CDM Federal Programs Corporation 134501 (3)

May 9, 1989

Rose Harvell
Project Officer
U.S. Environmental Protection Agency
401 M Street, Room 2834
Washington, D.C. 20460

PROJECT: EPA CONTRACT NO.: 68-01-7331

DOCUMENT NO.: T560-C03-EP-DDHL-1

SUBJECT: Draft Field Trip Report for Work Assignment 560
William Dick Lagoons Site
Chester County, Pennsylvania
T560-C03-RT-DDHM-1

Dear Ms. Harvell:

Please find enclosed the Draft Field Trip Report entitled, "William Dick Lagoons Site, Chester County, Pennsylvania," as partial fulfillment of the reporting requirements for this work assignment.

If you have any comments regarding this submittal, please contact Deirdre O'Dwyer of CDM Federal Programs Corporation (CDM FPC) at (215) 293-0450 within two weeks of the date of this letter.

Sincerely,

CDM Federal Programs Corporation

Bruce R. Pluta
TES III Regional Manager

BRP/dmh

Enclosure

cc: [redacted], CERCLA Region III
Elaine Spiewak, EPA Regional Contact, CERCLA Region III
Bill Eckroade, EPA HQ Coordinator, CERCLA Region III
Michael P. Riley, EPA TES III Contracting Officer (letter only)
Harry P. Butler, CDM Federal Programs Corporation Program Manager

AR401588

T E S III

TECHNICAL ENFORCEMENT SUPPORT AT HAZARDOUS WASTE SITES

U.S. EPA CONTRACT NO. 68-01-7331

AR401589

CDM Federal Programs Corporation

DRAFT FIELD TRIP REPORT
WILLIAM DICK LAGOONS SITE
CHESTER COUNTY, PENNSYLVANIA

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, D.C. 20460

Work Assignment No.	:	560
EPA Region	:	III
Site No.	:	3BZZ
Contract No.	:	68-01-7331
CDM Federal Programs Corporation Document No.	:	TS60-CO3-RT-DDHM-1
Prepared By	:	CDM Federal Programs Corporation
Work Assignment Project Manager	:	Deirdre O'Dwyer
Telephone Number	:	(215) 293-0450
Primary Contact	:	Jack Kelly
Telephone Number	:	(215) 597-3168
Date Prepared	:	May 9, 1989

AR401590

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ATTACHMENT

Attachment A. Volatile Organic Results for William Dick Lagoons

AR401591

1.0 INTRODUCTION

CDM Federal Programs Corporation (CDM FPC) received TES III Work Assignment 560 to provide oversight of offsite sampling activities conducted at the William Dick Lagoons site. This oversight included the collection of split samples from selected domestic water supplies which were sampled by Environmental Resource Management, Inc. (ERM), consultant for the Potentially Responsible Party (PRP).

This report presents the results of CDM FPC's oversight activities during ERM's quarterly sampling conducted in June 1988 and March 1989.

2.0 BACKGROUND

The William Dick Lagoons Site occupies approximately 10 acres in West Caln Township, Chester County, Pennsylvania (See Figure 1). Three unlined lagoons located onsite were used by Chemical Leaman Tank Lines, Incorporated, from the late 1950's until June 1970 to dispose of final rinsewater from the interior cleaning of tanker trucks.

On June 7, 1970, approximately 300,000 gallons of waste materials migrated off site and into a nearby creek when two of the three lagoons were breached. This discharge resulted in the death of over 2,600 fish and the closure of public water supplies which use the creek as a supply source.

Remedial action initiated in 1971 by William Dick and Chemical Leaman, resulted in the treatment of approximately 4,049,500 gallons of impounded wastes within the lagoons. The remaining sludges were then backfilled with onsite materials and the area was reseeded.

In April 1985, NUS Corporation conducted a site inspection at the William Dick Lagoons Site. Sample results indicated the presence of trichloroethene (98,000 parts per million (ppm)), toluene (10,000 ppm), xylene (18,000 ppm) and other organic priority pollutants in surface and auger soil samples. A nearby downgradient residential well also showed the presence of low levels of trichloroethene (TCE).

In May 1987, EPA's Technical Assistance Team (TAT) sampled 28 residential wells located near the site. Trichloroethene was detected in concentrations of 140 parts per billion (ppb) and 200 ppb in two homes that are supplied by a common spring.

