       5.     .0476     1.73     .550     .251     .0005
        0.      -1.      -1.
   40
    1   10     2454
   11   20     6770
   21   40       21
```

V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89; M. Sukop and P. Lawson, 1/90
ISCO -- o-Xylene

GROUNDWATER IMPACT OF POLYGON 1

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.52561E-03	18.080
100.00	.52560E-03	18.079
150.00	.52552E-03	18.077
200.00	.52526E-03	18.068
250.00	.52465E-03	18.047
300.00	.52355E-03	18.009
350.00	.52187E-03	17.951
400.00	.51958E-03	17.873
450.00	.51670E-03	17.773
500.00	.51326E-03	17.655
550.00	.50932E-03	17.519
600.00	.50494E-03	17.369
650.00	.50019E-03	17.205
700.00	.49512E-03	17.031
750.00	.48980E-03	16.848
800.00	.48428E-03	16.658
850.00	.47858E-03	16.462
900.00	.47276E-03	16.262
950.00	.46684E-03	16.058
1000.00	.46085E-03	15.852

****

GROUNDWATER IMPACT OF POLYGON 2

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.29203E-06	.10662E-01
100.00	.29208E-06	.10664E-01
150.00	.29213E-06	.10666E-01
200.00	.29217E-06	.10668E-01
250.00	.29222E-06	.10669E-01
300.00	.29227E-06	.10671E-01
350.00	.29232E-06	.10673E-01
400.00	.29236E-06	.10675E-01
450.00	.29241E-06	.10676E-01
500.00	.29246E-06	.10678E-01
550.00	.29251E-06	.10680E-01
600.00	.29256E-06	.10682E-01
650.00	.29261E-06	.10684E-01
700.00	.29266E-06	.10685E-01
750.00	.29271E-06	.10687E-01
800.00	.29276E-06	.10689E-01
850.00	.29282E-06	.10691E-01
900.00	.29287E-06	.10693E-01
950.00	.29292E-06	.10695E-01
1000.00	.29297E-06	.10697E-01

****

GROUNDWATER IMPACT OF POLYGON 3

Time	Mass per area (g/sq.ft.)	Total Mass (g)

50.00	.54695E-03	16.771
100.00	.69275E-03	21.242
150.00	.11825E-02	36.259
200.00	.20910E-02	64.116
250.00	.33300E-02	102.11
300.00	.47464E-02	145.54
350.00	.61996E-02	190.10
400.00	.75904E-02	232.74
450.00	.88606E-02	271.69
500.00	.99828E-02	306.10
550.00	.10950E-01	335.76
600.00	.11767E-01	360.81
650.00	.12445E-01	381.60
700.00	.12998E-01	398.55
750.00	.13440E-01	412.11
800.00	.13786E-01	422.71
850.00	.14048E-01	430.76
900.00	.14239E-01	436.61
950.00	.14369E-01	440.58
1000.00	.14446E-01	442.97

****

GROUNDWATER IMPACT OF POLYGON 4

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.52711E-04	1.5930
100.00	.64035E-04	1.9352
150.00	.85834E-04	2.5940
200.00	.11238E-03	3.3962
250.00	.13898E-03	4.2000
300.00	.16329E-03	4.9349
350.00	.18451E-03	5.5759
400.00	.20251E-03	6.1200
450.00	.21750E-03	6.5732
500.00	.22980E-03	6.9447
550.00	.23972E-03	7.2446
600.00	.24759E-03	7.4823
650.00	.25368E-03	7.6665
700.00	.25826E-03	7.8049
750.00	.26155E-03	7.9043
800.00	.26374E-03	7.9706
850.00	.26500E-03	8.0087
900.00	.26548E-03	8.0231
950.00	.26529E-03	8.0174
1000.00	.26455E-03	7.9949

****

GROUNDWATER IMPACT OF POLYGON 5

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.53574E-03	18.033
100.00	.53572E-03	18.033
150.00	.53565E-03	18.030
200.00	.53537E-03	18.021
250.00	.53473E-03	18.000
300.00	.53358E-03	17.961
350.00	.53183E-03	17.902
400.00	.52945E-03	17.822
450.00	.52643E-03	17.720
500.00	.52284E-03	17.599

550.00	.51873E-03	17.461
600.00	.51416E-03	17.307
650.00	.50921E-03	17.141
700.00	.50394E-03	16.963
750.00	.49839E-03	16.776
800.00	.49264E-03	16.583
850.00	.48671E-03	16.383
900.00	.48065E-03	16.179
950.00	.47449E-03	15.972
1000.00	.46827E-03	15.762

****

GROUNDWATER IMPACT OF POLYGON 6

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.19407E-01	305.18
100.00	.19254E-01	302.77
150.00	.19143E-01	301.03
200.00	.19280E-01	303.17
250.00	.19695E-01	309.70
300.00	.20306E-01	319.31
350.00	.21004E-01	330.29
400.00	.21703E-01	341.28
450.00	.22346E-01	351.39
500.00	.22903E-01	360.15
550.00	.23361E-01	367.35
600.00	.23720E-01	372.99
650.00	.23984E-01	377.15
700.00	.24163E-01	379.96
750.00	.24265E-01	381.57
800.00	.24301E-01	382.13
850.00	.24279E-01	381.79
900.00	.24208E-01	380.67
950.00	.24096E-01	378.91
1000.00	.23948E-01	376.59

****

GROUNDWATER IMPACT OF POLYGON 7

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.11158E-02	63.274
100.00	.48799E-02	276.73
150.00	.11757E-01	666.69
200.00	.19583E-01	1110.5
250.00	.26852E-01	1522.7
300.00	.33013E-01	1872.1
350.00	.38024E-01	2156.3
400.00	.42026E-01	2383.2
450.00	.45193E-01	2562.8
500.00	.47681E-01	2703.9
550.00	.49617E-01	2813.7
600.00	.51103E-01	2898.0
650.00	.52219E-01	2961.3
700.00	.53030E-01	3007.2
750.00	.53586E-01	3038.7
800.00	.53930E-01	3058.3
850.00	.54097E-01	3067.7
900.00	.54115E-01	3068.8
950.00	.54010E-01	3062.8
1000.00	.53801E-01	3051.0

****

****

TOTAL GROUNDWATER IMPACT

Time (yr)	Mass (g)	Cumulative Mass (g)
50.00	422.94	422.94
100.00	638.80	1061.7
150.00	1042.7	2104.4
200.00	1517.3	3621.7
250.00	1974.8	5596.5
300.00	2377.9	7974.4
350.00	2718.1	10693.
400.00	2999.1	13692.
450.00	3228.0	16920.
500.00	3412.3	20332.
550.00	3559.0	23891.
600.00	3673.9	27565.
650.00	3762.0	31327.
700.00	3827.5	35154.
750.00	3874.0	39028.
800.00	3904.3	42933.
850.00	3921.1	46854.
900.00	3926.5	50780.
950.00	3922.4	54703.
1000.00	3910.1	58613.

```
V-Leach, VER 1.02
 J. Turin, 6/89; F. Carlson, 7/89;  M. Sukop and P. Lawson, 1/90
)SCO -- m,p-Xylenes
 7 polygons.
 Timestep =   1.00 years.  Simulation length = 1000.00 years.
 Printout every  50.00 years.  Vertical profile stored every ****** years.
 :oc =      691.83    ml/g,       .24432E-01cu.ft./g
Kh =      .31400     (dimensionless).
 Aqueous solubility =     146.00     mg/l,      4.1343     g/cu.ft
 'ree air diffusion coefficient = .65630     sq. m/day,  2578.6     sq.ft./yr

 Polygon   1
 'olygon A1
 'olygon area =      34398.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
 Soil Properties:
  Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
  Organic carbon content =  .00050000
 Recharge Rate =  .04670000 ft/yr
 :onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
 Water table is impermeable to gas diffusion.


 Polygon   2
 Polygon A2
 'olygon area =      36511.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
 Soil Properties:
  Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
  Porosity =  .5500 Volumetric water content =  .2500
Organic carbon content = 1.00050000
 Recharge Rate =  .04760000 ft/yr
 Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
 \tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.


 'olygon   3
 Polygon A3
 Polygon area =      30663.    sq. ft.
  40 cells, each cell  5.000 ft. thick.
 ;oil Properties:
  Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
  Porosity =  .5500 Volumetric water content =  .2510
  Organic carbon content =  .00050000
echarge Rate =  .04760000 ft/yr
 Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
 \tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
 /ater table is impermeable to gas diffusion.


 'olygon   4
 'olygon A4
 Polygon area =      30221.    sq. ft.
  40 cells, each cell  5.000 ft. thick.
 ;oil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
  Porosity =  .5500 Volumetric water content =  .2510
  Organic carbon content =  .00050000
 echarge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
 Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
 /ater table is impermeable to gas diffusion.
```

```
Polygon   5
Polygon A5
Polygon area =      33661.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   6
Polygon A6
Polygon area =      15725.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   7
Polygon A7
Polygon area =      56708.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.
```

```
OSCO -- m,p-Xylenes
  7
       1.0     1000.      50.     1000.
    691.83      .314     146.     .6563
Polygon A1
    34398.       5.     .0467      1.73      .550      .251     .0005
        0.      -1.       -1.
   40
    1   10       15
   11   20       15
   21   40       15
Polygon A2
    36511.       5.     .0476      1.73      .550      .251     .0005
        0.      -1.       -1.
   40
    1   10       15
   11   20     4206
   21   40       15
Polygon A3
    30663.       5.     .0476      1.73      .550      .251     .0005
        0.      -1.       -1.
   40
    1   10     3004
   11   20       15
   21   40       15
Polygon A4
    30221.       5.     .0476      1.73      .550      .251     .0005
        0.      -1.       -1.
   40
    1   10       15
   11   20       15
   21   40        2
Polygon A5
    33661.       5.     .0476      1.73      .550      .251     .0005
        0.      -1.       -1.
   40
    1   10       15
   11   20       15
   21   40       15
Polygon A6
    15725.       5.     .0476      1.73      .550      .251     .0005
        0.      -1.       -1.
   40
    1   10     3004
   11   20      144
   21   40      931
Polygon A7
    56708.       5.     .0476      1.73      .550      .251     .0005
        0.      -1.       -1.
   40
    1   10     3004
   11   20    13218
   21   40       45
```

V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89; M. Sukop and P. Lawson, 1/90
SCO -- m,p-Xylenes

GROUNDWATER IMPACT OF POLYGON 1

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.36377E-03	12.513
100.00	.36375E-03	12.512
150.00	.36361E-03	12.507
200.00	.36317E-03	12.492
250.00	.36227E-03	12.461
300.00	.36085E-03	12.413
350.00	.35891E-03	12.346
400.00	.35649E-03	12.263
450.00	.35367E-03	12.165
500.00	.35052E-03	12.057
550.00	.34710E-03	11.939
600.00	.34347E-03	11.815
650.00	.33968E-03	11.684
700.00	.33578E-03	11.550
750.00	.33178E-03	11.413
800.00	.32773E-03	11.273
850.00	.32364E-03	11.133
900.00	.31954E-03	10.991
950.00	.31542E-03	10.850
1000.00	.31132E-03	10.709

****

GROUNDWATER IMPACT OF POLYGON 2

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.29206E-06	.10663E-01
100.00	.29216E-06	.10667E-01
150.00	.29227E-06	.10671E-01
200.00	.29238E-06	.10675E-01
250.00	.29249E-06	.10679E-01
300.00	.29260E-06	.10683E-01
350.00	.29272E-06	.10687E-01
400.00	.29283E-06	.10692E-01
450.00	.29295E-06	.10696E-01
500.00	.29306E-06	.10700E-01
550.00	.29318E-06	.10704E-01
600.00	.29330E-06	.10709E-01
650.00	.29342E-06	.10713E-01
700.00	.29355E-06	.10718E-01
750.00	.29367E-06	.10722E-01
800.00	.29379E-06	.10727E-01
850.00	.29392E-06	.10731E-01
900.00	.29405E-06	.10736E-01
950.00	.29418E-06	.10741E-01
1000.00	.29431E-06	.10745E-01

****

GROUNDWATER IMPACT OF POLYGON 3

Time	Mass per area (g/sq.ft.)	Total Mass (g)

50.00	.40383E-03	12.383
100.00	.83593E-03	25.632
150.00	.21058E-02	64.569
200.00	.40704E-02	124.81
250.00	.63108E-02	193.51
300.00	.84921E-02	260.39
350.00	.10437E-01	320.03
400.00	.12082E-01	370.47
450.00	.13426E-01	411.68
500.00	.14496E-01	444.50
550.00	.15329E-01	470.04
600.00	.15963E-01	489.47
650.00	.16432E-01	503.84
700.00	.16765E-01	514.07
750.00	.16988E-01	520.92
800.00	.17123E-01	525.03
850.00	.17185E-01	526.95
900.00	.17190E-01	527.10
950.00	.17148E-01	525.82
1000.00	.17070E-01	523.42

****

ROUNDWATER IMPACT OF POLYGON 4

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.51632E-04	1.5604
100.00	.65453E-04	1.9780
150.00	.87783E-04	2.6529
200.00	.11056E-03	3.3413
250.00	.13038E-03	3.9401
300.00	.14657E-03	4.4295
350.00	.15941E-03	4.8175
400.00	.16938E-03	5.1187
450.00	.17695E-03	5.3477
500.00	.18257E-03	5.5174
550.00	.18659E-03	5.6390
600.00	.18932E-03	5.7216
650.00	.19101E-03	5.7726
700.00	.19186E-03	5.7982
750.00	.19203E-03	5.8034
800.00	.19166E-03	5.7923
850.00	.19086E-03	5.7681
900.00	.18972E-03	5.7335
950.00	.18830E-03	5.6907
1000.00	.18667E-03	5.6415

****

GROUNDWATER IMPACT OF POLYGON 5

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.37078E-03	12.481
100.00	.37076E-03	12.480
150.00	.37061E-03	12.475
200.00	.37015E-03	12.460
250.00	.36922E-03	12.428
300.00	.36774E-03	12.378
350.00	.36571E-03	12.310
400.00	.36319E-03	12.225
450.00	.36025E-03	12.126
500.00	.35697E-03	12.016

550.00	.35341E-03	11.896
600.00	.34963E-03	11.769
650.00	.34569E-03	11.636
700.00	.34163E-03	11.500
750.00	.33748E-03	11.360
800.00	.33327E-03	11.218
850.00	.32902E-03	11.075
900.00	.32476E-03	10.932
950.00	.32049E-03	10.788
1000.00	.31623E-03	10.645

****

GROUNDWATER IMPACT OF POLYGON 6

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.22912E-01	360.29
100.00	.22487E-01	353.61
150.00	.22340E-01	351.30
200.00	.22809E-01	358.68
250.00	.23689E-01	372.51
300.00	.24693E-01	388.30
350.00	.25636E-01	403.13
400.00	.26433E-01	415.66
450.00	.27057E-01	425.47
500.00	.27514E-01	432.65
550.00	.27821E-01	437.49
600.00	.28001E-01	440.31
650.00	.28074E-01	441.47
700.00	.28061E-01	441.26
750.00	.27977E-01	439.94
800.00	.27837E-01	437.73
850.00	.27651E-01	434.82
900.00	.27430E-01	431.34
950.00	.27181E-01	427.41
1000.00	.26909E-01	423.15

****

ROUNDWATER IMPACT OF POLYGON 7

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.32227E-02	182.75
100.00	.15754E-01	893.37
150.00	.34061E-01	1931.6
200.00	.50489E-01	2863.1
250.00	.63031E-01	3574.4
300.00	.72178E-01	4093.1
350.00	.78803E-01	4468.8
400.00	.83603E-01	4741.0
450.00	.87066E-01	4937.3
500.00	.89524E-01	5076.7
550.00	.91212E-01	5172.5
600.00	.92301E-01	5234.2
650.00	.92918E-01	5269.2
700.00	.93160E-01	5282.9
750.00	.93105E-01	5279.8
800.00	.92815E-01	5263.3
850.00	.92336E-01	5236.2
900.00	.91710E-01	5200.7
950.00	.90966E-01	5158.5
1000.00	.90131E-01	5111.2

****

****

OTAL GROUNDWATER IMPACT

Time (yr)	Mass (g)	Cumulative Mass (g)
50.00	581.99	581.99
100.00	1299.6	1881.6
150.00	2375.1	4256.6
200.00	3374.9	7631.6
250.00	4169.2	11801.
300.00	4771.0	16572.
350.00	5221.4	21793.
400.00	5556.7	27350.
450.00	5804.1	33154.
500.00	5983.5	39138.
550.00	6109.5	45247.
600.00	6193.3	51440.
650.00	6243.6	57684.
700.00	6267.1	63951.
750.00	6269.3	70220.
800.00	6254.4	76475.
850.00	6226.0	82701.
900.00	6186.8	88887.
950.00	6139.1	95027.
1000.00	6084.7	.10111E+06

```
V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89;  M. Sukop and P. Lawson, 1/90
)SCO -- Ethylbenzene
7 polygons.
Timestep =   1.00 years.  Simulation length = 1000.00 years.
?rintout every  50.00 years.  Vertical profile stored every ****** years.
:oc =      676.08    ml/g,       .23875E-01cu.ft./g
Kh =      .32100     (dimensionless).
Aqueous solubility =     152.00     mg/l,      4.3042     g/cu.ft
'ree air diffusion coefficient = .61080     sq. m/day,  2399.8     sq.ft./yr

Polygon   1
'olygon A1
'olygon area =      34398.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2510
Organic carbon content =  .00050000
'echarge Rate =  .04670000 ft/yr
:onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   2
Polygon A2
'olygon area =      36511.    sq. ft.
40 cells, each cell  5.000 ft. thick.
Soil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2500
Organic carbon content = 1.00050000
Recharge Rate =  .04760000 ft/yr
'onc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

olygon   3
Polygon A3
Polygon area =      30663.    sq. ft.
40 cells, each cell  5.000 ft. thick.
oil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2510
Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
tmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.

olygon   4
olygon A4
Polygon area =      30221.    sq. ft.
40 cells, each cell  5.000 ft. thick.
oil Properties:
Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
Porosity =  .5500 Volumetric water content =  .2510
Organic carbon content =  .00050000
echarge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
ater table is impermeable to gas diffusion.
```

```
Polygon   5
Polygon A5
Polygon area =      33661.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   6
Polygon A6
Polygon area =      15725.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.

Polygon   7
Polygon A7
Polygon area =      56708.    sq. ft.
 40 cells, each cell  5.000 ft. thick.
Soil Properties:
 Bulk density =     1.7300    g/ml,       48988.    g/cu.ft.
 Porosity =  .5500 Volumetric water content =  .2510
 Organic carbon content =  .00050000
Recharge Rate =  .04760000 ft/yr
Conc. in recharge water =      .00000    mg/l,       .00000    g/cu.ft
Atmospheric concentration =     -1.0000    mg/l,      -.28317E-01g/cu.ft
Water table is impermeable to gas diffusion.
```

```
OSCO -- Ethylbenzene
  7
       1.0      1000.       50.      1000.
    676.08       .321      152.      .6108
Polygon A1
    34398.        5.      .0467      1.73      .550      .251      .0005
        0.       -1.        -1.
  40
   1   10        15
  11   20        15
  21   40        15
Polygon A2
    36511.        5.      .0476      1.73      .550      .251      .0005
        0.       -1.        -1.
  40
   1   10        15
  11   20      1364
  21   40        15
Polygon A3
    30663.        5.      .0476      1.73      .550      .251      .0005
        0.       -1.        -1.
  40
   1   10       552
  11   20        15
  21   40        15
Polygon A4
    30221.        5.      .0476      1.73      .550      .251      .0005
        0.       -1.        -1.
  40
   1   10        15
  11   20        15
  21   40         1
Polygon A5
    33661.        5.      .0476      1.73      .550      .251      .0005
        0.       -1.        -1.
  40
   1   10        15
  11   20        15
  21   40        15
Polygon A6
    15725.        5.      .0476      1.73      .550      .251      .0005
        0.       -1.        -1.
  40
   1   10       552
  11   20        15
  21   40       224
Polygon A7
    56708.        5.      .0476      1.73      .550      .251      .0005
        0.       -1.        -1.
  40
   1   10       552
  11   20      3483
  21   40        15
```

V-Leach, VER 1.02
J. Turin, 6/89; F. Carlson, 7/89; M. Sukop and P. Lawson, 1/90
)SCO -- Ethylbenzene

GROUNDWATER IMPACT OF POLYGON 1

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.36827E-03	12.668
100.00	.36826E-03	12.667
150.00	.36813E-03	12.663
200.00	.36772E-03	12.649
250.00	.36688E-03	12.620
300.00	.36550E-03	12.573
350.00	.36360E-03	12.507
400.00	.36122E-03	12.425
450.00	.35841E-03	12.329
500.00	.35526E-03	12.220
550.00	.35182E-03	12.102
600.00	.34816E-03	11.976
650.00	.34432E-03	11.844
700.00	.34036E-03	11.708
750.00	.33629E-03	11.568
800.00	.33216E-03	11.426
850.00	.32799E-03	11.282
900.00	.32379E-03	11.138
950.00	.31958E-03	10.993
1000.00	.31538E-03	10.848

****

GROUNDWATER IMPACT OF POLYGON 2

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.29882E-06	.10910E-01
100.00	.29885E-06	.10911E-01
150.00	.29888E-06	.10912E-01
200.00	.29890E-06	.10913E-01
250.00	.29893E-06	.10914E-01
300.00	.29896E-06	.10915E-01
350.00	.29899E-06	.10917E-01
400.00	.29902E-06	.10918E-01
450.00	.29905E-06	.10919E-01
500.00	.29908E-06	.10920E-01
550.00	.29912E-06	.10921E-01
600.00	.29915E-06	.10922E-01
650.00	.29918E-06	.10923E-01
700.00	.29921E-06	.10925E-01
750.00	.29925E-06	.10926E-01
800.00	.29928E-06	.10927E-01
850.00	.29931E-06	.10928E-01
900.00	.29935E-06	.10929E-01
950.00	.29938E-06	.10931E-01
1000.00	.29942E-06	.10932E-01

****

GROUNDWATER IMPACT OF POLYGON 3

Time	Mass per area (g/sq.ft.)	Total Mass (g)

50.00	.38028E-03	11.660
100.00	.44937E-03	13.779
150.00	.66242E-03	20.312
200.00	.10024E-02	30.735
250.00	.13981E-02	42.871
300.00	.17893E-02	54.866
350.00	.21422E-02	65.685
400.00	.24433E-02	74.919
450.00	.26912E-02	82.519
500.00	.28897E-02	88.607
550.00	.30450E-02	93.370
600.00	.31636E-02	97.007
650.00	.32516E-02	99.704
700.00	.33143E-02	101.63
750.00	.33562E-02	102.91
800.00	.33813E-02	103.68
850.00	.33926E-02	104.03
900.00	.33929E-02	104.04
950.00	.33843E-02	103.77
1000.00	.33684E-02	103.29

****

GROUNDWATER IMPACT OF POLYGON 4

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.27151E-04	.82054
100.00	.41273E-04	1.2473
150.00	.64846E-04	1.9597
200.00	.89348E-04	2.7002
250.00	.11095E-03	3.3531
300.00	.12883E-03	3.8935
350.00	.14319E-03	4.3274
400.00	.15450E-03	4.6693
450.00	.16326E-03	4.9339
500.00	.16991E-03	5.1347
550.00	.17482E-03	5.2832
600.00	.17832E-03	5.3891
650.00	.18068E-03	5.4603
700.00	.18210E-03	5.5033
750.00	.18277E-03	5.5235
800.00	.18283E-03	5.5252
850.00	.18240E-03	5.5122
900.00	.18157E-03	5.4873
950.00	.18044E-03	5.4530
1000.00	.17905E-03	5.4110

****

GROUNDWATER IMPACT OF POLYGON 5

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.37537E-03	12.635
100.00	.37535E-03	12.635
150.00	.37522E-03	12.630
200.00	.37480E-03	12.616
250.00	.37391E-03	12.586
300.00	.37248E-03	12.538
350.00	.37050E-03	12.471
400.00	.36801E-03	12.388
450.00	.36509E-03	12.289
500.00	.36180E-03	12.179

550.00	.35822E-03	12.058
600.00	.35441E-03	11.930
650.00	.35042E-03	11.796
700.00	.34629E-03	11.657
750.00	.34207E-03	11.514
800.00	.33778E-03	11.370
850.00	.33344E-03	11.224
900.00	.32908E-03	11.077
950.00	.32471E-03	10.930
1000.00	.32034E-03	10.783

****

GROUNDWATER IMPACT OF POLYGON 6

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.55787E-02	87.725
100.00	.54367E-02	85.492
150.00	.52959E-02	83.278
200.00	.52637E-02	82.772
250.00	.53238E-02	83.716
300.00	.54267E-02	85.334
350.00	.55355E-02	87.046
400.00	.56307E-02	88.543
450.00	.57042E-02	89.698
500.00	.57545E-02	90.489
550.00	.57830E-02	90.937
600.00	.57924E-02	91.085
650.00	.57856E-02	90.979
700.00	.57654E-02	90.662
750.00	.57343E-02	90.173
800.00	.56944E-02	89.545
850.00	.56475E-02	88.806
900.00	.55949E-02	87.980
950.00	.55380E-02	87.086
1000.00	.54778E-02	86.138

****

ROUNDWATER IMPACT OF POLYGON 7

Time	Mass per area (g/sq.ft.)	Total Mass (g)
50.00	.87538E-03	49.641
100.00	.39967E-02	226.64
150.00	.86743E-02	491.90
200.00	.12893E-01	731.12
250.00	.16093E-01	912.62
300.00	.18402E-01	1043.5
350.00	.20053E-01	1137.2
400.00	.21236E-01	1204.3
450.00	.22082E-01	1252.2
500.00	.22677E-01	1286.0
550.00	.23083E-01	1309.0
600.00	.23342E-01	1323.7
650.00	.23485E-01	1331.8
700.00	.23537E-01	1334.7
750.00	.23516E-01	1333.5
800.00	.23437E-01	1329.1
850.00	.23312E-01	1322.0
900.00	.23150E-01	1312.8
950.00	.22960E-01	1302.0
1000.00	.22746E-01	1289.9

****

****

TOTAL GROUNDWATER IMPACT

Time (yr)	Mass (g)	Cumulative Mass (g)
50.00	175.16	175.16
100.00	352.47	527.64
150.00	622.76	1150.4
200.00	872.60	2023.0
250.00	1067.8	3090.8
300.00	1212.7	4303.5
350.00	1319.2	5622.7
400.00	1397.2	7019.9
450.00	1454.0	8473.9
500.00	1494.6	9968.5
550.00	1522.8	11491.
600.00	1541.1	13032.
650.00	1551.6	14584.
700.00	1555.9	16140.
750.00	1555.2	17695.
800.00	1550.6	19246.
850.00	1542.8	20789.
900.00	1532.5	22321.
950.00	1520.2	23841.
1000.00	1506.4	25348.

APPENDIX G

SUMMERS GROUNDWATER MIXING MODEL RESULTS

GROUNDWATER/RECHARGE MIXING CALCULATIONS FOR: OSCO FACILITY

I. RECHARGE PENETRATION DEPTH CALCULATION

The penetration depth for recharge may be calculated using the following formula (USEPA, 1988):

$$P = (2dL)^{1/2} + D(1 - \exp[-LI/DVn])$$

where,

P = recharge penetration depth (ft)
d = vertical dispersivity (unitless)
L = length of source (ft)
D = thickness of aquifer (ft)
V = longitudinal seepage velocity (ft/yr)
I = infiltration velocity (ft/yr)
n = effective porosity (unitless)

Parameters:

Variable	Value		Source/Rationale
d	4.88	=	[1/10][longitudinal dispersivity]
		=	[1/10][(1/10)(travel distance)]; assume travel distance = length of source (L)
L	487.74	=	sqare root of site area
D	900	=	thickness of saturated alluvial sediments
V	560	=	M/B&A (1993)
I	0.0467	=	equivalent to recharge rate (HELP model)
n	0.1	=	CH2M Hill (1988)
site area	237887	=	total paved area

P = 69.38

II. GROUNDWATER MIXING CALCULATION

The chemical concentration in groundwater may be calculated using the following formula (USEPA, 1991):

Cw = Mr/(Vi + Vgw)

where,

Cw = groundwater concentration (ug/l)
Mr = mass released to groundwater during timestep (ug)
Vi = volume of recharge released to groundwater during timestep (l)
Vgw = volume of groundwater flowing beneath the site during each timestep (l)

Vgw is derived such that,

Vgw = [Q][timestep] = [(K)(A)(dh/dl)][timestep]

where,

Q = rate of groundwater flow (l/yr)
K = saturated hydraulic conductivity (ft/day)
A = cross-sectional flow area (sq ft)
= [((site area) ^ 1/2)(recharge penetration depth)]
dh/dl = hydraulic gradient (unitless)
timestep = number of years

Parameters:

Variable	Value	Source/Rationale
Vi	15729135	equivalent to [(recharge rate)(site area)][timestep]; converted to liters
Vgw	19674385458	calculated from Q (listed below) and timestep
Q	3.93E+08	calculated from K, A, and dh/dl (listed below); converted to liters
K	250	Estimated from data provided by CH2M Hill (1988)
A	33841	site area measured and penetration depth calculated above
dh/dl	0.0045	Average hydrulic gradient for site (M/B&A, 1993)
mixing timestep =	50	selected based on computaional efficiency/optimization
recharge rate =	0.0467	HELP model output
Mr =	see below	mass calculated by VLEACH for timestep (grams)
Cw =	see below	Groundwater concentration during timestep (ug/l)

REFERENCES:

USEPA. 1988. Multimedia Exposure Assessment Model for Evaluating Land Disposal of Hazardous Wastes, Volume 1. Prepared by Woodward-Clyde Consultants. Athens, Georgia.

USEPA. 1991. Feasibility Study for the Interstate Lead Company Sit, Leeds, Alabama. Appendix A. Prepared by CH2M Hill for USEPA Region 4. Contract No. 68-W9-0049, July 1991.

METHYL ETHYL KETONE

Time (yr)	Mass (g)	Concentration (ug/l)
50	29880000.00	1517.51
100	29880000.00	1517.51
150	29880000.00	1517.51
200	29880000.00	1517.51
250	29886000.00	1517.82
300	29928000.00	1519.95
350	30103000.00	1528.84
400	30566000.00	1552.35
450	31419000.00	1595.67
500	32560000.00	1653.62
550	33646000.00	1708.78
600	34200000.00	1736.91
650	33800000.00	1716.60
700	32248000.00	1637.78
750	29632000.00	1504.92
800	26267000.00	1334.02
850	22557000.00	1145.60
900	18855000.00	957.59
950	15393000.00	781.76
1000	12288000.00	624.07

METHYL ISOBUTYL KETONE

Time (yr)	Mass (g)	Concentration (ug/l)
50	3483500.00	176.92
100	3483500.00	176.92
150	3483500.00	176.92
200	3483600.00	176.92
250	3484500.00	176.97
300	3490600.00	177.28
350	3518500.00	178.69
400	3600600.00	182.86
450	3770900.00	191.51
500	4034600.00	204.90
550	4348100.00	220.83
600	4625300.00	234.90
650	4768200.00	242.16
700	4702400.00	238.82
750	4403400.00	223.64
800	3902100.00	198.18
850	3271300.00	166.14
900	2599400.00	132.02
950	1964900.00	99.79
1000	1420000.00	72.12

FREON 11

Time (yr)	Mass (g)	Concentration (ug/l)
50	3237.00	0.16
100	3131.10	0.16
150	2947.80	0.15
200	2751.70	0.14
250	2575.40	0.13
300	2424.30	0.12
350	2294.40	0.12
400	2180.50	0.11
450	2078.70	0.11
500	1986.10	0.10
550	1900.90	0.10
600	1821.70	0.09
650	1747.60	0.09
700	1677.90	0.09
750	1612.00	0.08
800	1549.50	0.08
850	1490.20	0.08
900	1433.60	0.07
950	1379.60	0.07
1000	1327.90	0.07

1,1,1-TRICHLOROETHANE

Time (yr)	Mass (g)	Concentration (ug/l)
50	2574.40	0.13
100	2354.50	0.12
150	2176.60	0.11
200	2065.00	0.10
250	1989.50	0.10
300	1932.20	0.10
350	1884.00	0.10
400	1840.60	0.09
450	1800.00	0.09
500	1761.00	0.09
550	1723.30	0.09
600	1686.60	0.09
650	1650.80	0.08
700	1615.80	0.08
750	1581.50	0.08
800	1548.00	0.08
850	1515.20	0.08
900	1483.10	0.08
950	1451.70	0.07
1000	1420.90	0.07

TRICHLOROETHENE

Time (yr)	Mass (g)	Concentration (ug/l)
50	1696.10	0.09
100	1525.60	0.08
150	1367.30	0.07
200	1256.10	0.06
250	1178.00	0.06
300	1120.50	0.06
350	1075.30	0.05
400	1037.60	0.05
450	1004.60	0.05
500	974.59	0.05
550	946.67	0.05
600	920.22	0.05
650	894.90	0.05
700	870.51	0.04
750	846.92	0.04
800	824.04	0.04
850	801.83	0.04
900	780.24	0.04
950	759.26	0.04
1000	738.84	0.04

1,1-DICHLOROETHENE

Time (yr)	Mass (g)	Concentration (ug/l)
50	216.95	0.01
100	172.90	0.01
150	163.82	0.01
200	161.61	0.01
250	160.53	0.01
300	159.65	0.01
350	158.80	0.01
400	157.96	0.01
450	157.13	0.01
500	156.31	0.01
550	155.49	0.01
600	154.67	0.01
650	153.86	0.01
700	153.05	0.01
750	152.24	0.01
800	151.44	0.01
850	150.65	0.01
900	149.85	0.01
950	149.06	0.01
1000	148.28	0.01

TOLUENE

Time (yr)	Mass (g)	Concentration (ug/l)
50	1203.00	0.06
100	1985.20	0.10
150	2771.90	0.14
200	3256.10	0.17
250	3520.50	0.18
300	3657.70	0.19
350	3720.30	0.19
400	3736.10	0.19
450	3721.30	0.19
500	3685.50	0.19
550	3635.60	0.18
600	3575.90	0.18
650	3509.80	0.18
700	3439.50	0.17
750	3366.70	0.17
800	3292.60	0.17
850	3218.00	0.16
900	3143.70	0.16
950	3069.90	0.16
1000	2997.10	0.15

ETHYLBENZENE

Time (yr)	Mass (g)	Concentration (ug/l)
50	175.16	0.01
100	352.47	0.02
150	622.76	0.03
200	872.60	0.04
250	1067.80	0.05
300	1212.70	0.06
350	1319.20	0.07
400	1397.20	0.07
450	1454.00	0.07
500	1494.60	0.08
550	1522.80	0.08
600	1541.10	0.08
650	1551.60	0.08
700	1555.90	0.08
750	1555.20	0.08
800	1550.60	0.08
850	1542.80	0.08
900	1532.50	0.08
950	1520.20	0.08
1000	1506.40	0.08

M,P-XYLENES

Time (yr)	Mass (g)	Concentration (ug/l)
50	581.99	0.03
100	1299.60	0.07
150	2375.10	0.12
200	3374.90	0.17
250	4169.20	0.21
300	4771.00	0.24
350	5221.40	0.27
400	5556.70	0.28
450	5804.10	0.29
500	5983.50	0.30
550	6109.50	0.31
600	6193.30	0.31
650	6243.60	0.32
700	6267.10	0.32
750	6269.30	0.32
800	6254.40	0.32
850	6226.00	0.32
900	6186.80	0.31
950	6139.10	0.31
1000	6084.70	0.31

O-XYLENE

Time (yr)	Mass (g)	Concentration (ug/l)
50	422.94	0.02
100	638.80	0.03
150	1042.70	0.05
200	1517.30	0.08
250	1974.80	0.10
300	2377.90	0.12
350	2718.10	0.14
400	2999.10	0.15
450	3228.00	0.16
500	3412.30	0.17
550	3559.00	0.18
600	3673.90	0.19
650	3762.00	0.19
700	3827.50	0.19
750	3874.00	0.20
800	3904.30	0.20
850	3921.10	0.20
900	3926.50	0.20
950	3922.40	0.20
1000	3910.10	0.20

BENZENE

Time (yr)	Mass (g)	Concentration (ug/l)
50	86.08	0.0044
100	87.87	0.0045
150	88.80	0.0045
200	88.36	0.0045
250	86.96	0.0044
300	84.98	0.0043
350	82.67	0.0042
400	80.20	0.0041
450	77.67	0.0039
500	75.14	0.0038
550	72.64	0.0037
600	70.20	0.0036
650	67.81	0.0034
700	65.50	0.0033
750	63.26	0.0032
800	61.09	0.0031
850	58.99	0.0030
900	56.96	0.0029
950	55.00	0.0028
1000	53.11	0.0027

ACETONE

Time (yr)	Mass (g)	Concentration (ug/l)
50	29100000.00	1477.90
100	29100000.00	1477.90
150	29099000.00	1477.85
200	29098000.00	1477.80
250	29090000.00	1477.39
300	29036000.00	1474.65
350	28801000.00	1462.71
400	28133000.00	1428.79
450	26789000.00	1360.53
500	24726000.00	1255.76
550	22157000.00	1125.29
600	19419000.00	986.23
650	16781000.00	852.26
700	14362000.00	729.40
750	12165000.00	617.82
800	10160000.00	515.99
850	8339000.00	423.51
900	6718500.00	341.21
950	5317700.00	270.07
1000	4141800.00	210.35

TETRACHLOROETHENE

Time (yr)	Mass (g)	Concentration (ug/l)
50	11574.00	0.59
100	11825.00	0.60
150	11619.00	0.59
200	11293.00	0.57
250	11006.00	0.56
300	10772.00	0.55
350	10579.00	0.54
400	10413.00	0.53
450	10265.00	0.52
500	10129.00	0.51
550	10000.00	0.51
600	9877.90	0.50
650	9759.40	0.50
700	9643.90	0.49
750	9530.80	0.48
800	9419.70	0.48
850	9310.30	0.47
900	9202.40	0.47
950	9096.00	0.46
1000	8990.90	0.46

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

Chemical Waste Management, Inc.