AR401593

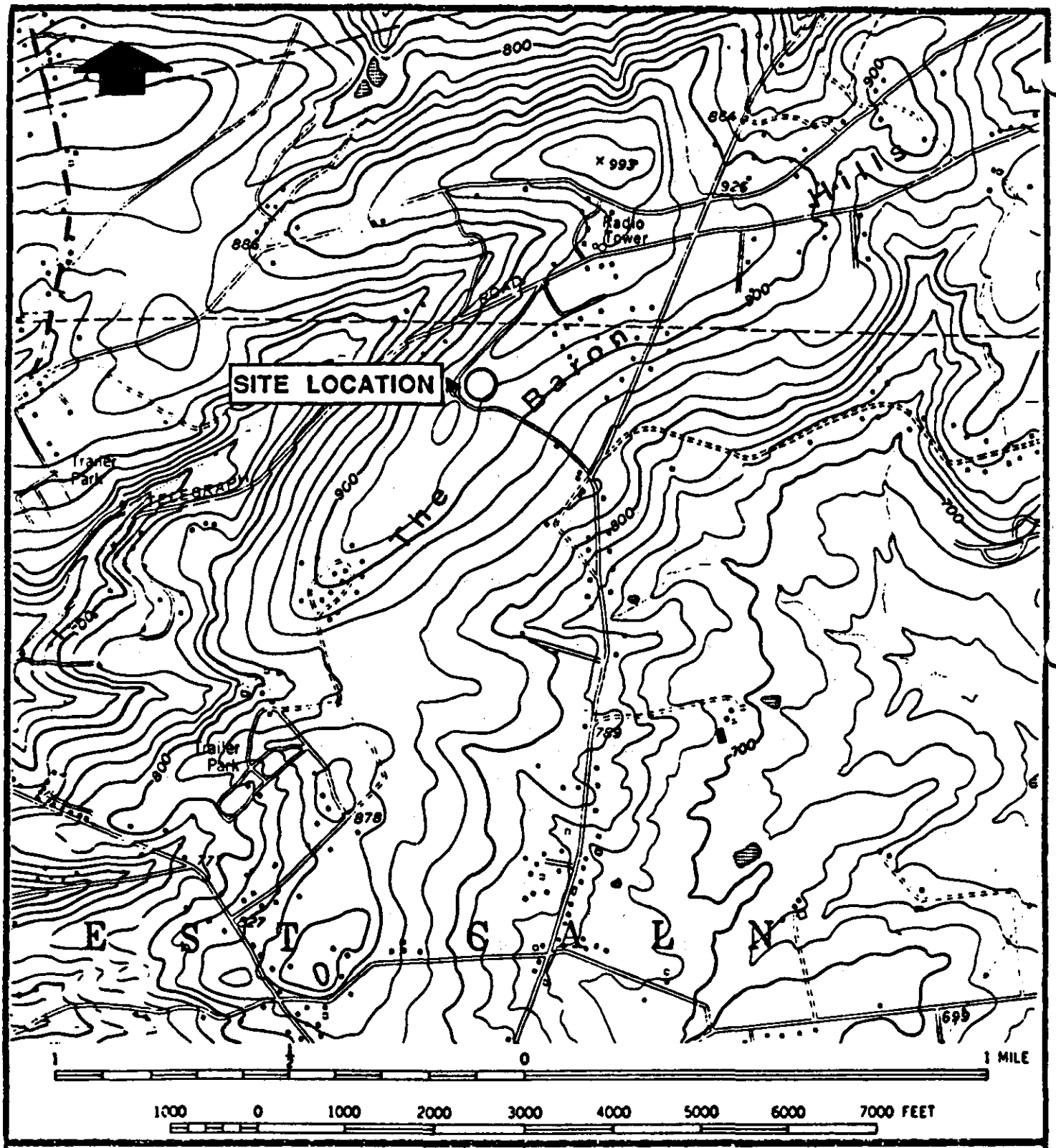

FIGURE 1

AR401594

SITE LOCATION MAP

Source: USGS Honey Brook Quadrangle, PA

CDM Federal Programs Corporation

Subsequent to the sampling in May 1987, Chemical Leaman agreed to sample all residences requesting sampling within one mile south and one-half mile north of the site. To date, approximately 80 wells have been sampled. Of this total, approximately 15 wells had detectable TCE levels between 0 and 5 ppb, while roughly seven wells exhibited TCE levels above 5 ppb. Trichloroethene has been the only compound detected in the groundwater on a consistent basis.

The results of CDM FPC's previous sampling in September 1987 indicated the presence of TCE in five of the 10 samples obtained. The highest concentration of TCE was detected in the recently installed well at the L. Gregor residence at 170 ppb, while the remaining wells and springs exhibited concentrations of TCE ranging from 3 to 9 ppb. The Federal Drinking Water Standard for TCE is 5 ppb. No inorganic contaminants were detected in these samples above the maximum contaminant levels established by the Safe Drinking Water Act.

In December 1987, Chemical Leaman entered into a Consent Order with EPA whereby they agreed to continue sampling residential wells and provide an alternate water supply as needed. EPA then negotiated a Remedial Investigation/Feasibility Study Consent Order with Chemical Leaman which was signed by both parties in September 1988.

The results of CDM FPC's sampling in March 1988 indicated the presence of TCE in four of the 11 samples obtained. In addition, TCE was detected above the quantitation limits in both blanks collected. The highest concentration of TCE was again detected in the L. Gregor well at 199 and 220 ppb (blind duplicate result). Other compounds detected included cis-1,2-dichloroethene, 1,2-dichloroethane, toluene, dibromochloromethane, tetrachloroethylene, and chlorobenzene.

AR401595

3.0 DESCRIPTION OF FIELD ACTIVITIES

3.1 INTRODUCTION

On June 20, through June 22, 1988, CDM FPC representatives visited the William Dick Lagoons site vicinity to observe home well sampling by ERM and accepted split samples. The locations of the home wells from which split samples were collected by CDM FPC were predetermined by Jack Kelly, the EPA Primary Contact, prior to the sampling visit (See Figure 2). The wells selected were as follows:

L. Gregor (pre-treatment sample)
Sarnak (post-treatment sample)
G. Smith
Ostrosky (post-treatment sample)
Alexander (post-treatment sample)
Shank
Hoffman

CDM FPC, as directed by the Primary Contact, selected one additional sample location while in the field. Utilizing the following criteria, CDM FPC chose the Jameson residence:

- *no previous data available for the location;*
- the recent addition of the location to the ERM sampling schedule; and,
- the proximity of the location to the other recent ERM sampling schedule additions.

Samples were obtained from each of the aforementioned locations during CDM FPC's oversight. All samples obtained by CDM FPC and ERM during this quarterly sampling were analyzed for volatile organic compounds using EPA Method 601 which yields a detection limit of 1 ppb. The analysis for the samples obtained by CDM FPC was performed by Hitman Ebasco Lab of Columbia, Maryland.

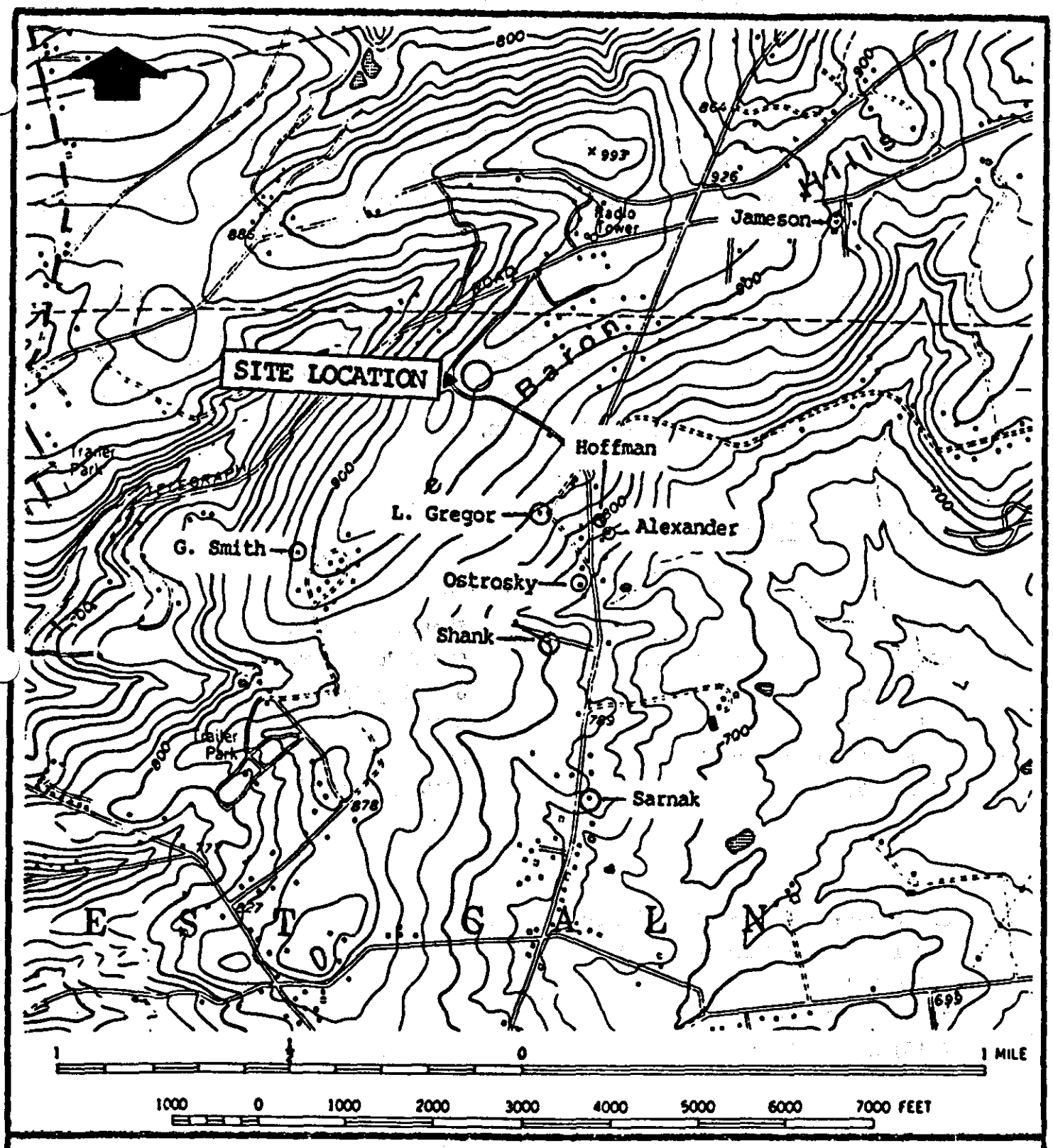

FIGURE 2

AR401597

JUNE 1988 SAMPLE LOCATION MAP

Source: USGS Honey Brook Quadrangle, PA

CDM Federal Programs Corporation

For those homes that had an activated carbon filter system, ERM obtained a sample at a pre-treatment, a mid-treatment, and a post-treatment location. ERM analyzed the pre-treatment samples for the Target Compound List (TCL) using EPA Methods 601/602.