4227 Technology Drive
Fremont, California 94538-6337
510/651-2964

August 17, 1994

Mr. Jeffrey Zelikson
Director
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

Two Copies
Via Certified Mail
Z 047 926 087

Mr. Dennis Dickerson
Regional Administrator
California Environmental Protection Agency
Region III
1011 North Grandview Avenue
Glendale, California 91201

Two Copies
Via Certified Mail
Z 047 926 088

Subject: Chemical Waste Management, Inc. - Azusa, California Facility, CAD 008302903, RCRA Facility Investigation, Combined Report of Second Quarter 1994 Groundwater Monitoring & RFI Events

Gentlemen:

In accordance with the recommendations presented in the Oil & Solvent Process Company (OSCO) RCRA Facility Investigation (RFI) Final Report[1], and the RCRA Part B Permit Attachment D, Section E.3.d, Chemical Waste Management, Inc., (CWM) is submitting this letter report describing the Second Quarter 1994 Groundwater Monitoring Event at the Chemcial Waste Management, Inc. - Azusa, California facility (CWMI-Azusa Formerly, OSCO).

CWM is also submitting a computer diskette containing monitoring event analytical and groundwater elevation data. The electronic media submission is required under permit condition VI.8.A.

The last section of this report provides an update on Second Quarter RFI activities for the period of April 1 through June 30. The RFI status report is in accordance with Permit Condition VI.3.A.

---

[1]Meredith/Boli and Associates, RCRA Facility Investigation (Phase III), Groundwater Investigation, January 11, 1993.

GROUNDWATER MONITORING

Initial groundwater sampling was performed by RUST Environment & Infrastructure (RUST) of Irvine, California on May 28, 1994. Laboratory analyses were performed by WMX Technologies' Environmental Monitoring Laboratory of Geneva, Illinois.

The results for the sample from well MW-03 indicated the analysis was performed after the analytical instrument's 12-hour mass spectral tune verification time had expired. The sample was re-analyzed after re-verification of the tune. However, by that time, the 14-day sample hold time had expired. Based on discussions with the EML account manager for CWMI-Azusa, the results for well MW-03 could not be validated by EML. MW-03 was resampled on July 5, 1994.

The analytical results for well MW-02 indicated acetone at a concentration of 92 ug/l. A Data Quality Review by EML confirmed the result. Acetone has been detected in soil and soil vapor on the portion of the property that manages solvent materials. However, the well was upgradient of solvent handling portion of the facility in late April 1994, cross gradient to that portion of the facility at sampling time, and is positioned where no known solvent handling operations have occurred. Therefore we suspect the accuracy of the acetone detection. During subsequent groundwater monitoring events, CWM will closely scrutinize sample collection and analysis at MW-02.

During the first quarter, groundwater levels were measured by RUST in CWMI-Azusa wells on April 29, May 26, and June 30, 1994.

Descriptions of the sampling event, analytical results, and groundwater elevation measurements are described in the RUST report in Attachment 1.

DATA ON ELECTRONIC MEDIA

Attachment 2 contains one 5¼-inch, double sided, high density, DOS compatible diskette containing 3 ASCII files.

The file "CHEMSTRY.TXT" contains primary and duplicate field and laboratory analytical results for the Second Quarter 1994 event. The file is fixed format, containing 216 records, each with eleven fields. Table 1 is a description of the variable fields. Each record contains the result for one chemical analyte.

Printed on recycled paper

The file "BLANKS.TXT" contains the results of Travel and Field Blank analyses for the event. The file contains 108 records, each with nine fields. Variable fields are described in Table 2. The ninth field was included for the first time for this event to help distinguish travel blanks that accompanied the initial and MW-03 resample episodes.

Groundwater elevation measurements for the Second Quarter 1994 are presented in "LEVELS.TXT". The file contains fifteen records, each with six fields. Table 3 describes the fields for this file.

The information presented in the electronic files is summary in nature. For specific details, please refer to the laboratory reports in the RUST report (Attachment 1).

OTHER RFI ACTIVITIES

WORK COMPLETED

In addition to groundwater monitoring activities described above, the following RFI related actions occurred between April 1 and June 30, 1994:

- On June 13, 1994, CWM issued the Subsurface Volatile Organic Compound (VOC) Migration Study to U.S. EPA, DTSC, and the Regional Water Quality Control Board.

WORK PLANNED

- Third Quarter 1994 groundwater sampling is scheduled for Friday, August 28, 1994.
- Third Quarter 1994 groundwater level measurements are planned for July 29, August 27, and September 30, 1994.

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system design to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for

Printed on recycled paper

gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

If you have any questions, I can be reached at (510) 651-2964.

Sincerely,

CHEMICAL WASTE MANAGEMENT, INC.

Marc Yalom, R.G.
Hydrogeologist

Attachments (2)

/miy

cc: Wayne Chiou, Los Angeles RWQCB - Monterey Park (2 Copies)

Printed on recycled paper

TABLES

Printed on recycled paper

TABLE 1
CHEMICAL WASTE MANAGEMENT, INC.
AZUSA FACILITY
ELECTRONIC FILE SUMMARY
"CHEMSTRY.TXT"

Cols.	Field	Description	Options
1-2	blank field		
3-18	Site_id	Source of sample	
19-28	Replicate	Type of sample	"P0" - Primary Sample "D0" - Duplicate Sample
29-38	Samp_date	Date sample was collected	Format: "MM/DD/YY"
39-48	Samp_time	Time sample was collected	Format: "HH:MM"
49-89	Name	Analyte Name	
90-101	Cas_num	Chemical Abstract Number	CAS number beginning "GIS" or "CWM" are improvised entries for analytes without true CAS designations
102-113	Conc	Concentration detected	
114-124	Det_limit	Detection limit	
125-130	Units	Analyte units	
131-138	Pf_code	Preparation fraction code	"T" - Total "D" - Dissolved
139-145	Dl_flag	Detection limit flag	"<" - Analyte not detected blank - Analyte detected

Notes:

1. First line of the file contains a field header.
2. All fields are left justified.

Printed on recycled paper

TABLE 2
CHEMICAL WASTE MANAGEMENT, INC.
AZUSA FACILITY
ELECTRONIC FILE SUMMARY
"BLANKS.TXT"

Cols.	Field	Description	Options
1-2	blank field		
3-13	Blank_Type	Type of QA Blank	"F1" - Field Blank "T1" - Travel Blank
14-54	Name	Analyte Name	
55-66	Cas_num	Chemical Abstract Number	CAS number beginning "GIS" or "CWM" are improvised entries for analytes without true CAS designations
67-78	Conc	Concentration detected	
79-89	Det_limit	Detection limit	
90-95	Units	Analyte units	
96-103	Pf_code	Preparation fraction code	"T" - Total "D" - Dissolved
104-111	Dl_Flag	Detection limit flag	"<" - Analyte not detected blank - Analyte detected
112-119	EML_Ens	Environmental Monitoring Laboratories Event Notification System Code	YY-##### "YY" - Year "#####" - EML assigned laboratory seqence number

Notes:

1. First line of the file contains a field header.
2. All fields are left justified.

recycled paper

TABLE 3
CHEMICAL WASTE MANAGEMENT, INC.
AZUSA FACILITY
ELECTRONIC FILE SUMMARY
"LEVELS.TXT"

Cols.	Field	Description	Options
1-2	blank field		
3-18	Site_id	Measurement source	
19-27	Date	Date of measurement	Format: "MM/DD/YY"
28-32	Time	Time of measurement	Format: "HH:MM" "00:00" - Time of measurement not recorded
33-40	Level	Depth to groundwater	In feet
41-49	Mp_elev	Measuring point reference elevation	Feet above mean sea level
51-59	Elev	Groundwater elevation	Feet above mean sea level (Mp_elev - Level)

Notes:

1. First line of file contains a field header.
2. Level, Mp_elev, and Elev fields are right justified. All other fields are left justified.

Printed on recycled paper

ATTACHMENT 1

RUST REPORT OF GROUNDWATER MONITORING

Printed on recycled paper

RUST ENVIRONMENT & INFRASTRUCTURE

RUST Environment & Infrastructure Inc.
18401 Von Karman Avenue, Suite 550 - 5th Floor
Irvine, CA 92715
Tel. (714) 251-6400 • FAX (714) 251-6444

August 15, 1994

Mr. Marc Yalom, R.G.
Hydrogeologist
Chemical Waste Management, Inc.
Treatment and Landfill Disposal Operations Group
4227 Technology Drive
Fremont, California 94538-6337

AUG 1994
RECEIVED
Western Region
Environmental
Mgt. Dept.
C.W.M.I.

SUBJECT: CHEMICAL WASTE MANAGEMENT, INC. - AZUSA, CALIFORNIA FACILITY - CAD 008302903. REPORT OF SECOND QUARTER 1994 GROUNDWATER MONITORING EVENT (RUST E & I PROJECT NO. 88388)

Dear Marc:

The following is a summary of the groundwater monitoring activity and results for the Second Quarter 1994 Groundwater Monitoring Event at the Chemical Waste Management, Inc. (CWMI)-Azusa Facility.

GROUNDWATER SAMPLING & ANALYSES

SAMPLE COLLECTION

Groundwater samples were collected from five monitoring wells by RUST Environment & Infrastructure (RUST E&I) personnel on May 27, 1994. Monitoring Well MW-03 was resampled on July 5, 1994, after the analytical laboratory failed to validate MW-03's original results. Details of the sampling activities are described in Appendix A - Second Quarter 1994 Groundwater Monitoring Event Detail. The laboratory's explanation for the lack of validation for MW-03's first sample, as well as, the validation for all the other sample results are discussed in Appendix C - Data Quality Report Letters.

SAMPLE SHIPMENT

The groundwater samples were shipped according to chain of custody protocol, via Federal Express overnight delivery service, on May 27, 1994 to WMX Technologies, Inc.'s Environmental Monitoring Laboratories (EML) in Geneva, Illinois, for laboratory analyses. The samples were shipped in two EML AquaPak coolers (AquaPak Nos. 2000 and 2040). The AquaPaks were cooled with "blue ice" and sealed prior to shipment with destructive seals. The

samples arrived intact at EML on May 28, at temperatures ranging from 9° to 13° C. The alternate sample from MW-03 was packaged in the same manner and shipped via Federal Express to EML on July 5, 1994. The AquaPak number was 2096, and it arrived intact at EML on July 6 with a measured internal temperature of 7° C.

GROUNDWATER ANALYTICAL RESULTS

Groundwater samples were analyzed by EML according to EPA Method 624. Analyses for xylenes and ketones (acetone, MEK, and MIBK), compounds detected in previous CWMI-Azusa Facility soil investigations, were included in the Method 624 analyses. Certified laboratory analytical results are presented in Appendix B. Table 1 presents a summary of the detected analytes.

Acetone was detected in one groundwater sample from this site during this quarter. It was detected in MW02, and the measured concentration was 92 micrograms/liter. A review of the data quality was requested of EML since acetone has not been detected in the past, and because it was detected in only one sample this quarter. EML reexamined the analysis results and found that the analysis met all of the quality control criteria for the acetone analysis method and that no errors had been made in reporting the results (see letter to Marc Yalom, CWMI from Barbara Hill, EML, dated August 9, 1994 in Appendix C).

QUALITY CONTROL RESULTS

Duplicate Sample

Primary and duplicate samples (MW05 and DUP) were collected at well MW-05 and analyzed according to Method 624 (see Appendix B). All four of the compounds detected in MW-05's primary sample were also detected in the duplicate sample. The relative percent differences (RPD) for the four analytes ranged between 0% and 32% (see Table 2). EML was asked to reexamine the quality of the tetrachloroethene analysis results for the primary and duplicate samples since their RPD was 32%. EML verified the results as originally reported (see letter to Marc Yalom, CWMI from Barbara Hill, EML, dated August 9, 1994 in Appendix C).

A fifth compound, 1,2-dichloroethane, was detected in the duplicate sample but not in the primary sample from MW-05 by EML. The compound's concentration was reported as 6 micrograms per liter (ug/l) for the duplicate sample and as less than the practical quantitation limit (PQL), 8 ug/l, for the primary sample.

Field Blank

A Field Blank (01FB) was collected at well MW-03 and analyzed according to Method 624. No compounds were detected in the Field Blank (see Appendix B).

Travel Blank

A travel blank sample accompanied each AquaPak to the laboratory. One travel blank from each AquaPak shipment (TBK-MW02 from May 26 and TBK-MW03 from July 5) was analyzed by Method 624. Contamination was not detected in either of the travel blanks (see Appendix B).

GROUNDWATER LEVEL MEASUREMENTS

During the second quarter, groundwater levels were measured by RUST in CWMI-Azusa Facility wells on April 29, May 26 and June 30, 1994. Details of the measurement events are provided in Appendix A. The measurement data are summarized in Table 3, and contour maps for the three events are presented as Figures 1, 2, and 3 of this report.

The data indicate that groundwater elevations increased in each of the months in the second quarter of 1994. The total increase in groundwater elevation, over the three month period was approximately 4.3 feet. The groundwater flow direction varied throughout the second quarter, flowing to the west in April, to the south-southeast in May and to the southwest in June. The groundwater gradient varied from approximately 0.0012 feet/feet in April, 0.0004 feet/feet in May to 0.0007 feet/feet in June.

If you have any questions, please do not hesitate to call me at (714) 251-6420.

Sincerely,

RUST ENVIRONMENT & INFRASTRUCTURE, INC.

Matthew Katen

Matthew Katen, R.G.
Project Manager

Attachments

2NDQTR.RPT

TABLES

TABLE 1
CHEMICAL WASTE MANAGEMENT, INC.
AZUSA CALIFORNIA FACILITY
SUMMARY OF ANALYTICAL RESULTS
Quarter 2 - 1994
Groundwater Monitoring Event

SITE	DATE	Tetrachloro-ethene ug/l	Trichloroethene ug/l	1,1,1-trichloro-ethane ug/l	1,1-Dichloro-ethene ug/l	Acetone ug/l
MW-01	5/27/94	58	17	<5	8	<34
MW-02	5/27/94	190	72	12	24	92
MW-03	5/27/94	49	32	<10	<5	<34
MW-04	5/27/94	240	61	<29	<29	<340
MW-05	5/27/94	250	62	19	23	<96

< = Not detected at indicated reporting limit

--- = Not sampled and/or analyzed

Values represent total concentrations unless noted

= Highest of multiple results

Hits Only

Chem Waste Disk #01

Date: 08/10/94

TABLE 2

CHEMICAL WASTE MANAGEMENT, INC.
AZUSA CALIFORNIA FACILITY
SUMMARY OF DUPLICATE RESULTS
Quarter 2 - 1994
Groundwater Monitoring Event

	SAMPLE INFORMATION	PRIMARY SAMPLE	FIRST DUPLICATE	SECOND DUPLICATE	THIRD DUPLICATE	FOURTH DUPLICATE	PRECISION SUMMARY	
	SITE	MW-05	MW-05				RELATIVE PERCENT DIFFERENCE (RPD)	
	FIELD SAMPLE NO	MW-05	DUP					
	LAB CODE	EML	EML					
	LAB SAMPLE NO	AJ9905A	AJ9908A					
	CASE NO	94Q01	94Q01				RPD MEASURED	RPD GOAL
	SDG NO	AQUAPAK 2000	AQUAPAK 2000					
	BATCH NO	94-12164	94-12164					
COMPOUNDS	UNITS->	ug/l	ug/l				%	%
1,1,1-Trichloroethane		19	19				0	0
1,1-Dichloroethene		23	23				0	0
1,2-Dichloroethane		<8	6				N/A	0
Tetrachloroethene		250	170				32	0
Trichloroethene		62	60				3	0

Hits Only

DATE: 08/10/94

TABLE 3

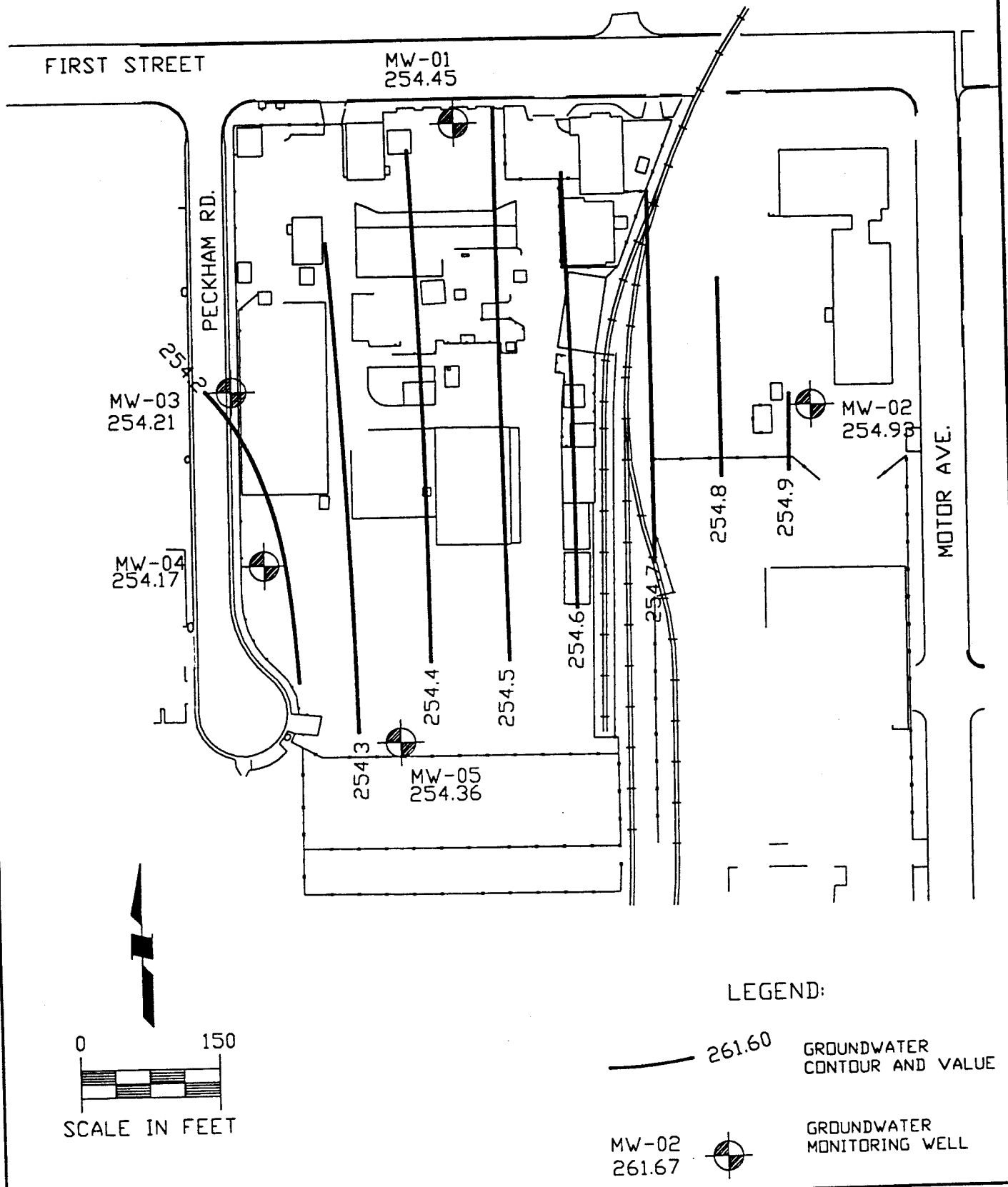
CHEMICAL WASTE MANAGEMENT, INC.
AZUSA CALIFORNIA FACILITY
SUMMARY OF GROUNDWATER ELEVATION MEASUREMENTS
Second Quarter 1994

SITE	DATE	MP ELEVATION [2] feet	TIME	DEPTH TO WATER	△ WATER ELEV.[1] feet	WATER ELEV. [2] feet
MW-01	03/31/93	529.33	11:35	272.21	N/A	257.12
MW-01	04/29/94	529.33	15:14	274.88	-2.67	254.45
MW-01	05/26/94	529.33	12:07	270.59	+4.29	258.74
MW-01	06/30/94	529.33	11:00	270.32	+0.27	259.01
MW-02	03/31/93	525.65	12:50	268.12	N/A	257.53
MW-02	04/29/94	525.65	16:22	270.72	-2.60	254.93
MW-02	05/26/94	525.65	13:05	267.37	+3.35	258.28
MW-02	06/30/94	525.65	11:30	266.63	+0.74	259.02
MW-03	03/31/93	519.05	12:30	262.14	N/A	256.91
MW-03	04/29/94	519.05	15:50	264.84	-2.70	254.21
MW-03	05/26/94	519.05	12:50	260.49	+4.35	258.56
MW-03	06/30/94	519.05	11:10	260.28	+0.21	258.77
MW-04	03/31/93	520.48	11:50	263.62	N/A	256.86
MW-04	04/29/94	520.48	14:50	266.31	-2.69	254.17
MW-04	05/26/94	520.48	12:25	262.17	+4.14	258.31
MW-04	06/30/94	520.48	10:40	261.91	+0.26	258.57
MW-05	03/31/93	519.67	12:05	262.66	N/A	257.01
MW-05	04/29/94	519.67	15:03	265.31	-2.65	254.36
MW-05	05/26/94	519.67	12:35	261.50	+3.81	258.17
MW-05	06/30/94	519.67	10:30	261.05	+0.45	258.62

1) Change in Water Elevation since last measurement
2) Measurements Based on Mean Sea Level

FIGURES

Figure 1

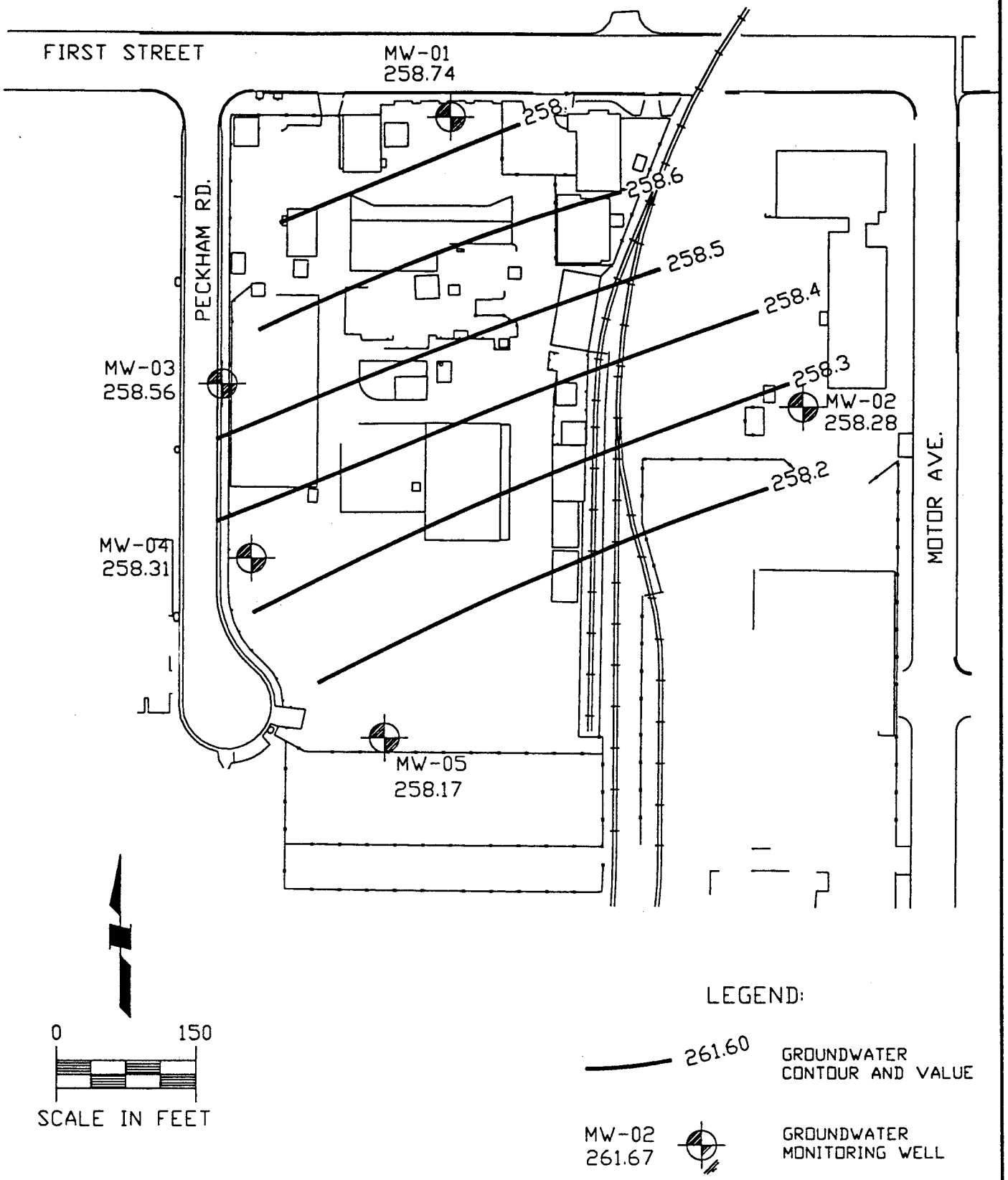


RUST ENVIRONMENT & INFRASTRUCTURE

CHEMICAL WASTE MANAGEMENT, INC.
OSCO AZUSA FACILITY

GROUNDWATER ELEVATION CONTOURS
APRIL 29, 1994

Figure 2

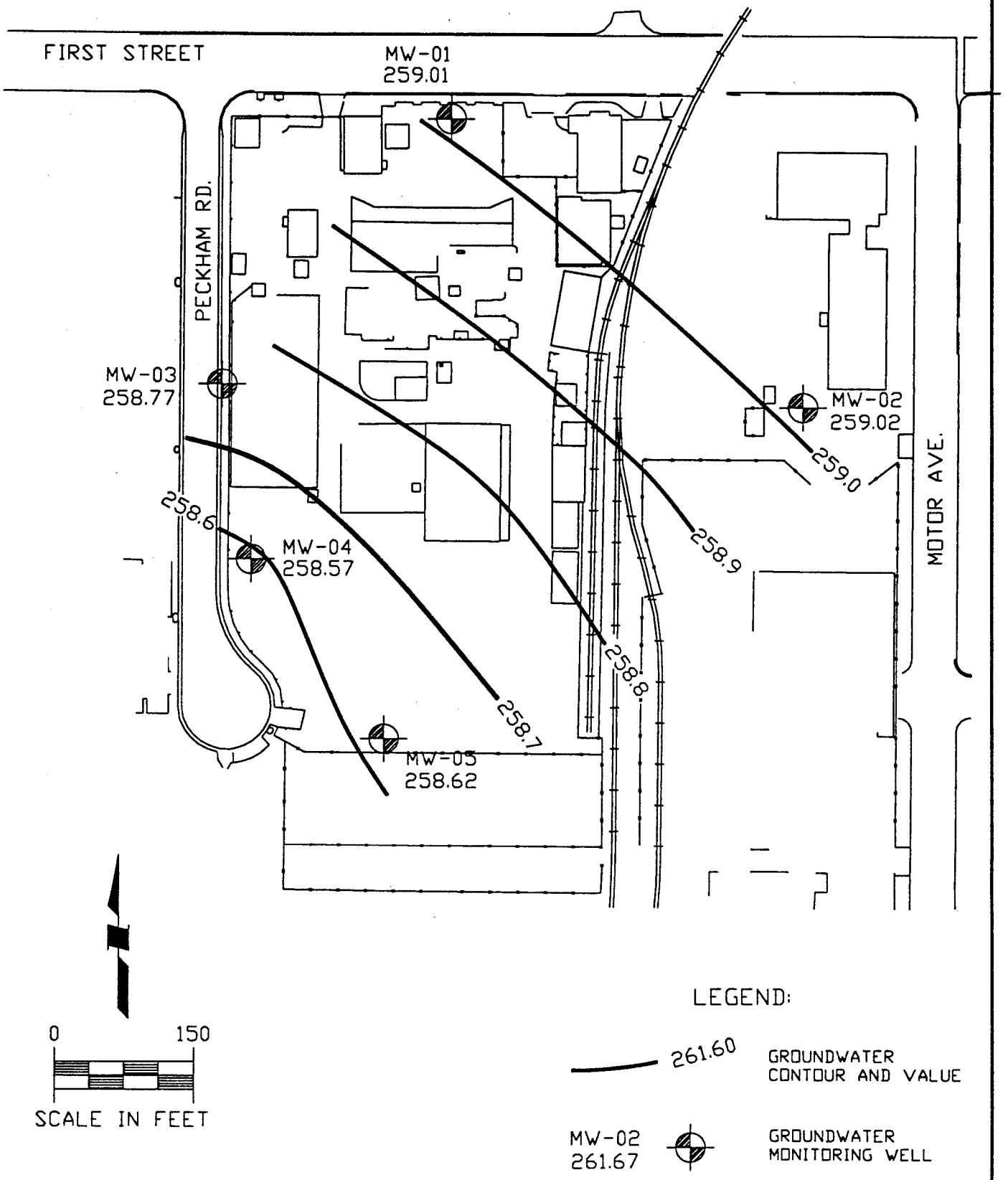


RUST ENVIRONMENT & INFRASTRUCTURE

CHEMICAL WASTE MANAGEMENT, INC.
OSCO AZUSA FACILITY

GROUNDWATER ELEVATION CONTOURS
May 26, 1994

Figure 3



RUST ENVIRONMENT & INFRASTRUCTURE

CHEMICAL WASTE MANAGEMENT, INC.
OSCO AZUSA FACILITY

GROUNDWATER ELEVATION CONTOURS
JUNE 30, 1994

we82570.dwg

APPENDIX A

Second Quarter Groundwater Monitoring Event Detail

GROUNDWATER SAMPLING

AquaPak Inspection

Two small EML AquaPaks, numbers 2000 and 2040, were received at the RUST E&I, Irvine office approximately one week prior to the planned sampling date, April 27, 1994. Contained in the WMX-EML provided AquaPak were pre-labeled, pre-cleaned 40 ml glass sample bottles. Each bottle label was pre-printed with an identification number, testing method, target analyte(s), type of preservative, filtration requirements and a unique bar-code which the laboratory uses to read this information. Mr. R. Liles Cobb, a WMX-EML-certified specialist, inspected the AquaPak's contents on May 26 and found the sample containers to be complete and labeled accurately. The WMX-EML bottle set numbers were as follows:

MW-01	MW-02	MW-03	MW-04	MW-05 PRIMARY	MW-05 DUPLICATE	FIELD BLANK
AJ9907	AJ9909	AJ9911	AJ9906	AJ9905	AJ9908	AJ9910

An additional AquaPak, number 2096, was received at the RUST E&I office on July 3, 1994 for the resampling of Monitoring Well MW-03. Its contents were also inspected by Mr. Cobb, and were found to be complete and accurately labeled. The WMX-EML bottle set number was AK4023.

Groundwater Sampling

On May 27, 1994, RUST E & I personnel performed groundwater sampling at all five of the OSCO Azusa RCRA facility groundwater monitoring wells (MW-01 through MW-05). Duplicate samples were collected at MW-05, and Field Blanks were collected at MW-03. The task was performed on-site by Mr. Cobb with the assistance of Mr. Mark Jackson, a RUST E & I technician. On July 5, 1994, Mr. Cobb, with the assistance of Mr. Matt Katen of RUST E&I, performed groundwater sampling tasks at MW-03, as the laboratory results for MW-03's original sample was found to be invalid due to laboratory error. All groundwater sampling work was performed according to WMX Groundwater Sampling Manual protocols and the CWM OSCO Site Specific Groundwater Monitoring Plan. The sampling times are documented on the enclosed WMX-EML Field Information Forms.

Weather conditions on May 27 and July 5 were essentially the same; clear and sunny with mild air temperatures and a slight easterly breeze, approximately 5 to 10 MPH. No difficulties were encountered during the collection of the groundwater samples on either day.

All samples were immediately preserved, and placed in a chilled AquaPak for delivery to WMX Technologies, Inc.'s Environmental Monitoring laboratories in Geneva, Illinois. The samples were shipped according to chain of custody protocol via Federal Express overnight delivery

service. The chain of custody documents contained instructions for the laboratory to perform EML analysis VOMSBAO322 (EPA Method 624) on each sample.

Prior to sampling, each well was purged of three "well-volumes" of groundwater, making sure that pH, specific conductivity, and temperature had stabilized by the end of the purging activities. These purge-water parameters were measured using a Hydac pH, conductivity and temperature meter. The Hydac instrument was calibrated prior to the start of the job, and the calibration was checked at least once every 4 hours and again at the end of the day. The conductivity meter was "zero and spanned" as part of its initial calibration. In addition, the sampling pump tubings were purged of about 3 gallons of groundwater just before the sample bottles were filled.

All of the purged waters were placed in CWM-OSCO provided 55-gallon drums and properly labeled for cross-reference with the analytical data. A total of 24 drums were used, and disposal arrangements for the containerized waters were made by CWM.

The field notes have been typed and put in tabular form, and are provided on the following pages. Included in them are documentation of field meter calibrations, purge water field readings, actual purge volumes, samples times and number of drums of waste generated at each sample point.

GROUNDWATER LEVEL MEASUREMENTS

On April 29, May 26, and June 30, 1994, RUST E&I personnel measured depth-to-groundwater in all five of the OSCO Azusa RCRA facility groundwater monitoring wells (MW-01 through MW-05). No problems or difficulties were encountered while taking the measurements.