The representative of ERM present during the June 1988 quarterly sampling and responsible for collection of samples was C. Pete Barringer. Deirdre O'Dwyer of CDM FPC provided oversight for the entire sampling event. Also present during this sampling event were Kathryn Garris of CDM FPC, on June 20, 1988 and Sharon Schaeffer of CDM FPC, on June 22, 1988.

3.2.1 LIST OF INSPECTORS

Deirdre O'Dwyer
CDM Federal Programs Corporation
8 Valley Forge Executive Mall
Suite 230
Wayne, Pennsylvania 19087
(215) 293-0450

Sharon Schaeffer
CDM Federal Programs Corporation
8 Valley Forge Executive Mall
Suite 230
Wayne, Pennsylvania 19087
(215) 293-0450

Kathryn Garris
CDM Federal Programs Corporation
8 Valley Forge Executive Mall
Suite 230
Wayne, PA 19087
(215) 293-0450

AR401598

3.2.2 PRP REPRESENTATIVE

C. Peter Barringer
ERM, Inc.
855 Springdale Drive
Exton, Pennsylvania 19341
(215) 430-6219

3.3 SITE OBSERVATIONS

3.3.1 GENERAL OBSERVATIONS

- All samples were obtained by ERM in accordance with their approved "Work Plan for Residential Sampling, Water Supply Improvements and Restriction of Access. September 1, 1987" and their "Quality Assurance Project Plan (QAPP) (Limited Sampling) for William Dick Lagoons, West Caln Township, Chester County, Pennsylvania. September 1987."

- At each sample location, ERM obtained the sample from the closest accessible point to the holding tank.

- The water at the tap of each home was allowed to run for at least 10 minutes prior to sampling.

- For those homes that have activated carbon filter systems, ERM obtained a sample at a pre-treatment, mid-treatment, and after treatment location. Prior to obtaining each of these samples, the water was purged from the PVC lines between each sampling point. One gallon of water was removed from the PVC lines between the pre-treatment and mid-treatment valves and one gallon was removed from between the mid-treatment and post-treatment valves.

AR401599

- ERM measured the temperature, conductivity, and pH at each sample location.

- For the pre-treatment Ostrosky location, ERM collected sufficient sample volume for total coliform analysis as well as the TCL analysis.

AR401600

3.3.2 JUNE 1988 SAMPLE LOG

The following sample log contains information regarding the split samples obtained by CDM FPC during June 1988.

TAG NO.	CRL STATION NUMBER	SAMPLE LOCATION	DATE COLLECTED	TIME	COMMENTS
3-158099	001	Trip Blank	6/20/88	0630	HPLC water used for blank.
3-158100	002	Sarnak	6/20/88	1135	Sample obtained at post-treatment location.
3-158101	003	Jameson	6/20/88	1225	No comments.
3-158102	004	G. Smith	6/20/88	1320	No comments.
3-158461	005	Ostrosky	6/21/88	0930	Sample obtained at post-treatment location.
3-158462	006	Alexander	6/21/89	1125	Sample obtained at post-treatment location.
3-158460	007	Shank	6/22/88	1115	No comments.
3-158091	008	L. Gregor	6/22/88	1730	Sample obtained at pre-treatment location.
3-158092	009	Trip Blank	6/21/88	0700	HPLC water used for blank.
3-158093	010	Thomas	6/22/88	1043	Blind duplicate obtained from Hoffman.
3-158094	011	Hoffman	6/22/88	1040	No comments.

AR401601

3.3.3 ORGANIC SAMPLE DATA SUMMARY

The following table presents the results of the organic analysis performed on the 11 aqueous samples obtained by CDM FPC in June 1988. The data qualifier codes noted on this table are as follows:

B = Not detected substantially above level reported in blanks.

N = Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence In future sampling efforts.

The complete quality assurance review and data package for these samples are located in Attachment A to this report.

Please note that the sample location designated "Thomas" is a blind duplicate of the Hoffman sample location. The duplicate was incorrectly identified as a duplicate of the L. Gregor location in the shipping log.

AR401602

ORGANIC SAMPLE DATA SUMMARY

Location	CRL Station Number	Compounds Detected (ppb)				
		Bromo-methane	Chloroform	Trichloro-fluoromethane	1,2-Di-chloroethane	Tri-chloroethene
Trip Blank	001		6.7B			
Sarnak (after)	002					
Jameson	003					
G. Smith	004					
Ostrofsky (after)	005			1.9B		
Alexander (after)	006	3.0N		1.9B		
Shank	007			1.8B		
L. Gregor (before)	008		10B	2.5B	2.0	92
Trip Blank	009		2.2B	1.7B		
Thomas (Duplicate of Hoffman)	010			1.8B		4.0
Hoffman	011			1.9B		8.7

B = Not detected substantially above level reported in blanks.

N = Tent ve identification. Consider present.

AR401503

4.0 DESCRIPTION OF MARCH 1989 FIELD ACTIVITIES

4.1 INTRODUCTION

On March 28, 1989, CDM FPC representative Kathryn Garris visited the William Dick Lagoons site vicinity to observe home well sampling by ERM and accepted split samples. The locations of the home wells from which split samples were collected by CDM FPC were predetermined by Jack Kelly, the EPA Primary Contact, prior to the sampling visit (See Figure 3). The location of these wells were as follows:

Warren
Himelrite
Bickings
A. Walton
Hart (pre-treatment)
Wentworth

Samples were obtained from each of the aforementioned locations during CDM FPC's oversight. All samples obtained by CDM FPC and ERM during this quarterly sampling were analyzed for volatile organic compounds using EPA Method 601/602 which yields a detection limit of 1 ppb. The analysis for the samples obtained by CDM FPC were performed by Aquatec, Inc. of South Burlington, Vermont.

Since the Hart residence had an activated carbon filter system, ERM obtained a sample at a pre-treatment, a mid-treatment, and a post-treatment location. Additionally, the Himelrite residence had a non-bypassable water softener treatment system. Therefore, ERM obtained a sample only at a post-treatment location. ERM analyzed the samples for volatile organic compounds using EPA Methods 601/602, and for xylene and styrene.