Depth-to-groundwater was measured at each sample point (monitoring well) using an RST electronic water-level probe attached to a 300-foot fiberglass measuring tape. The measuring tape is graduated in 0.01-foot increments, and the "zero-foot" calibration point is at the water detection sensor, which allows depth-to-water to be measured directly. The probe and measuring tape were decontaminated by washing them in a bucket of dilute, non-phosphate detergent solution, followed by a double-rinse with tap water and a final rinse with distilled water prior to being lowered in each well's sounding tube. This procedure meets the CRWQCB requirement for instrument decontamination.

The groundwater surface elevation was calculated for each sample point by subtracting the depth-to-groundwater value from the known reference point (top of sounding tube nipple) elevation.

TABLE 1 PRE-SAMPLING PURGE VOLUME CALCULATIONS					
SAMPLE POINT	TOTAL CASING DEPTH (ft.) (a)	DEPTH-TO-GROUNDWATER (ft.) (b)	VOLUME FACTOR (gal./ft.) (c)	ONE WELL VOLUMES [1] (gallons) (d)	THREE WELL VOLUMES [2] (gallons)
MW01	335	270.59	1.02	65.7	197.1
MW02	328	267.37	1.02	61.8	185.4
MW03 [3]	319.5	260.95	1.02	59.7	179.1
MW04	318	262.17	1.02	56.9	170.8
MW05	330	261.50	1.02	69.9	209.7

[1] ONE "WELL VOLUME" (d) = (a - b) x (c)

[2] THREE "WELL VOLUMES" = 3 X (d)

[3] MW-03 DATA FROM JULY 5, 1994

TABLE 2 PURGE WATER QUANTITIES				
SAMPLE POINT	THREE WELL VOLUMES (gallons)	ACTUAL PURGE VOLUME (gallons)	SAMPLE TUBING PURGE VOLUME (gallons)	NO. OF DRUMS OF WASTE GENERATED
MW01	197.1	198	3	4
MW02	185.4	186	3	4
MW03 [1]	179.1	180	3	4
MW04	170.8	171	3	4
MW05	209.7	210	3	4

[1] MW-03 DATA FROM JULY 5, 1994

TABLE 3a FIELD MEASUREMENTS OF PURGED WATER - MW01 May 27, 1994					
INTERVAL	VOLUME (gallons)	pH	SPECIFIC CONDUCTIVITY	TEMP. (°C)	TIME
START	2	7.82	477	22.8	08:15
1/2	67	7.54	523	22.2	08:22
3/4	134	7.52	545	22.8	08:29
END	198	7.44	538	22.4	08:37

TABLE 3b FIELD MEASUREMENTS OF PURGED WATER - MW02 May 27, 1994					
INTERVAL	VOLUME (gallons)	pH	SPECIFIC CONDUCTIVITY	TEMP. (°C)	TIME
START	1	7.99	602	26.6	13:34
1/2	62	7.62	630	24.0	13:42
3/4	124	7.42	616	22.7	13:47
END	186	7.31	612	22.8	13:54

TABLE 3c FIELD MEASUREMENTS OF PURGED WATER - MW03 July 5, 1994					
INTERVAL	VOLUME (gallons)	pH	SPECIFIC CONDUCTIVITY	TEMP. (°C)	TIME
START	1	7.68	725	28.2	12:38
1/2	60	7.22	740	24.1	12:48
3/4	120	7.12	629	22.2	12:53
END	180	7.24	629	21.9	12:59

TABLE 3d FIELD MEASUREMENTS OF PURGED WATER - MW04 May 27, 1994					
INTERVAL	VOLUME (gallons)	pH	SPECIFIC CONDUCTIVITY	TEMP. (°C)	TIME
START	2	7.72	433	25.0	09:32
1/2	57	7.45	501	22.8	09:38
3/4	114	7.29	510	23.3	09:43
END	171	7.34	519	23.9	09:51

TABLE 3e FIELD MEASUREMENTS OF PURGED WATER - MW05 May 27, 1994					
INTERVAL	VOLUME (gallons)	pH	SPECIFIC CONDUCTIVITY	TEMP. (°C)	TIME
START	2	8.10	500	25.6	10:47
1/2	70	7.37	560	24.0	10:55
3/4	140	7.35	567	24.3	11:01
END	210	7.35	550	24.3	11:09

TABLE 4a FIELD INSTRUMENT CALIBRATION RECORD
May 27, 1994

		pH RESULTS							SPEC. COND.		
TIME	METER	TEMP (°C)	READ 7	CAL 7	READ 10	CAL 10	READ 4	CAL 4	STD (mmho)	READ @ TEMP 1 (mmho)	READ @ TEMP 2 (mmho)
07:40	HYDAC No. 9210	21.1		7.00		10.01		4.00	1314	989 @ 16°C	987 @ 13°C
12:00	HYDAC No. 9210	29.6	6.66	6.99	10.33	9.98	4.10		993	994 @ 31°C	993 @ 19°C
14:30	HYDAC No. 9210	22.3	6.90	6.94	10.18	10.01	4.05		993	992 @ 16°C	993 @ 13°C

TABLE 4b FIELD INSTRUMENT CALIBRATION RECORD
July 5, 1994

		pH RESULTS							SPEC. COND.		
TIME	METER	TEMP (°C)	READ 7	CAL 7	READ 10	CAL 10	READ 4	CAL 4	STD (mmho)	READ @ TEMP 1 (mmho)	READ @ TEMP 2 (mmho)
12:24	HYDAC No. 9210	28.9		6.91		9.96		3.99	1010	1040 @29°C	
13:02	HYDAC No. 9210	23.3	6.98		10.02		4.03		1010	1030 @23°C	

TABLE 5 SAMPLE COLLECTION ORDER
May 27, and July 5, 1994

ORDER	MW-01	MW-02	MW-03 (July 5)	FIELD BLANK	MW-04	MW-05 & DUPLICATE
1	AJ9907A1	AJ9909A1	AK4023A1	AJ9910A1	AJ9906A1	AJ9905A1
2	AJ9907A2	AJ9909A2	AK4023A2	AJ9910A2	AJ9906A2	AJ9908A1
3	AJ9907A3	AJ9909A3	AK4023A3	AJ9910A3	AJ9906A3	AJ9905A2
4	AJ9907A4	AJ9909A4	AK4023A4	AJ9910A4	AJ9906A4	AJ9908A2
5						AJ9905A3
6						AJ9908A3
7						AJ9905A4
8						AJ9908A4

APPENDIX B

Laboratory Analytical Results
and
Chain of Custody Records

WMX Environmental Monitoring Laboratories, Inc.

Analytical Report Transmittal Memorandum

JUN 1994
RECEIVED
Western Region
Environmental
Mgt. Dept.
C.W.M.L.

Date: June 21, 1994

To: Client(s) - see below

From: Dave Lundquist

Subject: O.S.C.O. 94-12164

Please find enclosed the current Client Report, Field Information Forms, and Field Chain-of-Custody Records for the recently completed event at O.S.C.O..

The data has been thoroughly reviewed and compared to historical data. We have tried to provide a report that is complete and of known and documented quality. Please take a moment to review the enclosed report to insure it meets your expectations.

If you have any questions, don't hesitate to call Joe Rentz at (708)208-3100.

Report Distribution:

Name	Report Type
Marc Yalom*	ALL

* *Program Manager*

Mail Code: 2

Enclosed are the analytical results for samples received from your facility. The results in the Client Report are for a single ENS (Event Notification System) number only. The sampling event at your facility may include multiple ENS numbers. A separate Client Report will be generated for each one.

It is the goal of WMX Environmental Monitoring Laboratories Inc. to provide analytical data in a timely fashion, formatted in a way that our clients will find most useful.

If you have any questions concerning the form or content of this report, please contact the WMX EML Customer Operations Department:

Main Number (708) 208-3100
FAX Number (708) 208-1175

Note: Two designations may appear in the results column of your Client Report: NA or ND.

The designation NA (for "Not Analyzed") is used to identify analytes which were requested in the monitoring program, but for which no suitable testing methodology exists. NA may also indicate a dry well, broken sample bottle, insufficient sample volume, or other condition which precludes analysis for a sample.

The designation ND (for "Not Detected") is used to indicate that the analyte of interest was not found at or above the concentration listed under the EMLRL (EML Reporting Limit) heading.

Unless otherwise indicated, all analytes meet the requirements of holding time as specified in the method.

Deborah C. Hockman, Ph.D.

Deborah C. Hockman, Ph.D.
President
WMX Environmental Monitoring Laboratories, Inc.

DATA QUALIFIER COMMENT CODE DEFINITIONS

AR: Acid surrogate recoveries did not meet the acceptance criteria of the method. Oxidative degradation due to sampl matrix is suggested.

BB: Broken bottle.

BL: The method blank concentrations associated with this analyt did not meet the acceptance criteria of the method.

CX: The concentration of this compound exceeded the calibration used for this analysis. The concentration reported is estimated.

CU: Co-elution with another compound interferes with the quantitation of this compound. The concentration reported is estimated.

DL: The sample was diluted during analysis. Reporting limits have been adjusted where necessary.

DP: Aliquots or spiked aliquots of this sample were analyzed in duplicate. The relative percent difference between the two results did not meet the acceptance criteria of the method.

DW: Dry Well.

HS: Headspace in sample exceeded laboratory control limit. The reported results of the analysis may be less than actual value.

IS: The internal standard recoveries associated with this analysis did not meet the acceptance criteria of the method.

IV: The bottle did not contain enough sample to perform the analysis.

MP: 3-methylphenol and 4-methylphenol co-elute under the analytical conditions of the method, and cannot be differentiated solely on the basis of their mass spectra. The concentrations reported may be either or both isomers.

MX: This sample was used as a matrix spike. The percent recovery did not meet the acceptance criteria of the method. The analysis of a quality control standard showed the analytical system was in control. The result reported may therefore be affected by matrix interferences.

NN: N-nitrosodiphenylamine cannot be distinguished from diphenylamine using gas chromatography. The concentrations reported may be either or both compounds.

NQ: No standard qualifier code is in use for this qualification. See the associated comment.

NS: There was not enough sample to repeat this analysis.

P: (Wisconsin only) Concentration found between the method detection limit and the reporting limit indicates the presence of a compound.

PL: This result may be a product of contamination from phthalate plasticizers, which are a common lab contaminant.

PX: This sample required preservation in the field to a pH of less than 2. The pH was checked before analysis and did not have a pH of less than 2.

PY: This sample required preservation in the field to a pH of 4 to 5. The pH was checked before analysis and did not have a pH of 4 to 5.

PZ: This sample required preservation in the field to a pH of 12 or greater. The pH was checked before analysis and did not have a pH of 12 or greater.

QX: This sample was used as a matrix spike. The percent recovery did not meet the acceptance criteria of the method. The analysis of a quality control standard showed the analytical system was out-of-control. The analytical result for this parameter in the unspiked sample is suspect and may not be reported for regulatory compliance purposes.

SB: The analysis of this sample was performed by an approved subcontract laboratory.

ST: This compound is not stable in acidic water.

SU: The analysis of the surrogate with this sample did not meet the acceptance criteria of the method.

TX: The analysis for this parameter was conducted after the holding time specified in the method.

UN: This compound is not stable under the conditions of the analysis.

WMX - Environmental Monitoring Laboratories, Inc. - Data Qualifier Report ENS #: 94-12164

Sample Point	EML Method	Analyte	Comment Code	Dilution Factor	Additional Comment
MW03	VOMSBAO322	EVERY ANALYTE FOR THIS METHOD	DL,NQ	1.250	SAMPLE WAS ANALYZED AFTER MASS SPECTRAL TUNE VERIFICATION TIME HAD EXPIRED. SAMPLE WAS CONFIRMED BY RERUN BUT TX.
MW03	VOMSBAO322	2-CHLOROETHYLVINYL ETHER	ST		
01FB	VOMSBAO322	2-CHLOROETHYLVINYL ETHER	ST		
MW02	VOMSBAO322	EVERY ANALYTE FOR THIS METHOD	TX		
MW02	VOMSBAO322	2-CHLOROETHYLVINYL ETHER	ST		
MW02	VOMSBAO322	EVERY ANALYTE FOR THIS METHOD	DL	3.333	
MW02	VOMSBAO322	2-CHLOROETHYLVINYL ETHER	ST		
DUP	VOMSBAO322	EVERY ANALYTE FOR THIS METHOD	DL,NQ	2.000	SAMPLE WAS CONFIRMED BY RERUN WITH CORRECT DILUTION BUT TX.
DUP	VOMSBAO322	2-CHLOROETHYLVINYL ETHER	ST		
DUP	VOMSBAO322	TETRACHLOROETHENE	CX		
MW01	VOMSBAO322	EVERY ANALYTE FOR THIS METHOD	DL	1.250	
MW01	VOMSBAO322	2-CHLOROETHYLVINYL ETHER	ST		
MW04	VOMSBAO322	EVERY ANALYTE FOR THIS METHOD	DL,NQ	14.300	THE DILUTION FOR THIS ANALYSIS WAS INCORRECT; RESPONSE OF HIGHEST CONCENTRATION COMPOUND FAILED CRITERIA FOR DILUTED SAMPLES. SAMPLE WAS CONFIRMED BY RERUN WITH CORRECT DILUTION BUT TX.
MW04	VOMSBAO322	2-CHLOROETHYLVINYL ETHER	ST		
MW05	VOMSBAO322	EVERY ANALYTE FOR THIS METHOD	DL,NQ	4.000	SAMPLE WAS CONFIRMED BY RERUN WITH CORRECT DILUTION BUT TX.
MW05	VOMSBAO322	2-CHLOROETHYLVINYL ETHER	ST		
MW05	VOMSBAO322	TETRACHLOROETHENE	CX		
					** End of Comments **

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - O.S.C.O
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: 01FB
Sample Type: WELL
Sample Number: AJ9910

ENS: 94-12164
MP: 562941
REV: 00

Sampled: 27-MAY-1994
Received: 28-MAY-1994
Reported: 21-JUN-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	NA		FT		FDWDTWTC01
GROUNDWATER ELEV.	NA		FT MSL		FDWGWELWDT
PH FIELD	NA		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	NA		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEGREES CELSIUS	NA		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	NA		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		624
1,1,1-TRICHLOROETHANE	ND	5	UG/L		624
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		624
1,1,2-TRICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHENE	ND	5	UG/L		624
1,2-DICHLOROBENZENE	ND	10.	UG/L		624
1,2-DICHLOROETHANE	ND	5	UG/L		624
1,2-DICHLOROPROPANE	ND	5	UG/L		624
1,3-DICHLOROBENZENE	ND	10.	UG/L		624
1,4-DICHLOROBENZENE	ND	10.	UG/L		624
2-BUTANONE	ND	10.	UG/L		624
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	624
4-METHYL-2-PENTANONE	ND	10.	UG/L		624
ACETONE	ND	34	UG/L		624
BENZENE	ND	5	UG/L		624
BROMODICHLOROMETHANE	ND	5	UG/L		624
BROMOFORM	ND	5	UG/L		624
BROMOMETHANE	ND	10.	UG/L		624
CARBON TETRACHLORIDE	ND	5	UG/L		624
CHLOROBENZENE	ND	5	UG/L		624
CHLOROETHANE	ND	10.	UG/L		624
CHLOROFORM	ND	5	UG/L		624
CHLOROMETHANE	ND	10.	UG/L		624
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
DIBROMOCHLOROMETHANE	ND	5	UG/L		624
ETHYLBENZENE	ND	5	UG/L		624
METHYLENE CHLORIDE	ND	5	UG/L		624
O-XYLENE	ND	10.	UG/L		624
TETRACHLOROETHENE	ND	5	UG/L		624
TOLUENE	ND	5	UG/L		624
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		624
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
TRICHLOROETHENE	ND	5	UG/L		624
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		624
VINYL CHLORIDE	ND	10.	UG/L		624

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - O.S.C.O
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: DUP
Sample Type: WELL
Sample Number: AJ9908

ENS: 94-12164
MP: 562941
REV: 00

Sampled: 27-MAY-1994
Received: 28-MAY-1994
Reported: 21-JUN-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	261.50		FT		FDWDTWTC01
GROUNDWATER ELEV.	258.17		FT MSL		FDWGWELWDT
PH FIELD	7.35		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	550		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEGREES CELSIUS	24.3		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	330.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		624
1,1,1-TRICHLOROETHANE	19	5	UG/L		624
1,1,2,2-TETRACHLOROETHANE	ND	8	UG/L		624
1,1,2-TRICHLOROETHANE	ND	8	UG/L		624
1,1-DICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHENE	23	5	UG/L		624
1,2-DICHLOROBENZENE	ND	10.	UG/L		624
1,2-DICHLOROETHANE	6	5	UG/L		624
1,2-DICHLOROPROPANE	ND	5	UG/L		624
1,3-DICHLOROBENZENE	ND	10.	UG/L		624
1,4-DICHLOROBENZENE	ND	10.	UG/L		624
2-BUTANONE	ND	20.	UG/L		624
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	624
4-METHYL-2-PENTANONE	ND	20.	UG/L		624
ACETONE	ND	48	UG/L		624
BENZENE	ND	5	UG/L		624
BROMODICHLOROMETHANE	ND	5	UG/L		624
BROMOFORM	ND	5	UG/L		624
BROMOMETHANE	ND	10.	UG/L		624
CARBON TETRACHLORIDE	ND	5	UG/L		624
CHLOROBENZENE	ND	5	UG/L		624
CHLOROETHANE	ND	10.	UG/L		624
CHLOROFORM	ND	5	UG/L		624
CHLOROMETHANE	ND	10.	UG/L		624
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
DIBROMOCHLOROMETHANE	ND	8	UG/L		624
ETHYLBENZENE	ND	5	UG/L		624
METHYLENE CHLORIDE	ND	10.	UG/L		624
O-XYLENE	ND	10.	UG/L		624
TETRACHLOROETHENE	170	5	UG/L	CX	624
TOLUENE	ND	5	UG/L		624
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		624
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
TRICHLOROETHENE	60.	5	UG/L		624
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		624
VINYL CHLORIDE	ND	10.	UG/L		624

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
624	Dilution factor 2.000 applied. SAMPLE WAS CONFIRMED BY RERUN WITH CORRECT DILUTION BUT TX.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - O.S.C.O
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW01
Sample Type: WELL
Sample Number: AJ9907

ENS: 94-12164
MP: 562941
REV: 00

Sampled: 27-MAY-1994
Received: 28-MAY-1994
Reported: 21-JUN-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	270.59		FT		FDWDTWTC01
GROUNDWATER ELEV.	258.74		FT MSL		FDWGWELWDT
PH FIELD	7.44		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	538		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEGREES CELSIUS	22.4		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	335.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		624
1,1,1-TRICHLOROETHANE	ND	5	UG/L		624
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		624
1,1,2-TRICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHENE	8	5	UG/L		624
1,2-DICHLOROBENZENE	ND	10.	UG/L		624
1,2-DICHLOROETHANE	ND	5	UG/L		624
1,2-DICHLOROPROPANE	ND	5	UG/L		624
1,3-DICHLOROBENZENE	ND	10.	UG/L		624
1,4-DICHLOROBENZENE	ND	10.	UG/L		624
2-BUTANONE	ND	13	UG/L		624
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	624
4-METHYL-2-PENTANONE	ND	13	UG/L		624
ACETONE	ND	34	UG/L		624
BENZENE	ND	5	UG/L		624
BROMODICHLOROMETHANE	ND	5	UG/L		624
BROMOFORM	ND	5	UG/L		624
BROMOMETHANE	ND	10.	UG/L		624
CARBON TETRACHLORIDE	ND	5	UG/L		624
CHLOROBENZENE	ND	5	UG/L		624
CHLOROETHANE	ND	10.	UG/L		624
CHLOROFORM	ND	5	UG/L		624
CHLOROMETHANE	ND	10.	UG/L		624
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
DIBROMOCHLOROMETHANE	ND	5	UG/L		624
ETHYLBENZENE	ND	5	UG/L		624
METHYLENE CHLORIDE	ND	6	UG/L		624
O-XYLENE	ND	10.	UG/L		624
TETRACHLOROETHENE	58	5	UG/L		624
TOLUENE	ND	5	UG/L		624
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		624
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
TRICHLOROETHENE	17	5	UG/L		624
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		624
VINYL CHLORIDE	ND	10.	UG/L		624

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
624	Dilution factor 1.250 applied.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - O.S.C.O
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW02
Sample Type: WELL
Sample Number: AJ9909

ENS: 94-12164
MP: 562941
REV: 00

Sampled: 27-MAY-1994
Received: 28-MAY-1994
Reported: 21-JUN-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	267.37		FT		FDWDTWTC01
GROUNDWATER ELEV.	258.28		FT MSL		FDWGWELWDT
PH FIELD	7.31		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	612		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEGREES CELSIUS	22.8		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	328.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		624
1,1,1-TRICHLOROETHANE	12	7	UG/L		624
1,1,2,2-TETRACHLOROETHANE	ND	13	UG/L		624
1,1,2-TRICHLOROETHANE	ND	13	UG/L		624
1,1-DICHLOROETHANE	ND	7	UG/L		624
1,1-DICHLOROETHENE	24	7	UG/L		624
1,2-DICHLOROBENZENE	ND	10.	UG/L		624
1,2-DICHLOROETHANE	ND	7	UG/L		624
1,2-DICHLOROPROPANE	ND	7	UG/L		624
1,3-DICHLOROBENZENE	ND	10.	UG/L		624
1,4-DICHLOROBENZENE	ND	10.	UG/L		624
2-BUTANONE	ND	33	UG/L		624
2-CHLOROETHYLVINYL ETHER	ND	27	UG/L	ST	624
4-METHYL-2-PENTANONE	ND	33	UG/L		624
ACETONE	92	80.	UG/L		624
BENZENE	ND	5	UG/L		624
BROMODICHLOROMETHANE	ND	7	UG/L		624
BROMOFORM	ND	7	UG/L		624
BROMOMETHANE	ND	10.	UG/L		624
CARBON TETRACHLORIDE	ND	5	UG/L		624
CHLOROBENZENE	ND	7	UG/L		624
CHLOROETHANE	ND	13	UG/L		624
CHLOROFORM	ND	7	UG/L		624
CHLOROMETHANE	ND	13	UG/L		624
CIS-1,3-DICHLOROPROPENE	ND	7	UG/L		624
DIBROMOCHLOROMETHANE	ND	13	UG/L		624
ETHYLBENZENE	ND	7	UG/L		624
METHYLENE CHLORIDE	ND	17	UG/L		624
O-XYLENE	ND	10.	UG/L		624
TETRACHLOROETHENE	190	7	UG/L		624
TOLUENE	ND	7	UG/L		624
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		624
TRANS-1,3-DICHLOROPROPENE	ND	7	UG/L		624
TRICHLOROETHENE	72	7	UG/L		624
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		624
VINYL CHLORIDE	ND	13	UG/L		624

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
624	Dilution factor 3.333 applied.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - O.S.C.O
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW04
Sample Type: WELL
Sample Number: AJ9906

ENS: 94-12164
MP: 562941
REV: 00

Sampled: 27-MAY-1994
Received: 28-MAY-1994
Reported: 21-JUN-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	262.17		FT		FDWDTWTC01
GROUNDWATER ELEV.	258.31		FT MSL		FDWGWELWDT
PH FIELD	7.31		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	519		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEGREES CELSIUS	23.9		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	318.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	29	UG/L		624
1,1,1-TRICHLOROETHANE	ND	29	UG/L		624
1,1,2,2-TETRACHLOROETHANE	ND	57	UG/L		624
1,1,2-TRICHLOROETHANE	ND	57	UG/L		624
1,1-DICHLOROETHANE	ND	29	UG/L		624
1,1-DICHLOROETHENE	ND	29	UG/L		624
1,2-DICHLOROBENZENE	ND	29	UG/L		624
1,2-DICHLOROETHANE	ND	29	UG/L		624
1,2-DICHLOROPROPANE	ND	29	UG/L		624
1,3-DICHLOROBENZENE	ND	29	UG/L		624
1,4-DICHLOROBENZENE	ND	29	UG/L		624
2-BUTANONE	ND	140	UG/L		624
2-CHLOROETHYLVINYL ETHER	ND	110	UG/L	ST	624
4-METHYL-2-PENTANONE	ND	140	UG/L		624
ACETONE	ND	340	UG/L		624
BENZENE	ND	6	UG/L		624
BROMODICHLOROMETHANE	ND	29	UG/L		624
BROMOFORM	ND	29	UG/L		624
BROMOMETHANE	ND	29	UG/L		624
CARBON TETRACHLORIDE	ND	6	UG/L		624
CHLOROBENZENE	ND	29	UG/L		624
CHLOROETHANE	ND	57	UG/L		624
CHLOROFORM	ND	29	UG/L		624
CHLOROMETHANE	ND	57	UG/L		624
CIS-1,3-DICHLOROPROPENE	ND	29	UG/L		624
DIBROMOCHLOROMETHANE	ND	57	UG/L		624
ETHYLBENZENE	ND	29	UG/L		624
METHYLENE CHLORIDE	ND	72	UG/L		624
O-XYLENE	ND	29	UG/L		624
TETRACHLOROETHENE	240	29	UG/L		624
TOLUENE	ND	29	UG/L		624
TRANS-1,2-DICHLOROETHENE	ND	29	UG/L		624
TRANS-1,3-DICHLOROPROPENE	ND	29	UG/L		624
TRICHLOROETHENE	61	29	UG/L		624
TRICHLOROFLUOROMETHANE	ND	29	UG/L		624
VINYL CHLORIDE	ND	57	UG/L		624

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
624	Dilution factor 14.300 applied. THE DILUTION FOR THIS ANALYSIS WAS INCORRECT; RESPONSE OF HIGHEST CONCENTRATION COMPOUND FAILED CRITERIA FOR DILUTED SAMPLES. SAMPLE WAS CONFIRMED BY RERUN WITH CORRECT DILUTION BUT TX.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - O.S.C.O
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW05
Sample Type: WELL
Sample Number: AJ9905

ENS: 94-12164
MP: 562941
REV: 00

Sampled: 27-MAY-1994
Received: 28-MAY-1994
Reported: 21-JUN-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	261.50		FT		FDWDTWTC01
GROUNDWATER ELEV.	258.17		FT MSL		FDWGWELWDT
PH FIELD	7.35		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	550		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEGREES CELSIUS	24.3		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	330.00		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		624
1,1,1-TRICHLOROETHANE	19	8	UG/L		624
1,1,2,2-TETRACHLOROETHANE	ND	16	UG/L		624
1,1,2-TRICHLOROETHANE	ND	16	UG/L		624
1,1-DICHLOROETHANE	ND	8	UG/L		624
1,1-DICHLOROETHENE	23	8	UG/L		624
1,2-DICHLOROBENZENE	ND	10.	UG/L		624
1,2-DICHLOROETHANE	ND	8	UG/L		624
1,2-DICHLOROPROPANE	ND	8	UG/L		624
1,3-DICHLOROBENZENE	ND	10.	UG/L		624
1,4-DICHLOROBENZENE	ND	10.	UG/L		624
2-BUTANONE	ND	40.	UG/L		624
2-CHLOROETHYLVINYL ETHER	ND	32	UG/L	ST	624
4-METHYL-2-PENTANONE	ND	40.	UG/L		624
ACETONE	ND	96	UG/L		624
BENZENE	ND	5	UG/L		624
BROMODICHLOROMETHANE	ND	8	UG/L		624
BROMOFORM	ND	8	UG/L		624
BROMOMETHANE	ND	10.	UG/L		624
CARBON TETRACHLORIDE	ND	5	UG/L		624
CHLOROBENZENE	ND	8	UG/L		624
CHLOROETHANE	ND	16	UG/L		624
CHLOROFORM	ND	8	UG/L		624
CHLOROMETHANE	ND	16	UG/L		624
CIS-1,3-DICHLOROPROPENE	ND	8	UG/L		624
DIBROMOCHLOROMETHANE	ND	16	UG/L		624
ETHYLBENZENE	ND	8	UG/L		624
METHYLENE CHLORIDE	ND	20.	UG/L		624
O-XYLENE	ND	10.	UG/L		624
TETRACHLOROETHENE	250	8	UG/L	CX	624
TOLUENE	ND	8	UG/L		624
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		624
TRANS-1,3-DICHLOROPROPENE	ND	8	UG/L		624
TRICHLOROETHENE	62	8	UG/L		624
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		624
VINYL CHLORIDE	ND	16	UG/L		624

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Item	Additional Comment Explanations (NQ/DL)
624	Dilution factor 4.000 applied. SAMPLE WAS CONFIRMED BY RERUN WITH CORRECT DILUTION BUT TX.

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - O.S.C.O
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: TBK-MW02
Sample Type: WELL
Sample Number: AJ9909

ENS: 94-12164
MP: 562941
REV: 00

Sampled: 27-MAY-1994
Received: 28-MAY-1994
Reported: 21-JUN-1994

Analyte	Result	P Q L	Units	Comments	Method
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L	TX	624
1,1,1-TRICHLOROETHANE	ND	5	UG/L	TX	624
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L	TX	624
1,1,2-TRICHLOROETHANE	ND	5	UG/L	TX	624
1,1-DICHLOROETHANE	ND	5	UG/L	TX	624
1,1-DICHLOROETHENE	ND	5	UG/L	TX	624
1,2-DICHLOROBENZENE	ND	10.	UG/L	TX	624
1,2-DICHLOROETHANE	ND	5	UG/L	TX	624
1,2-DICHLOROPROPANE	ND	5	UG/L	TX	624
1,3-DICHLOROBENZENE	ND	10.	UG/L	TX	624
1,4-DICHLOROBENZENE	ND	10.	UG/L	TX	624
2-BUTANONE	ND	10.	UG/L	TX	624
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST,TX	624
4-METHYL-2-PENTANONE	ND	10.	UG/L	TX	624
ACETONE	ND	34	UG/L	TX	624
BENZENE	ND	5	UG/L	TX	624
BROMODICHLOROMETHANE	ND	5	UG/L	TX	624
BROMOFORM	ND	5	UG/L	TX	624
BROMOMETHANE	ND	10.	UG/L	TX	624
CARBON TETRACHLORIDE	ND	5	UG/L	TX	624
CHLOROBENZENE	ND	5	UG/L	TX	624
CHLOROETHANE	ND	10.	UG/L	TX	624
CHLOROFORM	ND	5	UG/L	TX	624
CHLOROMETHANE	ND	10.	UG/L	TX	624
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L	TX	624
DIBROMOCHLOROMETHANE	ND	5	UG/L	TX	624
ETHYLBENZENE	ND	5	UG/L	TX	624
METHYLENE CHLORIDE	ND	5	UG/L	TX	624
O-XYLENE	ND	10.	UG/L	TX	624
TETRACHLOROETHENE	ND	5	UG/L	TX	624
TOLUENE	ND	5	UG/L	TX	624
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L	TX	624
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L	TX	624
TRICHLOROETHENE	ND	5	UG/L	TX	624
TRICHLOROFLUOROMETHANE	ND	10.	UG/L	TX	624
VINYL CHLORIDE	ND	10.	UG/L	TX	624

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Subcontract To: [redacted]

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

[redacted]

SITE/FACILITY # [redacted] SITE NAME: [redacted]

Sample Point: W 0 1 F B (Source Code)

B A R C O D E

SAMPLE DATE: 9 4 0 5 2 7 (YY / MM / DD)

SAMPLE TIME: 1 3 : 1 7 (2400 HR.)

MATRIX CODE: W

Water ..... (W) Soil ..... (S) Leachate ..... (C) Other ..... (X)

Source Codes:

Well ..... (W) Dewatering/Pressure Relief .... (D) Surface Water Impoundment ... (I) Leachate System .. (C) Gas Condensate ... (M) Air ..... (A) Pretreatment Facility ... (P) Influent ..... (U) Effluent ..... (T) River/Stream/Brook .. (R) Lake or Ocean ..... (L) Outfall ..... (O) Soil ..... (S) Bottom Sediment ... (B) Noise ..... (N) Generation Pt. .... (G) Other ..... (X) Specify _____

ENS # 94-12164

AquaPak™ CONTENT

[redacted]	FILTER Y — N	FIELD COMMENTS	[redacted]
[redacted]	Y / N	EML	[redacted]
[redacted]	Y / N	EML	[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 5/26/94 Time: 08:30 (2400 HR.)
   Signature: R. Liles Cobb Seal #: 74048 Intact: yes

I have received these materials in good condition from the above person.

2. Name: _____ Signature: _____
   Date: / / Time: : (2400 HR.) Remarks: _____

I have received these materials in good condition from the above person.

3. Name: _____ Signature: _____
   Date: / / Time: : (2400 HR.) Remarks: _____

4. AquaPak™/Sub Contr. # 2040 Sealed By: R. Liles Cobb (Print) Date: 05/27/94 Time: 15:30 (2400 HR.)
   Signature: R. Liles Cobb Seal #: 74604 Intact: yes

[redacted]

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

Site # S 6 2

Bottle Set: A J 9 9 1 0

Sample Point: W 0 1 F 8 T (Source Code)

FIELD INFORMATION FORM

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated | Y | N | (circle one) NOT APPLICABLE

Sampling Equipment ..... Dedicated | Y | N | (circle one)

Purging Device		A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device		B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material		A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material		B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging		A-Teflon	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling		B-Tygon C-Rope X- (SPECIFY)	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
Filtering Devices 0.45 μ:	None	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

NOT APPLICABLE

Well Elevation	(ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	(ft)	Depth to water From land surface	(ft)
Groundwater Elevation	(ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	(ft)	Stickup	(ft)

1st	(STD) ph	1st	μm/cm at 25° C spec. cond.	Sample Temp.	(° C)
2nd	(STD) ph	2nd	μm/cm at 25° C spec. cond.	(other parameter)	value / units
3rd	(STD) ph	3rd	μm/cm at 25° C spec. cond.	(other parameter)	value / units
4th	(STD) ph	4th	μm/cm at 25° C spec cond.	(other parameter)	value / units

FIELD COMMENTS

Sample Appearance: N/A (if applicable) Odor: Color: Turbidity:

Weather Conditions: Wind Speed 5 mph Direction Precipitation Y/N Outlook Sunny, mild

Specific Comments:

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

5/27/94 (Date) R. Lo Lobb (Signature) Employer: RESTEC

Subcontract To: [redacted]

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

[redacted]

SITE/FACILITY # [redacted] SITE NAME: [redacted]

Sample Point: W O W P (Source Code)

B A R C O D E

SAMPLE DATE: 9 4 0 5 2 7 (YY / MM / DD)

SAMPLE TIME: 1 1 : 2 5 (2400 HR.)

MATRIX CODE: W

Water (W) Soil (S) Leachate (C) Other (X)

Source Codes:

Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generation Pt. (G) Other (X) Specify

ENS # 94-12164

AquaPak™ CONTENT

SAMPLE ID	[redacted]	[redacted]	[redacted]	[redacted]	FILTER Y—N	FIELD COMMENTS	[redacted]
[redacted]					Y N	EML	
[redacted]					Y N	EML	
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 05/26/94 Time: 08:30 (2400 HR.)
   Signature: R. Liles Cobb Seal #: 72961 Intact: yes

I have received these materials in good condition from the above person.

2. Name: Signature:
   Date: / / Time: : (2400 HR.) Remarks:

I have received these materials in good condition from the above person.

3. Name: Signature:
   Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 2000 Sealed By: R. Liles Cobb (Print) Date: 05/27/94 Time: 15:30 (2400 HR.)