AR401604

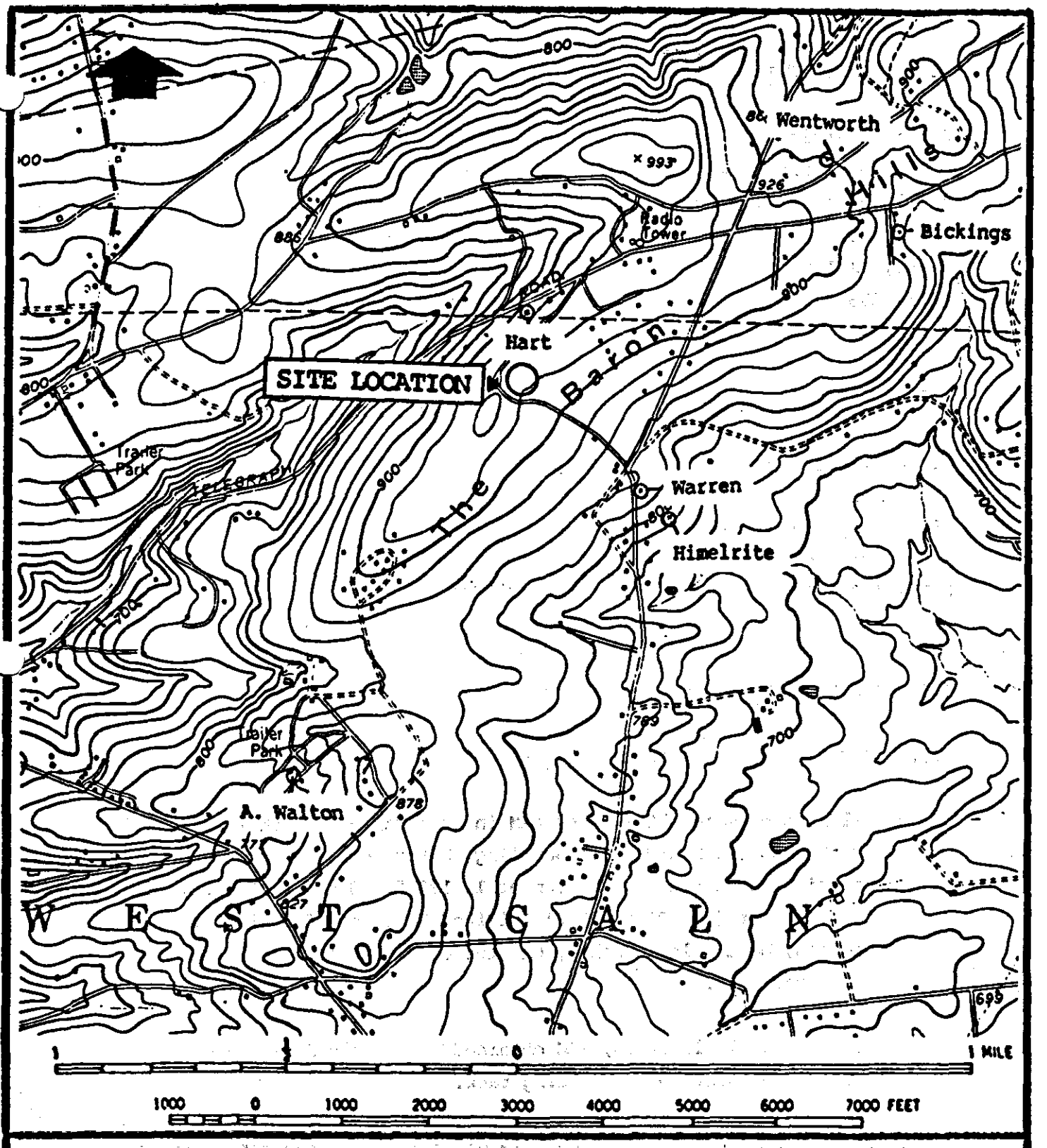

FIGURE 3

AR401605

MARCH 1989 SAMPLE LOCATION MAP

Source: USGS Honey Brook Quadrangle, PA

CDM Federal Programs Corporation

4.2.1 LIST OF INSPECTORS

Kathryn Garris
CDM Federal Programs Corporation
8 Valley Forge Executive Mall
Suite 230
Wayne, PA 19087
(215) 293-0450

4.2.2 PRP REPRESENTATIVE

C. Peter Barringer
ERM, Inc.
855 Springdale Drive
Exton, Pennsylvania 19341
(215) 430-6219

4.3 SITE OBSERVATIONS

4.3.1 GENERAL OBSERVATIONS

- All samples were obtained by ERM in accordance with their approved "Work Plan for Residential Sampling, Water Supply Improvements and Restriction of Access. September 1, 1987" and their "Quality Assurance Project Plan (QAPP) (Limited Sampling) for William Dick Lagoons, West Caln Township, Chester County, Pennsylvania. September 1987."

- At each sample location, ERM obtained the sample from the closest accessible point to the holding tank.

- The water at the tap of each home was allowed to run for at least 5 minutes prior to sample collection.

AR401606

- For the residence that had an activated carbon filter system, ERM obtained a sample at a pre-treatment, mid-treatment and after treatment location. Prior to obtaining these samples, the water was purged from the PVC lines between each sampling point. One gallon of water was removed from the pipe system between pre-treatment and mid-treatment valves and one gallon was removed from between the mid-treatment and post-treatment locations.

- ERM measured the temperature, conductivity, and pH at each sample location.

AR401607

4.3.2 SAMPLE LOG

The following sample log contains information regarding the split samples obtained by CDM FPC during March ~~1988~~. 1989

TAG NO.	CRL STATION NUMBER	SAMPLE LOCATION	DATE COLLECTED	TIME	COMMENTS
3-1027931	01	Trip Blank	3/28/89	0700	HPLC water used for blank.
3-1027933	02	Himelrite	3/28/89	1215	Sample obtained at post-water softener treatment location.
3-1027951	03	Bickings	3/28/89	1300	No comment.
3-1027937	04	Walton	3/28/89	1344	No comment.
3-1027938	05	Hart	3/28/89	1450	Sample obtained at pre-treatment location.
3-1027941	06	Garris	3/28/89	1545	Blind duplicate obtained from Hart.
3-1027942	07	Warren	3/28/89	1555	No comment.
3-1027944	08	Warren	3/28/89	1555	Matrix duplicate of Station No. 7.
3-1027946	09	Warren	3/28/89	1555	Matrix spike of Station No. 7.
3-1027948	10	Wentworth	3/28/89	1636	No comment.

AR401608

ATTACHMENT A

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
CENTRAL REGIONAL LABORATORY
839 BESTGATE ROAD
ANNAPOLIS, MARYLAND 21401
(301) 266-9180

DATE : March 2, 1989

SUBJECT: Organic Data Validation for the William Dick Lagoon Site
SAS 3942C

FROM : Theresa A. Simpson TAS
Region III Acting ESAT DPO (3ES23)

TO : Jack Kelly
Regional Project Manager (3HW12)

Thru: Pat Krantz PK for
Chief, QA Section (3ES23)

Attached is the organic data review for the William Dick Lagoon Site (SAS 3942C) completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III ESD.

If you have questions regarding this review, please call me.

Attachment

cc: Mark diFeliciantonio, CDM (w/ attachments)
Elaine Spiewak (3HW10) (w/o attachments)

TID File: 03881210 Task 1474

WESTON
MANAGERS DESIGNERS CONSULTANTS
2568A RIVA ROAD
SUITE 300
ANNAPOLIS, MD 21401
PHONE: 301-266-9887

DATE: March 1, 1989

SUBJECT: Organic Data Validation for SAS 3942C
Site: William Dick Lagoon

FROM: Albert T. Ellis
Senior Organic Data Reviewer

TO: Terry Simpson
Acting ESAT Deputy Project Officer

THROUGH: Charles Matkovich
ESAT Team Manager

Overview

SAS 3942C consisted of eleven (11) water samples for halogenated volatiles analyses. Included in this SAS were two (2) trip blanks and one (1) laboratory field duplicate pair. All samples were analyzed as a Contract Laboratory Program (CLP) Special Analytical Service (SAS).

Summary

All samples were successfully analyzed for all target compounds. All instrument and method sensitivities were according to Method 601 (40 CFR part 136, 10/26/84).

Minor Problems

- Several compounds failed precision criteria for the initial calibration curve and/or the calibration check standards. The quantitation limits are qualified "UJ" for the affected samples. (See Data Summary Forms in Appendix B).

- Several compounds were identified in the primary analyses for several samples. The presence of these compounds were not confirmed by re-analyses of the samples on a second column. These compounds are qualified "N" in the affected samples unless the compounds are blank contaminants in which case the "N" qualifier is superseded by "B". (See Data Summary Forms in Appendix B.)

WESTON

Notes

- The maximum concentrations of all compounds found in the trip and/or method blanks are listed below. All samples with concentrations less than five times (<5x) the blank level for the following contaminants have been qualified "B" on the data summary forms of Appendix B.

Compound	Concentration
Chloroform	6.7 ug/L
Trichlorofluoromethane	1.7 ug/L

- The laboratory field duplicate pair yielded data that was usable for comparison. The results are summarized in the following table:

Compound	Concentration(ug/L)		RPD
	3942C-008	3942C-010	
1,2-Dichloroethane	2.0	N.D.	IND
Trichloroethane	92	4.0	183

RPD = Relative Percent Deviation
N.D.= Not Detected
IND = Indeterminant

All data for SAS 3942C were reviewed in accordance with the Functional Guidelines for Evaluating Organic Analyses with Modifications for Use Within Region III. The text of this report addresses only those problems affecting usability.

Attachments

1) Appendix A - Glossary of Data Qualifier Codes
2) Appendix B - Data Summary. These include:
   (a) All positive results for target compounds with qualifier flags where applicable;
   (b) All unusable detection limits (qualified "R").
3) Appendix C - Results as Reported by the Laboratory for all Target Compounds.
5) Appendix D - DPO Report for Contractual Compliance
6) Appendix E - Support Documentation

WESTON

Appendix A

Glossary of Data Qualifier Codes

GLOSSARY OF DATA QUALIFIER CODES (ORGANIC)

CODES RELATING TO IDENTIFICATION
(confidence concerning presence or absence of compounds):

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

(NO CODE) = Confirmed identification.

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.

N = Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.

CODES RELATED TO QUANTITATION
(can be used for both positive results and sample quantitation limits):

J = Analyte present. Reported value may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

UL = Not detected, quantitation limit is probably higher.

OTHER CODES

Q = No analytical result.

WESTON

Appendix B

Data Summary Forms

AR401615

DATA SUMMARY FORM: HALOGENATED VOLATILE COMPOUNDS (METHOD 601)

Site Name: WILLIAM DICK LAGOONS

WATER SAMPLES (ug/L)

SAS #: 3942C Sampling Date: 6/20/88 (samples 001-004) 6/21/88 (samples 005-011)

To calculate sample quantitation limit: (CRQL * Dilution Factor)

	Sample No.	001		002		003		004		005		006		007		008		009	
	Dilution Factor	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
	Location	Trip Blank		Sarnak		Jameson		Smith		Ostrosky		Alexander		Shank		L. Gregor		Trip Blank	
CRQL	COMPOUND																		
1	Bromodichloromethane																		
1	Bromoform											3.0	N						
1	Bromomethane		UJ		UJ		UJ		UJ		UJ		UJ		UJ		UJ		U
1	Carbon Tetrachloride																		
1	Chlorobenzene		UJ		UJ		UJ		UJ		UJ		UJ		UJ		UJ		U
1	Chloroethane										UJ		UJ		UJ		UJ		U
1	2-Chloroethylvinyl ether	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1	Chloroform	6.7	B		UJ		UJ		UJ		UJ		UJ		UJ	10	B	2.2	B
1	Chloromethane																		
1	Dibromochloromethane																		
1	1,2-Dichlorobenzene		UJ		UJ		UJ		UJ										
1	1,3-Dichlorobenzene		UJ		UJ		UJ		UJ		UJ		UJ		UJ		UJ		UJ
1	1,4-Dichlorobenzene		UJ		UJ		UJ		UJ										
1	Dichlorodifluoromethane																		
1	1,1-Dichloroethane																		
1	1,2-Dichloroethane															2.0			
1	1,1-Dichloroethene																		
1	Trans-1,2-Dichloroethene																		
1	1,2-Dichloropropane																		
1	cis-1,3-Dichloropropene		UJ		UJ		UJ		UJ		UJ		UJ		UJ		UJ		U
1	Trans-1,3-Dichloropropene																		
1	Methylene Chloride		UJ		UJ		UJ		UJ		UJ		UJ		UJ		UJ		U
1	1,1,2,2-Tetrachloroethane																		
1	Tetrachloroethene																		
1	1,1,1-Trichloroethane																		

CRQL = Contract Required Quantitation Limit

AR401616

DATA SUMMARY FORM: HALOGENATED VOLATILE COMPOUNDS (METHOD 601)

Site Name: WILLIAM DICK LAGOONS

WATER SAMPLES (ug/L)

SAS #: 3942C Sampling Date: 6/20/88 (samples 3803-3814) 6/21/88 (samples 3811-3815)

To calculate sample quantitation limit: (CRQL * Dilution Factor)

	Sample No.	001		002		003		004		005		006		007		008		009	
	Dilution Factor	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
	Location	Trip Blank		Sarnak		Jameson		Smith		Ostrosky		Alexander		Shank		McGregor		Trip Blank	
CRQL	COMPOUND																		
1	1,1,2-Trichloroethane																		
1	Trichloroethene											92							
1	Trichlorofluoromethane									1.9	B	19	B	1.8	B	2.5	B	1.7	B
1	Vinyl Chloride																		

CRQL = Contract Required Quantitation Limit

DATA SUMMARY FORM: HALOGENATED VOLATILE COMPOUNDS (METHOD 601)

Site Name: WILLIAM PICK LAGOONS

WATER SAMPLES (ug/L)

SAS #: 3947C Sampling Date: 6/21/88

To calculate sample quantitation limit: (CRQL * Dilution Factor)

	Sample No.	010		011	
	Dilution Factor	1.0		1.0	
	Location	Thomas (Duplicate of 009)		Hoffman	
CRQL	COMPOUND				
1	Bromodichloromethane				
1	Bromoform				
1	Bromomethane		UJ		UJ
1	Carbon Tetrachloride				
1	Chlorobenzene		UJ		UJ
1	Chloroethane		UJ		UJ
1	2-Chloroethylvinyl ether	—	—	—	—
1	Chloroform		UJ		UJ
1	Chloromethane				
1	Dibromochloromethane				
1	1,2-Dichlorobenzene				
1	1,3-Dichlorobenzene		UJ		UJ
1	1,4-Dichlorobenzene				
1	Dichlorodifluoromethane				
1	1,1-Dichloroethane				
1	1,2-Dichloroethane				
1	1,1-Dichloroethene				
1	Trans-1,2-Dichloroethene				
1	1,2-Dichloropropane				
1	cis-1,3-Dichloropropene		UJ		UJ
1	Trans-1,3-Dichloropropene				
1	Methylene Chloride		UJ		UJ
1	1,1,2,2-Tetrachloroethane				
1	Tetrachloroethene				
1	1,1,1-Trichloroethane				

CRQL = Contract Required Quantitation Limit

AR401618

DATA SUMMARY FORM: HALOGENATED VOLATILE COMPOUNDS (METHOD 601)

Site Name: William Dick Lagoons

WATER SAMPLES (ug/L)

SPS #: 3942C Sampling Date: 6/21/88

To calculate sample quantitation limit: (CRQL * Dilution Factor)