   Signature: R. Liles Cobb Seal #: 74071 Intact: yes

[redacted]

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AJ9908

FIELD INFORMATION FORM

Sample Point: WD4P (Source Code)

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
940527		3	69.9	210.0

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated |Y| |N| (circle one) Sampling Equipment ..... Dedicated |Y| |N| (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	A/B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A/C	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	A/B	A-Teflon	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling	A/D	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	NONE	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	519.67 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	261.50 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	258.17 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	*330.00 (ft)	Stickup	(ft)

	ph	spec. cond. (μm/cm at 25° C)	
1st	7.35 (STD)	550	Sample Temp. 24.3 (° C)
2nd	(STD)		(other parameter) / value / units
3rd	(STD)		(other parameter) / value / units
4th	(STD)		(other parameter) / value / units

FIELD COMMENTS

Sample Appearance: clear (if applicable) Odor: none Color: clear Turbidity: clear

Weather Conditions: Wind Speed calm Direction ____ Precipitation Y/N Outlook sunny

Specific Comments: *well depth obtained from site specific monitoring plan
Purge volume = (330.00' D.T.W.) - (261.50' D.T.W.) =
(68.50' water) x 1.02 = 69.9 gals/casing
x 3 = 209.7 gals purge volume
Hydac meter used to measure ph, temp, and conductivity
Temp read in °F and converted to °C

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

5/27/94 (Date) R. Giles Cobb (Signature) Employer: RUST E&I

Subcontract To: [redacted]

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ [redacted]
Date Sealed 94 05 27
[redacted]

SITE/FACILITY # 562 SITE NAME: [redacted]

Sample Point: W M W 0 1
Source Code

B A R C O D E

SAMPLE DATE: - 94 05 27
YY / MM / DD

SAMPLE TIME: 09:20 (2400 HR.) MATRIX CODE: W

Water ..... (W) Leachate ..... (C)
Soil ..... (S) Other ..... (X)

Source Codes:

Well ..... (W)	Leachate System ... (C)	Pretreatment Facility ... (P)	River/Stream/Brook ... (R)	Soil ..... (S)	Generation Pt. ..... (G)
Dewatering/Pressure Relief .... (D)	Gas Condensate ... (M)	Influent ..... (U)	Lake or Ocean ..... (L)	Bottom Sediment ... (B)	Other ..... (X)
Surface Water Impoundment ... (I)	Air ..... (A)	Effluent ..... (T)	Outfall ..... (O)	Noise ..... (N)	Specify _____

ENS # 94-12164

AquaPak™ CONTENT

[redacted]	FILTER Y — N	FIELD COMMENTS	[redacted]
[redacted]	Y / N	EML	[redacted]
[redacted]	Y / N	EML	[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]
[redacted]	Y / N		[redacted]

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 5/26/94 Time: 08:30 2400 HR.
Signature: R. Liles Cobb Seal #: 72961 Intact: yes

I have received these materials in good condition from the above person.

2. Name: _____ Signature: _____
Date: / / Time: : 2400 HR. Remarks: _____

I have received these materials in good condition from the above person.

3. Name: _____ Signature: _____
Date: / / Time: : 2400 HR. Remarks: _____

4. AquaPak™/Sub Contr. # 2000 Sealed By: R. Liles Cobb (Print) Date: 05/27/94 Time: 15:30 2400 HR.
Signature: R. Liles Cobb Seal #: 74071 Intact: yes

LAB USE ONLY
Opened By: [redacted]

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AJ9907

FIELD INFORMATION FORM

Sample Point: WMW01 (Source Code)

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
940527	0815	4	657	1980

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated | Y | N | (circle one) Sampling Equipment ..... Dedicated | Y | N | (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	A/B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A/C	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	A/B	A-Teflon	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling	A/D	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	none N/A	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	529.33 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	270.59 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	258.74 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	* 335.00 (ft)	Stickup	(ft)

	ph	spec. cond. (μm/cm at 25° C)	Sample Temp.
1st	7.44 (STD)	538	24.4 (° C)
2nd	(STD)		
3rd	(STD)		
4th	(STD)		

(other parameter)	value	units

FIELD COMMENTS

Sample Appearance: Clear (if applicable) Odor: None Color: clear Turbidity: clear

Weather Conditions: Wind Speed 9 m Direction Precipitation Y/N Outlook

Specific Comments: * Well depth obtained from site specific monitoring plan

Purge Volume = (TD 335 - (270.59 DTW)) =

64.4 x 1.02 = 65.7 gal / casing

x3 = 197.1 gallons

Hydac meter used to measure conductivity, ph + Temp

Temp read in °F and converted to °C

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

5/27/94 (Date) R. L. [illegible] (Signature) Employer: RUST E&I

Subcontract To: [redacted]

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2040
Date Sealed 9 4 0 5 2 7 (YY / MM / DD)
Seal # 74048
By: [illegible]

SITE/FACILITY # 562 SITE NAME: O.S.C.O

Sample Point: w m w o 2 (Source Code)

B A R C O D E

SAMPLE DATE: 9 4 0 5 2 7 (YY / MM / DD)

SAMPLE TIME: 1 4 : 1 4 (2400 HR.) MATRIX CODE: w

Water ..... (W) Leachate ..... (C)
Soil ..... (S) Other ..... (X)

Source Codes:

Well ..... (W) Leachate System .. (C) Pretreatment Facility ... (P) River/Stream/Brook .. (R) Soil ..... (S) Generation Pt. .... (G)
Dewatering/Pressure Relief .... (D) Gas Condensate ... (M) Influent ..... (U) Lake or Ocean ..... (L) Bottom Sediment ... (B) Other ..... (X)
Surface Water Impoundment ... (I) Air ..... (A) Effluent ..... (T) Outfall ..... (O) Noise ..... (N) Specify _____

ENS # 94-12164

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y — N	FIELD COMMENTS	E.M.L. COMMENTS
[illegible]	04	G	HCL 4C	VOMSBA0322	Y / N	EML	
[illegible]	01	G	HCL 4C	VOMSBA0322	Y / N	EML	TBK
					Y / N		BOND
[illegible]					Y / N		BRL
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 05/26/94 Time: 08:30 (2400 HR.)
Signature: R. Liles Cobb Seal #: 74048 Intact: yes

I have received these materials in good condition from the above person.

2. Name: _____ Signature: _____
Date: / / Time: : (2400 HR.) Remarks: _____

I have received these materials in good condition from the above person.

3. Name: _____ Signature: _____
Date: / / Time: : (2400 HR.) Remarks: _____

4. AquaPak™/Sub Contr. # 2040 Sealed By: R. Liles Cobb (Print) Date: 05/27/94 Time: 15:30 (2400 HR.)
Signature: R. Liles Cobb Seal #: 74604 Intact: yes

LAB USE ONLY
Opened By: (Signature) [signature] Date: 5/28/94 Time: 10:40 (2400 HR.)
[illegible] 2040 Temp°C 9 Seal # 74604 Intact Y

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AJ9909

Sample Point: WMW02 (Source Code)

FIELD INFORMATION FORM

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
940527	13.34	0.3	61.8	186.0

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated (Y) N (circle one) Sampling Equipment ..... Dedicated (Y) N (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	A/B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A/C	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	A/B	A-Teflon	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling	A/D	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	None	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	525.65 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	267.37 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	258.28 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	*328.00 (ft)	Stickup	(ft)

	ph		spec. cond.		Sample Temp.	(other parameter)	value	units
1st	7.31 (STD)	1st	612	μm/cm at 25° C	22.8 (° C)			
2nd	(STD)	2nd		μm/cm at 25° C				
3rd	(STD)	3rd		μm/cm at 25° C				
4th	(STD)	4th		μm/cm at 25° C				

FIELD COMMENTS

Sample Appearance: clear (if applicable) Odor: none Color: clear Turbidity: none

Weather Conditions: Wind Speed 5 Direction W Precipitation Y/N Outlook Sunny, mild.

Specific Comments: * Well depth obtained from site specific monitoring plan

Purge Volume = (328.0' TD) − (267.37' D.T.W.) =

(60.63' water) x 1.02 = 61.8 gals/casing

x 3 = 185.4 gals/purge volume

Hydac meter used to measure PH, temp, and conductivity

Temp read in °F and converted to °C

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

5/27/94 (Date) R. Liles Cobb (Signature) Employer: BUST E&I

Subcontract To:

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2000
Date Sealed 9 4 0 5 2 1 (YY / MM / DD)
Seal # 72961
By: RC

SITE/FACILITY # 562 SITE NAME: O.S.C.O

Sample Point: W m w 0 4 (Source Code)

BAR CODE

SAMPLE DATE: 9 4 0 5 2 7 (YY / MM / DD)

SAMPLE TIME: 1 0 : 3 5 (2400 HR.) MATRIX CODE: W

Water (W) Soil (S) Leachate (C) Other (X)

Source Codes:

Well (W) Dewatering/Pressure Relief (D) Surface Water Impoundment (I) Leachate System (C) Gas Condensate (M) Air (A) Pretreatment Facility (P) Influent (U) Effluent (T) River/Stream/Brook (R) Lake or Ocean (L) Outfall (O) Soil (S) Bottom Sediment (B) Noise (N) Generation Pt. (G) Other (X) Specify

ENS # 94-12164

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
AJR906-A	04	G	HCL 4C	VOMSBAD322	Y N	EML	
AJR906-B	01	G	HCL 4C	VOMSBAD322	Y N	EML	
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		
					Y N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 5/26/94 Time: 08:30 (2400 HR.)
   Signature: R. Liles Cobb Seal #: 72961 Intact: yes

I have received these materials in good condition from the above person.

2. Name: Signature:
   Date: / / Time: : (2400 HR.) Remarks:

I have received these materials in good condition from the above person.

3. Name: Signature:
   Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 2000 Sealed By: R. Liles Cobb (Print) Date: 05/27/94 Time: 15:30 (2400 HR.)
   Signature: R. Liles Cobb Seal #: 74071 Intact: yes

LAB USE ONLY
Opened By: (Signature) Date: 5/28/94 Time: 11:00 (2400 HR.)
AquaPak™/Sub Contr. # 2000 Temp °C 13 Seal # 74071 Intact ✓

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AJ9906

Sample Point: W MW04 (Source Code)

FIELD INFORMATION FORM

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
940527	0932	3	569	170

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated | Y | N | (circle one) Sampling Equipment ..... Dedicated | Y | N | (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	A/B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A/C	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	A/B	A-Teflon	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling	A/D	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	none N/A	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	5208.48 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	262.17 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	258.31 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	*318.00 (ft)	Stickup	(ft)

	ph		spec. cond.		Sample Temp.
1st	7.31 (STD)	1st	519.9 μm/cm at 25° C		23.9 (° C)
2nd	(STD)	2nd	μm/cm at 25° C	(other parameter)	value / units
3rd	(STD)	3rd	μm/cm at 25° C	(other parameter)	value / units
4th	(STD)	4th	μm/cm at 25° C	(other parameter)	value / units

FIELD COMMENTS

Sample Appearance: clear (if applicable) Odor: none Color: clear Turbidity: clear

Weather Conditions: Wind Speed calm Direction Precipitation Y/N Outlook sunny

Specific Comments: *Well depth obtained from site specific monitoring plan
Purge Volume = (TD 318.0') - (262.17' DTW) =
55.83 x 1.02 = 56.9 gals / casing
x 3 = 170.8 (170.8) gallons
Hydac meter used to measure Ph, temp, and conductivity
Temp read in °F and converted to °C

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

5/27/94 (Date) R. Lilas Cobb (Signature) Employer: RUST E&I

Subcontract To:

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2000
Date Sealed 9 4 0 5 2 1 (YY MM DD)
Seal # 72961
By:

SITE/FACILITY # 5621 SITE NAME: O.S.C.O

Sample Point: W M W O S (Source Code)

B A R C O D E

SAMPLE DATE: - 9 4 0 5 2 7 (YY / MM / DD)

SAMPLE TIME: 1 1 : 2 5 (2400 HR.)

MATRIX CODE: W

Water.....(W) Soil.....(S) Leachate.....(C) Other.....(X)

Source Codes:
Well.....(W) Dewatering/Pressure Relief....(D) Surface Water Impoundment...(I) Leachate System..(C) Gas Condensate...(M) Air.....(A) Pretreatment Facility...(P) Influent.....(U) Effluent.....(T) River/Stream/Brook...(R) Lake or Ocean.....(L) Outfall.....(O) Soil.....(S) Bottom Sediment...(B) Noise.....(N) Generation Pt.....(G) Other.....(X) Specify

ENS # 94-12164

AquaPak™ CONTENT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y—N	FIELD COMMENTS	E.M.L. COMMENTS
AJ9905-A	04	G	HCL 4C	VOMSBA0322	Y/N	EML	
AJ9905-B	01	G	HCL 4C	VOMSBA0322	Y/N	EML	IBK
					Y/N		BQ BRL
					Y/N		11 (BNG)
					Y/N		5-27-94
					Y/N		
					Y/N		
					Y/N		
					Y/N		
					Y/N		
					Y/N		
					Y/N		
					Y/N		
					Y/N		
					Y/N		
					Y/N		
					Y/N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 5/26/94 Time: 08:30 (2400 HR.)
Signature: R. Liles Cobb Seal #: 72961 Intact: yes

I have received these materials in good condition from the above person.

2. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

I have received these materials in good condition from the above person.

3. Name: Signature:
Date: / / Time: : (2400 HR.) Remarks:

4. AquaPak™/Sub Contr. # 2000 Sealed By: R. Liles Cobb (Print) Date: 05/27/94 Time: 15:30 (2400 HR.)
Signature: R. Liles Cobb Seal #: 74071 Intact: yes

LAB USE ONLY
Opened By: (Signature) Date: 5 28 94 Time: 11:00 (2400 HR.)
AquaPak™/Sub Contr. # 2000 Temp°C 12 Seal # 74071 Intact

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

Site # 562

Bottle Set: AJ9905

Sample Point: WMW05 (Source Code)

FIELD INFORMATION FORM

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
940527	10.47	3	69.9	210.0

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated (Y) N (circle one) Sampling Equipment ..... Dedicated (Y) N (circle one)

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	A/B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A/C	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	A/B	A-Teflon	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling	A/D	B-Tygon	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
		C-Rope X- (SPECIFY)			
Filtering Devices 0.45 μ:	None	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	519.67 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	261.50 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	258.17 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	*330.00 (ft)	Stickup	(ft)

	ph		spec. cond.		Sample Temp.
1st	7.35 (STD)	1st	550 μm/cm at 25° C		24.3 (° C)
2nd	(STD)	2nd	μm/cm at 25° C	(other parameter)	value / units
3rd	(STD)	3rd	μm/cm at 25° C	(other parameter)	value / units
4th	(STD)	4th	μm/cm at 25° C	(other parameter)	value / units

FIELD COMMENTS

Sample Appearance: clear (if applicable) Odor: None Color: clear Turbidity: clear

Weather Conditions: Wind Speed Calm Direction — Precipitation Y/N Outlook Sunny, mild

Specific Comments: *Well depth obtained from site specific monitoring plan

Purge Volume = (330.0' TD) - (261.50' DTW) =

(68.50' Water) x 1.02 = 69.9 gals/casing

x 3 = 209.7 gals purge volume

Hydac meter used to measure Ph, temp, and conductivity

Temp read in °F and converted to °C

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

5/27/94 (Date) R. Liles Cobb (Signature) Employer: RUST E & I

WMX Environmental Monitoring Laboratories, Inc.

Analytical Report Transmittal Memorandum

Date: July 19, 1994

To: Client(s) - see below

From: Dave Lundquist

Subject: O.S.C.O. 94-12999

Please find enclosed the current Client Report, Field Information Forms, and Field Chain-of-Custody Records for the recently completed event at O.S.C.O..

The data has been thoroughly reviewed and compared to historical data. We have tried to provide a report that is complete and of known and documented quality. Please take a moment to review the enclosed report to insure it meets your expectations.

If you have any questions, don't hesitate to call Joe Rentz at (708)208-3100.

Report Distribution:

Name	Report Type
Marc Yalom*	ALL

* *Program Manager*

Mail Code: 1

Enclosed are the analytical results for samples received from your facility. The results in the Client Report are for a single ENS (Event Notification System) number only. The sampling event at your facility may include multiple ENS numbers. A separate Client Report will be generated for each one.

It is the goal of WMX Environmental Monitoring Laboratories Inc. to provide analytical data in a timely fashion, formatted in a way that our clients will find most useful.

If you have any questions concerning the form or content of this report, please contact the WMX EML Customer Operations Department:

Main Number (708) 208-3100
FAX Number (708) 208-1175

Note: Two designations may appear in the results column of your Client Report: NA or ND.

The designation NA (for "Not Analyzed") is used to identify analytes which were requested in the monitoring program, but for which no suitable testing methodology exists. NA may also indicate a dry well, broken sample bottle, insufficient sample volume, or other condition which precludes analysis for a sample.

The designation ND (for "Not Detected") is used to indicate that the analyte of interest was not found at or above the concentration listed under the EMLRL (EML Reporting Limit) heading.

Unless otherwise indicated, all analytes meet the requirements of holding time as specified in the method.

Deborah C. Hockman, Ph.D.

Deborah C. Hockman, Ph.D.
President
WMX Environmental Monitoring Laboratories, Inc.

DATA QUALIFIER COMMENT CODE DEFINITIONS

AR: Acid surrogate recoveries did not meet the acceptance criteria of the method. Oxidative degradation due to sample matrix is suggested.

BB: Broken bottle.

BL: The method blank concentrations associated with this analyte did not meet the acceptance criteria of the method.

CX: The concentration of this compound exceeded the calibration used for this analysis. The concentration reported is estimated.

CU: Co-elution with another compound interferes with the quantitation of this compound. The concentration reported is estimated.

DL: The sample was diluted during analysis. Reporting limits have been adjusted where necessary.

DP: Aliquots or spiked aliquots of this sample were analyzed in duplicate. The relative percent difference between the two results did not meet the acceptance criteria of the method.

DW: Dry Well.

HS: Headspace in sample exceeded laboratory control limit. The reported results of the analysis may be less than actual value.

IS: The internal standard recoveries associated with this analysis did not meet the acceptance criteria of the method.