CRQL	COMPOUND	Sample No. 010		Sample No. 011	
	Dilution Factor	1.0		1.0	
	Location	Thomas (Duplicate of 00P)		Hoffman	
1	1,1,2-Trichloroethane				
1	Trichloroethene	4.0		8.7	
1	Trichlorofluoromethane	1.8	B	1.9	B
1	Vinyl Chloride				

CRQL = Contract Required Quantitation Limit

AR401619

WESTON

Appendix C

Form Is

As Reported by the Laboratory for all Target Compounds

HITTMAN EBASCO ASSOCIATES INC.
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9151 Rumsey Road, Columbia, MD 21045
(301) 730-8525

HITTMAN EBASCO

11/3/88

VOLATILE ORGANIC ANALYSIS BY GC

CLIENT: VIAR & CO. CONTRACT NUMBER: VIAR-7010-023

Analysis date 06/22/88 HEAI# 3803
CLIENT ID: 001

COMPOUND	Detection Limit (ug/L)	Sample Result (ug/L)
Chloromethane	1.0	*
Bromomethane	1.0	*
Dichlorodifluoromethane	1.0	*
Vinyl chloride	1.0	*
Chloroethane	1.0	*
Methylene chloride	1.0	*
Trichlorofluoromethane	1.0	*
1,1-Dichloroethene	1.0	*
1,1-Dichloroethane	1.0	*
trans-1,2-Dichloroethene	1.0	*
Chloroform	1.0	**
1,2-Dichloroethane	1.0	*
1,1,1-Trichloroethane	1.0	*
Carbon Tetrachloride	1.0	*
Bromodichloromethane	1.0	*
1,2-Dichloropropane	1.0	*
trans-1,3-Dichloropropene	1.0	*
Trichloroethene	1.0	*
Dibromochloromethane	1.0	*
1,1,2-Trichloroethane	1.0	*
cis-1,3-Dichloropropene	1.0	*
Bromoform	1.0	*
1,1,2,2-Tetrachloroethane	1.0	*
Tetrachloroethene	1.0	*
Chlorobenzene	1.0	*
1,3-Dichlorobenzene	1.0	*
1,2-Dichlorobenzene	1.0	*
1,4-Dichlorobenzene	1.0	*

(*) Compound not detected above method detection limit.
(**) Chloroform was detected at 6.7 ug/L however no confirming analysis was performed.

AR401621

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VOLATILE ORGANIC ANALYSIS BY GC

CLIENT: VIAR & CO. CONTRACT NUMBER: VIAR-7010-023

HEAI# 3804
Analysis date 06/22/88 CLIENT ID: 002

COMPOUND	Detection Limit (ug/L)	Sample Result (ug/L)
Chloromethane	1.0	*
Bromomethane	1.0	*
Dichlorodifluoromethane	1.0	*
Vinyl chloride	1.0	*
Chloroethane	1.0	*
Methylene chloride	1.0	*
Trichlorofluoromethane	1.0	*
1,1-Dichloroethene	1.0	*
1,1-Dichloroethane	1.0	*
trans-1,2-Dichloroethene	1.0	*
Chloroform	1.0	*
1,2-Dichloroethane	1.0	*
1,1,1-Trichloroethane	1.0	*
Carbon Tetrachloride	1.0	*
Bromodichloromethane	1.0	*
1,2-Dichloropropane	1.0	*
trans-1,3-Dichloropropene	1.0	*
Trichloroethene	1.0	*
Dibromochloromethane	1.0	*
1,1,2-Trichloroethane	1.0	*
cis-1,3-Dichloropropene	1.0	*
Bromoform	1.0	*
1,1,2,2-Tetrachloroethane	1.0	*
Tetrachloroethene	1.0	*
Chlorobenzene	1.0	*
1,3-Dichlorobenzene	1.0	*
1,2-Dichlorobenzene	1.0	*
1,4-Dichlorobenzene	1.0	*

(*) Compound not detected above method detection limit.

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VOLATILE ORGANIC ANALYSIS BY GC

CLIENT: VIAR & CO. CONTRACT NUMBER: VIAR-7010-023

HEAI# 3805
Analysis date 06/22/88 CLIENT ID: 003

COMPOUND	Detection Limit (ug/L)	Sample Result (ug/L)
Chloromethane	1.0	*
Bromomethane	1.0	*
Dichlorodifluoromethane	1.0	*
Vinyl chloride	1.0	*
Chloroethane	1.0	*
Methylene chloride	1.0	*
Trichlorofluoromethane	1.0	*
1,1-Dichloroethene	1.0	*
1,1-Dichloroethane	1.0	*
trans-1,2-Dichloroethene	1.0	*
Chloroform	1.0	*
1,2-Dichloroethane	1.0	*
1,1,1-Trichloroethane	1.0	*
Carbon Tetrachloride	1.0	*
Bromodichloromethane	1.0	*
1,2-Dichloropropane	1.0	*
trans-1,3-Dichloropropene	1.0	*
Trichloroethene	1.0	*
Dibromochloromethane	1.0	*
1,1,2-Trichloroethane	1.0	*
cis-1,3-Dichloropropene	1.0	*
Bromoform	1.0	*
1,1,2,2-Tetrachloroethane	1.0	*
Tetrachloroethene	1.0	*
Chlorobenzene	1.0	*
1,3-Dichlorobenzene	1.0	*
1,2-Dichlorobenzene	1.0	*
1,4-Dichlorobenzene	1.0	*

(*) Compound not detected above method detection limit.

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VOLATILE ORGANIC ANALYSIS BY GC

CLIENT: VIAR & CO. CONTRACT NUMBER: VIAR-7010-023

HEAI# 3806
Analysis date 06/22/88 CLIENT ID: 004

COMPOUND	Detection Limit (ug/L)	Sample Result (ug/L)
Chloromethane	1.0	*
Bromomethane	1.0	*
Dichlorodifluoromethane	1.0	*
Vinyl chloride	1.0	*
Chloroethane	1.0	*
Methylene chloride	1.0	*
Trichlorofluoromethane	1.0	*
1,1-Dichloroethene	1.0	*
1,1-Dichloroethane	1.0	*
trans-1,2-Dichloroethene	1.0	*
Chloroform	1.0	*
1,2-Dichloroethane	1.0	*
1,1,1-Trichloroethane	1.0	*
Carbon Tetrachloride	1.0	*
Bromodichloromethane	1.0	*
1,2-Dichloropropane	1.0	*
trans-1,3-Dichloropropene	1.0	*
Trichloroethene	1.0	*
Dibromochloromethane	1.0	*
1,1,2-Trichloroethane	1.0	*
cis-1,3-Dichloropropene	1.0	*
Bromoform	1.0	*
1,1,2,2-Tetrachloroethane	1.0	*
Tetrachloroethene	1.0	*
Chlorobenzene	1.0	*
1,3-Dichlorobenzene	1.0	*
1,2-Dichlorobenzene	1.0	*
1,4-Dichlorobenzene	1.0	*

(*) Compound not detected above method detection limit.

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VOLATILE ORGANIC ANALYSIS BY GC

CLIENT: VIAR & CO. CONTRACT NUMBER: VIAR-7010-023

Analysis date 06/22/88 HEAI# 3811
CLIENT ID: 005

COMPOUND	Detection Limit (ug/L)	Sample Result (ug/L)
Chloromethane	1.0	*
Bromomethane	1.0	*
Dichlorodifluoromethane	1.0	*
Vinyl chloride	1.0	*
Chloroethane	1.0	*
Methylene chloride	1.0	*
Trichlorofluoromethane	1.0	1.9
1,1-Dichloroethene	1.0	*
1,1-Dichloroethane	1.0	*
trans-1,2-Dichloroethene	1.0	*
Chloroform	1.0	*
1,2-Dichloroethane	1.0	*
1,1,1-Trichloroethane	1.0	*
Carbon Tetrachloride	1.0	*
Bromodichloromethane	1.0	*
1,2-Dichloropropane	1.0	*
trans-1,3-Dichloropropene	1.0	*
Trichloroethene	1.0	*
Dibromochloromethane	1.0	*
1,1,2-Trichloroethane	1.0	*
cis-1,3-Dichloropropene	1.0	*
Bromoform	1.0	*
1,1,2,2-Tetrachloroethane	1.0	*
Tetrachloroethene	1.0	*
Chlorobenzene	1.0	*
1,3-Dichlorobenzene	1.0	*
1,2-Dichlorobenzene	1.0	*
1,4-Dichlorobenzene	1.0	*

(*) Compound not detected above method detection limit.

AR401625

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VOLATILE ORGANIC ANALYSIS BY GC

CLIENT: VIAR & CO. CONTRACT NUMBER: VIAR-7010-023

HEAI# 3812
Analysis date 06/24/88 CLIENT ID: 006

COMPOUND	Detection Limit (ug/L)	Sample Result (ug/L)
Chloromethane	1.0	*
Bromomethane	1.0	*
Dichlorodifluoromethane	1.0	*
Vinyl chloride	1.0	*
Chloroethane	1.0	*
Methylene chloride	1.0	*
Trichlorofluoromethane	1.0	**
1,1-Dichloroethene	1.0	*
1,1-Dichloroethane	1.0	*
trans-1,2-Dichloroethene	1.0	*
Chloroform	1.0	*
1,2-Dichloroethane	1.0	*
1,1,1-Trichloroethane	1.0	*
Carbon Tetrachloride	1.0	*
Bromodichloromethane	1.0	*
1,2-Dichloropropane	1.0	*
trans-1,3-Dichloropropene	1.0	*
Trichloroethene	1.0	*
Dibromochloromethane	1.0	*
1,1,2-Trichloroethane	1.0	*
cis-1,3-Dichloropropene	1.0	*
Bromoform	1.0	**
1,1,2,2-Tetrachloroethane	1.0	*
Tetrachloroethene	1.0	*
Chlorobenzene	1.0	*
1,3-Dichlorobenzene	1.0	*
1,2-Dichlorobenzene	1.0	*
1,4-Dichlorobenzene	1.0	*

(*) Compound not detected above method detection limit.
(**) Trichlorofluoromethane was detected at 1.9 ug/L and bromoform at 3.0 ug/L however no confirming analysis was performed.

AR401626

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VOLATILE ORGANIC ANALYSIS BY GC

CLIENT: VIAR & CO. CONTRACT NUMBER: VIAR-7010-023

HEAI# 3813
Analysis date 06/24/88 CLIENT ID: 007

COMPOUND	Detection Limit (ug/L)	Sample Result (ug/L)
Chloromethane	1.0	*
Bromomethane	1.0	*
Dichlorodifluoromethane	1.0	*
Vinyl chloride	1.0	*
Chloroethane	1.0	*
Methylene chloride	1.0	*
Trichlorofluoromethane	1.0	**
1,1-Dichloroethene	1.0	*
1,1-Dichloroethane	1.0	*
trans-1,2-Dichloroethene	1.0	*
Chloroform	1.0	*
1,2-Dichloroethane	1.0	*
1,1,1-Trichloroethane	1.0	*
Carbon Tetrachloride	1.0	*
Bromodichloromethane	1.0	*
1,2-Dichloropropane	1.0	*
trans-1,3-Dichloropropene	1.0	*
Trichloroethene	1.0	*
Dibromochloromethane	1.0	*
1,1,2-Trichloroethane	1.0	*
cis-1,3-Dichloropropene	1.0	*
Bromoform	1.0	*
1,1,2,2-Tetrachloroethane	1.0	*
Tetrachloroethene	1.0	*
Chlorobenzene	1.0	*
1,3-Dichlorobenzene	1.0	*
1,2-Dichlorobenzene	1.0	*
1,4-Dichlorobenzene	1.0	*

(*) Compound not detected above method detection limit.
(**) Trichlorofluoromethane was detected at 1.8 ug/L however no confirming analysis was performed.

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VOLATILE ORGANIC ANALYSIS BY GC

CLIENT: VIAR & CO. CONTRACT NUMBER: VIAR-7010-023

HEAI# 3814
Analysis date 06/24/88 CLIENT ID: 008

COMPOUND	Detection Limit (ug/L)	Sample Result (ug/L)
Chloromethane	1.0	*
Bromomethane	1.0	*
Dichlorodifluoromethane	1.0	*
Vinyl chloride	1.0	*
Chloroethane	1.0	*
Methylene chloride	1.0	*
Trichlorofluoromethane	1.0	2.5
1,1-Dichloroethene	1.0	*
1,1-Dichloroethane	1.0	*
trans-1,2-Dichloroethene	1.0	*
Chloroform	1.0	10
1,2-Dichloroethane	1.0	2.0
1,1,1-Trichloroethane	1.0	*
Carbon Tetrachloride	1.0	*
Bromodichloromethane	1.0	*
1,2-Dichloropropane	1.0	*
trans-1,3-Dichloropropene	1.0	*
Trichloroethene	1.0	92
Dibromochloromethane	1.0	*
1,1,2-Trichloroethane	1.0	*
cis-1,3-Dichloropropene	1.0	*
Bromoform	1.0	*
1,1,2,2-Tetrachloroethane	1.0	*
Tetrachloroethene	1.0	*
Chlorobenzene	1.0	*
1,3-Dichlorobenzene	1.0	*
1,2-Dichlorobenzene	1.0	*
1,4-Dichlorobenzene	1.0	*

(*) Compound not detected above method detection limit.

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VOLATILE ORGANIC ANALYSIS BY GC

CLIENT: VIAR & CO. CONTRACT NUMBER: VIAR-7010-023

HEAI# 3815
Analysis date 06/24/88 CLIENT ID: 009

COMPOUND	Detection Limit (ug/L)	Sample Result (ug/L)
Chloromethane	1.0	*
Bromomethane	1.0	*
Dichlorodifluoromethane	1.0	*
Vinyl chloride	1.0	*
Chloroethane	1.0	*
Methylene chloride	1.0	*
Trichlorofluoromethane	1.0	**
1,1-Dichloroethene	1.0	*
1,1-Dichloroethane	1.0	*
trans-1,2-Dichloroethene	1.0	*
Chloroform	1.0	**
1,2-Dichloroethane	1.0	*
1,1,1-Trichloroethane	1.0	*
Carbon Tetrachloride	1.0	*
Bromodichloromethane	1.0	*
1,2-Dichloropropane	1.0	*
trans-1,3-Dichloropropene	1.0	*
Trichloroethene	1.0	*
Dibromochloromethane	1.0	*
1,1,2-Trichloroethane	1.0	*
cis-1,3-Dichloropropene	1.0	*
Bromoform	1.0	*
1,1,2,2-Tetrachloroethane	1.0	*
Tetrachloroethene	1.0	*
Chlorobenzene	1.0	*
1,3-Dichlorobenzene	1.0	*
1,2-Dichlorobenzene	1.0	*
1,4-Dichlorobenzene	1.0	*

(*) Compound not detected above method detection limit.
(**) Trichlorofluoromethane was detected at 1.7 ug/L and chloroform at 2.2 ug/L however no confirming analysis was performed.