IV: The bottle did not contain enough sample to perform the analysis.

MP: 3-methylphenol and 4-methylphenol co-elute under the analytical conditions of the method, and cannot be differentiated solely on the basis of their mass spectra. The concentrations reported may be either or both isomers.

MX: This sample was used as a matrix spike. The percent recovery did not meet the acceptance criteria of the method. The analysis of a quality control standard showed the analytical system was in control. The result reported may therefore be affected by matrix interferences.

NN: N-nitrosodiphenylamine cannot be distinguished from diphenylamine using gas chromatography. The concentrations reported may be either or both compounds.

NQ: No standard qualifier code is in use for this qualification. See the associated comment.

NS: There was not enough sample to repeat this analysis.

P: (Wisconsin only) Concentration found between the method detection limit and the reporting limit indicates the presence of a compound.

PL: This result may be a product of contamination from phthalate plasticizers, which are a common lab contaminant.

PX: This sample required preservation in the field to a pH of less than 2. The pH was checked before analysis and did not have a pH of less than 2.

PY: This sample required preservation in the field to a pH of 4 to 5. The pH was checked before analysis and did not have a pH of 4 to 5.

PZ: This sample required preservation in the field to a pH of 12 or greater. The pH was checked before analysis and did not have a pH of 12 or greater.

QX: This sample was used as a matrix spike. The percent recovery did not meet the acceptance criteria of the method. The analysis of a quality control standard showed the analytical system was out-of-control. The analytical result for this parameter in the unspiked sample is suspect and may not be reported for regulatory compliance purposes.

SB: The analysis of this sample was performed by an approved subcontract laboratory.

ST: This compound is not stable in acidic water.

SU: The analysis of the surrogate with this sample did not meet the acceptance criteria of the method.

TX: The analysis for this parameter was conducted after the holding time specified in the method.

UN: This compound is not stable under the conditions of the analysis.

WMX - Environmental Monitoring Laboratories, Inc. - Data Qualifier Report ENS #: 94-12999

Sample Point	EML Method	Analyte	Comment Code	Dilution Factor	Additional Comment
MW03	VOMSBAO322	2-CHLOROETHYLVINYL ETHER	ST		
MW03	VOMSBAO322	2-CHLOROETHYLVINYL ETHER	ST		
					** End of Comments **

WMX - Environmental Monitoring Laboratories, Inc. - Data Qualifier Report ENS #: 94-12999

Sample Point	Sample ID	RML Method	Comment Code	Dilution Factor	Additional Comment
					NO SAMPLE LEVEL COMMENTS

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - O.S.C.O
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: MW03
Sample Type: WELL
Sample Number: AK4023

ENS: 94-12999
MP: 562941
REV: 00

Sampled: 5-JUL-1994
Received: 6-JUL-1994
Reported: 19-JUL-1994

Analyte	Result	P Q L	Units	Comments	Method
FIELD DATA:					
DEPTH TO WATER FROM TOP OF CASING	260.95		FT		FDWDTWTC01
GROUNDWATER ELEV.	258.10		FT MSL		FDWGWELWDT
PH FIELD	7.24		PH UNITS		FDPHSING01
SPECIFIC CONDUCTANCE FIELD	629		UMHOS/CM		FDSPCOND01
WATER TEMPERATURE IN DEGREES CELSIUS	21.9		DEGREES C		FDXTEMPC01
WELL DEPTH TOTAL	319.50		FT		FDWGWELWDT
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		624
1,1,1-TRICHLOROETHANE	ND	5	UG/L		624
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		624
1,1,2-TRICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHENE	7	5	UG/L		624
1,2-DICHLOROBENZENE	ND	10.	UG/L		624
1,2-DICHLOROETHANE	ND	5	UG/L		624
1,2-DICHLOROPROPANE	ND	5	UG/L		624
1,3-DICHLOROBENZENE	ND	10.	UG/L		624
1,4-DICHLOROBENZENE	ND	10.	UG/L		624
2-BUTANONE	ND	10.	UG/L		624
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	624
4-METHYL-2-PENTANONE	ND	10.	UG/L		624
ACETONE	ND	34	UG/L		624
BENZENE	ND	5	UG/L		624
BROMODICHLOROMETHANE	ND	5	UG/L		624
BROMOFORM	ND	5	UG/L		624
BROMOMETHANE	ND	10.	UG/L		624
CARBON TETRACHLORIDE	ND	5	UG/L		624
CHLOROBENZENE	ND	5	UG/L		624
CHLOROETHANE	ND	10.	UG/L		624
CHLOROFORM	ND	5	UG/L		624
CHLOROMETHANE	ND	10.	UG/L		624
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
DIBROMOCHLOROMETHANE	ND	5	UG/L		624
ETHYLBENZENE	ND	5	UG/L		624
METHYLENE CHLORIDE	ND	5	UG/L		624
O-XYLENE	ND	10.	UG/L		624
TETRACHLOROETHENE	49	5	UG/L		624
TOLUENE	ND	5	UG/L		624
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		624
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
TRICHLOROETHENE	32	5	UG/L		624
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		624
VINYL CHLORIDE	ND	10.	UG/L		624

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

WMX ENVIRONMENTAL MONITORING LABORATORIES, INC

CLIENT REPORT

Site: 562 - O.S.C.O
Treatment Facility
107 S. Motor Ave.
Azusa CA 91702

Sample Point: TBK-MW03
Sample Type: WELL
Sample Number: AK4023

ENS: 94-12999
MP: 562941
REV: 00

Sampled: 5-JUL-1994
Received: 6-JUL-1994
Reported: 19-JUL-1994

Analyte	Result	P Q L	Units	Comments	Method
VOLATILE ORGANICS:					
(M and P)-XYLENE	ND	10.	UG/L		624
1,1,1-TRICHLOROETHANE	ND	5	UG/L		624
1,1,2,2-TETRACHLOROETHANE	ND	5	UG/L		624
1,1,2-TRICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHANE	ND	5	UG/L		624
1,1-DICHLOROETHENE	ND	5	UG/L		624
1,2-DICHLOROBENZENE	ND	10.	UG/L		624
1,2-DICHLOROETHANE	ND	5	UG/L		624
1,2-DICHLOROPROPANE	ND	5	UG/L		624
1,3-DICHLOROBENZENE	ND	10.	UG/L		624
1,4-DICHLOROBENZENE	ND	10.	UG/L		624
2-BUTANONE	ND	10.	UG/L		624
2-CHLOROETHYLVINYL ETHER	ND	20.	UG/L	ST	624
4-METHYL-2-PENTANONE	ND	10.	UG/L		624
ACETONE	ND	34	UG/L		624
BENZENE	ND	5	UG/L		624
BROMODICHLOROMETHANE	ND	5	UG/L		624
BROMOFORM	ND	5	UG/L		624
BROMOMETHANE	ND	10.	UG/L		624
CARBON TETRACHLORIDE	ND	5	UG/L		624
CHLOROBENZENE	ND	5	UG/L		624
CHLOROETHANE	ND	10.	UG/L		624
CHLOROFORM	ND	5	UG/L		624
CHLOROMETHANE	ND	10.	UG/L		624
CIS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
DIBROMOCHLOROMETHANE	ND	5	UG/L		624
ETHYLBENZENE	ND	5	UG/L		624
METHYLENE CHLORIDE	ND	5	UG/L		624
O-XYLENE	ND	10.	UG/L		624
TETRACHLOROETHENE	ND	5	UG/L		624
TOLUENE	ND	5	UG/L		624
TRANS-1,2-DICHLOROETHENE	ND	10.	UG/L		624
TRANS-1,3-DICHLOROPROPENE	ND	5	UG/L		624
TRICHLOROETHENE	ND	5	UG/L		624
TRICHLOROFLUOROMETHANE	ND	10.	UG/L		624
VINYL CHLORIDE	ND	10.	UG/L		624

NA = Not Analyzed ND = Not Detected TBK = Trip Blank

Subcontract To: [redacted]

WMX Environmental Monitoring Laboratories, Inc.

FIELD CHAIN-OF-CUSTODY RECORD

AquaPak™ PREP
AquaPak™ # 2096
Date Sealed 94/06/30
YY / MM / DD
[redacted]
By [redacted]

SITE/FACILITY # [redacted] SITE NAME: [redacted]

Sample Point: W | m | w | 0 | 3 | | (Source Code)

B A R C O D E

SAMPLE DATE: - 9 4 0 7 0 5 (YY / MM / DD)

SAMPLE TIME: 1 3 : 5 5 (2400 HR.) MATRIX CODE: W

Water ..... (W) Leachate ..... (C)
Soil ..... (S) Other ..... (X)

Source Codes:

Well ..... (W) Leachate System .. (C) Pretreatment Facility ... (P) River/Stream/Brook .. (R) Soil ..... (S) Generation Pt. .... (G)
Dewatering/Pressure Relief .... (D) Gas Condensate ... (M) Influent ..... (U) Lake or Ocean ..... (L) Bottom Sediment ... (B) Other ..... (X)
Surface Water Impoundment ... (I) Air ..... (A) Effluent ..... (T) Outfall ..... (O) Noise ..... (N) Specify _____

ENS # 94-12999 **AquaPak™ CONTENT** 07 Day TAT

SAMPLE I.D.	# OF BOTTLES	BOTTLE TYPE	PRESERVATIVE TYPE	ANALYTES/LAB GROUPS	FILTER Y — N	FIELD COMMENTS	E.M.L. COMMENTS
AK4023-A	04	[illegible]	[illegible]	VOMSBA0322	Y / N	EML	
AK4023-B	01	[illegible]	[illegible]	VOMSBA0322	Y / N	EML	TBK
[redacted]					Y / N		[illegible]
[redacted]					Y / N		[illegible]
					Y / N		[illegible]
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		
					Y / N		

CHAIN OF CUSTODY CHRONICLE

1. AquaPak™ Opened By: (print) R. Liles Cobb Date: 7/5/94 Time: 07:00 (2400 HR.)
Signature: R. Liles Cobb Seal #: 73356 Intact: yes

I have received these materials in good condition from the above person.

2. Name: _____ Signature: _____
Date: / / Time: : (2400 HR.) Remarks: _____

I have received these materials in good condition from the above person.

3. Name: _____ Signature: _____
Date: / / Time: : (2400 HR.) Remarks: _____

4. AquaPak™/Sub Contr. # 2096 Sealed By: R. Liles Cobb (Print) Date: 07/05/94 Time: 15:50 (2400 HR.)
Signature: R. Liles Cobb Seal #: 73343 Intact: yes

LAB USE ONLY
Opened By: (Signature) [illegible] Date: [illegible] Time: [illegible]
AquaPak™/Sub Contr. # 2096 Temp°C [illegible] Seal # [illegible] Intact: [illegible]

EML FF-1A 12/92

WMX Environmental Monitoring Laboratories, Inc.

FIELD INFORMATION FORM

Site # 562

Bottle Set: AK4023

Sample Point: WMW03 (Source Code)

PURGING INFORMATION

PURGE DATE (YY MM DD)	START PURGE (2400 Hr Clock)	ELAPSED HRS	WATER VOL. IN CASING (Gallons)	ACTUAL VOLUME PURGED (Gallons)
940705	1238	04	59.7	180.0

PURGING AND SAMPLING EQUIPMENT

Purging Equipment ..... Dedicated (Y) (circle one) | N | Sampling Equipment ..... Dedicated (Y) (circle one) | N |

Purging Device	A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X- PURGING OTHER (SPECIFY)
Sampling Device	C	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- SAMPLING OTHER (SPECIFY)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	
Purging Material	A/B	A-Teflon	C-Polypropylene	E-Polyethylene	X- PURGING OTHER (SPECIFY)
Sampling Material	A/C	B-Stainless Steel	D-PVC		X- SAMPLING OTHER (SPECIFY)
Tubing-Purging	A/B	A-Teflon	D-Polypropylene	F-Silicon	X- PURGING OTHER (SPECIFY)
Tubing-Sampling	A/D	B-Tygon C-Rope X- (SPECIFY)	E-Polyethylene	G-Combination teflon/ Polypropylene	X- SAMPLING OTHER (SPECIFY)
Filtering Devices 0.45 μ:	None	A-In-line Disposable	B-Pressure	C-Vacuum	

FIELD MEASUREMENTS

Well Elevation	519.05 (ft/msl)	Land Surface Elevation	(ft/msl)
Depth to water From top of well casing	260.95 (ft)	Depth to water From land surface	(ft)
Groundwater Elevation	258.10 (ft/msl)	Groundwater Elevation	(ft/msl)
Well Depth	*319.50 (ft)	Stickup	(ft)

	ph		spec. cond.		Sample Temp.	(other parameter)	value	units
1st	7.24 (STD)	1st	629	μm/cm at 25° C	21.9 (° C)			
2nd	(STD)	2nd		μm/cm at 25° C				
3rd	(STD)	3rd		μm/cm at 25° C				
4th	(STD)	4th		μm/cm at 25° C				

FIELD COMMENTS

Sample Appearance: Clear (if applicable) Odor: None Color: None Turbidity: None

Weather Conditions: Wind Speed 10 mph Direction W Precipitation Y/N Outlook Sunny, mild

Specific Comments: * Well depth obtained from site specific monitoring plan

Purge volume = (319.50' TD) − (260.95' DTW) =

(58.55' of water) x 1.02 = 59.7 gals/casing

x3 = 179.1 gals/purge

Hydac meter used to measure conductivity, PH, & Temp

Temp read in °F and converted to °C

I certify that sampling procedures were in accordance with applicable EPA, State and WMI protocols.

7/5/94 (Date) R. [illegible] (Signature) Employer: R&S T&I 09 03

2611 73343

APPENDIX C

Data Quality Report (DQR) Letters

WMX

72

WMX Environmental Monitoring Laboratories, Inc.

A WMX Technologies Company
2100 Cleanwater Drive
Geneva, Illinois 60134

Phone 708.208.3100
Fax 708.208.9064

JUL 1994
RECEIVED
Western Region
Environmental
Mgt. Dept.
C.W.M.I.

Date: 8-July-1994

TO: Marc Yalom

FROM: Barbara Hill Barbara Hill /dss

Dept: Administration

Subject: RE: Dilution Confirmation Past Hold Time

Thank you for your inquiry concerning the completed sampling events for the second quarter at O.S.C.O. Facility. The information below details how the following samples and the associated qualifiers will be regarded.

The samples MW05 (AJ9905) and DUP (AJ9908) contained the qualifier "CX" with the comment "Sample was confirmed by rerun with correct dilution, but 'TX'.". The "CX" comment indicates that there was an analyte that exceeded the highest calibration standard measurement. The reported amounts for compounds that were out of the calibration range will be considered as estimates, but since there was an amount detected (although the amount is estimated) the presence of these compounds will not be questioned. The rerun will help confirm the original amount, but is still estimated since it was 'TX'. The reported results for these samples, other than the analytes outside of the calibration range, will not be considered as estimated, but the concentrations are in fact what was reported.

The sample MW04 (AJ9906) was reported with the comment "The dilution for this analysis was incorrect; response of the highest concentration compound failed criteria for diluted samples. Sample was confirmed by rerun with correct dilution but 'TX'." It is the practice of the laboratory to adopt into the SOP stricter QC criteria than the method referenced with your sample. Since the method referenced with your sample does not have this dilution criteria, the initial reported results are within the QC criteria for this referenced method and will not be considered as estimated. However, since it was outside the QC limits per the laboratory SOP, it received the above comment. The lab is currently reviewing its policy to see if it is overly conservative and consequently whether or not the TX flag should actually apply. We will inform you of effective dates for method changes in this area should it be determined our interpretation

was overly conservative. A decision should be made by 7/30/94.

Distribution:

CC: Joe Rentz
CC: (file)

WMX

WMX Environmental Monitoring Laboratories, Inc.

A WMX Technologies Company
2100 Cleanwater Drive
Geneva, Illinois 60134

Phone 708.208.3100
Fax 708.208.9064

AUG 1994
RECEIVED
Western Region
Environmental
Mgt. Dept.
C.W.M.L.

Date: 9-August-1994

TO: Marc Yalom

FROM: Barbara Hill Barbara Hill

Dept: Administration

Subject: RE: DQR 562-94-12164-OR-072594-1/1

Thank you for your inquiry concerning the recently completed sampling event at O.S.C.O. A review of the data associated with the following sample revealed no errors with the result reported:

Sample Point	Sample ID	Analyte
MW02	AJ9909-A2	Acetone

The analysis met all of the quality control requirements of the reference method. No problems were noted which would have caused the reported result to be erroneously high.

If you have any further questions, please contact your Account Representative at (708) 208-3117.

Distribution:

CC: Joe Rentz
CC: 94-12164 (file)

WMX Environmental Monitoring Laboratories, Inc.

A WMX Technologies Company
2100 Cleanwater Drive
Geneva, Illinois 60134

Phone 708.208.3100
Fax 708.208.9064

Date: 9-August-1994

TO: Marc Yalom

FROM: Barbara Hill Barbara Hill

Dept: Administration

Subject: RE: DQR 562-94-12164-OR-080194-1/1

Thank you for your inquiry concerning the recently completed sampling event at O.S.C.O. A review of the data associated with the following samples revealed that the results were reported correctly:

Sample Point	Sample ID	Analyte
MW05	AJ9905-A2	Tetrachloroethene
DUP	AJ9908-A2	Tetrachloroethene

Due to the fact that the original samples results exceeded the calibration range, a confirmation sample was analyzed for each of the sample points listed above. The results of the confirmation analyses are as follows:

Sample Point	Original Results	Confirmation Result
MW05	250 ug/L	260 ug/L
DUP	190 ug/L	170 ug/L

The confirmation results correlate with the original results, which verifies the results that were reported. If you have any further questions, please contact your Account Representative at (708) 208-3117.

Distribution:

CC: Joe Rentz
CC: 94-12164 (file)

Printed on recycled paper

ATTACHMENT 2
GROUNDWATER DATA DISKETTE

Printed on recycled paper