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VOLATILE ORGANIC ANALYSIS BY GC

CLIENT: VIAR & CO. CONTRACT NUMBER: VIAR-7010-023

HEAI# 3816
Analysis date 06/24/88 CLIENT ID: 010

COMPOUND	Detection Limit (ug/L)	Sample Result (ug/L)
Chloromethane	1.0	*
Bromomethane	1.0	*
Dichlorodifluoromethane	1.0	*
Vinyl chloride	1.0	*
Chloroethane	1.0	*
Methylene chloride	1.0	*
Trichlorofluoromethane	1.0	1.8
1,1-Dichloroethene	1.0	*
1,1-Dichloroethane	1.0	*
trans-1,2-Dichloroethene	1.0	*
Chloroform	1.0	*
1,2-Dichloroethane	1.0	*
1,1,1-Trichloroethane	1.0	*
Carbon Tetrachloride	1.0	*
Bromodichloromethane	1.0	*
1,2-Dichloropropane	1.0	*
trans-1,3-Dichloropropene	1.0	*
Trichloroethene	1.0	4.0
Dibromochloromethane	1.0	*
1,1,2-Trichloroethane	1.0	*
cis-1,3-Dichloropropene	1.0	*
Bromoform	1.0	*
1,1,2,2-Tetrachloroethane	1.0	*
Tetrachloroethene	1.0	*
Chlorobenzene	1.0	*
1,3-Dichlorobenzene	1.0	*
1,2-Dichlorobenzene	1.0	*
1,4-Dichlorobenzene	1.0	*

(*) Compound not detected above method detection limit.

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11/3/88

VOLATILE ORGANIC ANALYSIS BY GC

CLIENT: VIAR & CO. CONTRACT NUMBER: VIAR-7010-023

HEAI# 3817
Analysis date 06/24/88 CLIENT ID: 011

COMPOUND	Detection Limit (ug/L)	Sample Result (ug/L)
Chloromethane	1.0	*
Bromomethane	1.0	*
Dichlorodifluoromethane	1.0	*
Vinyl chloride	1.0	*
Chloroethane	1.0	*
Methylene chloride	1.0	*
Trichlorofluoromethane	1.0	1.9
1,1-Dichloroethene	1.0	*
1,1-Dichloroethane	1.0	*
trans-1,2-Dichloroethene	1.0	*
Chloroform	1.0	*
1,2-Dichloroethane	1.0	*
1,1,1-Trichloroethane	1.0	*
Carbon Tetrachloride	1.0	*
Bromodichloromethane	1.0	*
1,2-Dichloropropane	1.0	*
trans-1,3-Dichloropropene	1.0	*
Trichloroethene	1.0	8.7
Dibromochloromethane	1.0	*
1,1,2-Trichloroethane	1.0	*
cis-1,3-Dichloropropene	1.0	*
Bromoform	1.0	*
1,1,2,2-Tetrachloroethane	1.0	*
Tetrachloroethene	1.0	*
Chlorobenzene	1.0	*
1,3-Dichlorobenzene	1.0	*
1,2-Dichlorobenzene	1.0	*
1,4-Dichlorobenzene	1.0	*

(*) Compound not detected above method detection limit.

WESTON

Appendix D

DPO Report for Contractual Compliance

AR401633

WESTON

ORGANIC DATA VALIDATION SUMMARY

Date Review Completed: 2/27/89
SAS No.: 3942C
Site Name: William Dick Lagoon
Sample Nos.: 3942C-001 through 3942C-011

Contract Lab.: Hittman-Ebasco
Contract No.: 68-01-7280
Lab DPO: Charles Sands
Reviewer: Albert T. Ellis
From: Region III/ESAT
Phone: (301) 266-9887

MATRIX	CONCENTRATION low	med	high	MATRIX RELATED COMMENTS
soil/solid				
aqueous	11			Halogenated Volatiles (Method 601)
other				

VOLATILES (Method 601)	OK	FYI	Action	COMMENT
Instrument Performance	X			
Initial Calibration			X	See Note 1
Continuing Calibration			X	See Note 2
Surrogate Recovery	X			
Matrix Spikes	X			
Reagent Blanks	X			
Holding Times	X			

OVERALL CASE	OK	FYI	Action	
Compound Identification			X	See Note 3
Data Completeness		X		See Note 4

Attachments Enclosed

Notes:

Note 1 - The %RSD exceeded 30% in the initial calibration for several compounds. (See support documents in Appendix E).

Note 2 - The %D for several compounds in all of the Check standards exceeded 25%. (See support documents in Appendix E).

Note 3 - The primary analyses of several samples demonstrated the presence of possible contaminants. A confirmatory analysis was not performed as required by the SAS request.

Note 4 - The Form I for sample 3942C-005 was incorrectly labeled for the date of analysis. The sample was actually analyzed on 6/24/88. (See Support Documentation in Appendix E).

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Appendix E

Support Documentation

HITTMAN EBASCO ASSOCIATES INC.
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9151 Rumsey Road, Columbia, MD 21045
(301) 730-8525

HITTMAN EBASCO

11/3/88

VOLATILE ORGANIC ANALYSIS BY GC

CLIENT: VIAR & CO. CONTRACT NUMBER: VIAR-7010-023

Analysis date 06/24/88 HEAI# BLANK
CLIENT ID: N/A

COMPOUND	Detection Limit (ug/L)	Sample Result (ug/L)
Chloromethane	1.0	*
Bromomethane	1.0	*
Dichlorodifluoromethane	1.0	*
Vinyl chloride	1.0	*
Chloroethane	1.0	*
Methylene chloride	1.0	*
Trichlorofluoromethane	1.0	*
1,1-Dichloroethene	1.0	*
1,1-Dichloroethane	1.0	*
trans-1,2-Dichloroethene	1.0	*
Chloroform	1.0	*
1,2-Dichloroethane	1.0	*
1,1,1-Trichloroethane	1.0	*
Carbon Tetrachloride	1.0	*
Bromodichloromethane	1.0	*
1,2-Dichloropropane	1.0	*
trans-1,3-Dichloropropene	1.0	*
Trichloroethene	1.0	*
Dibromochloromethane	1.0	*
1,1,2-Trichloroethane	1.0	*
cis-1,3-Dichloropropene	1.0	*
Bromoform	1.0	*
1,1,2,2-Tetrachloroethane	1.0	*
Tetrachloroethene	1.0	*
Chlorobenzene	1.0	*
1,3-Dichlorobenzene	1.0	*
1,2-Dichlorobenzene	1.0	*
1,4-Dichlorobenzene	1.0	*

(*) Compound not detected above method detection limit.

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(301) 730-8525

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11/3/88

VOLATILE ORGANIC ANALYSIS BY GC

CLIENT: VIAR & CO. CONTRACT NUMBER: VIAR-7010-023

Analysis date 06/22/88 HEAI# BLANK
CLIENT ID: N/A

COMPOUND	Detection Limit (ug/L)	Sample Result (ug/L)
Chloromethane	1.0	*
Bromomethane	1.0	*
Dichlorodifluoromethane	1.0	*
Vinyl chloride	1.0	*
Chloroethane	1.0	*
Methylene chloride	1.0	*
Trichlorofluoromethane	1.0	*
1,1-Dichloroethene	1.0	*
1,1-Dichloroethane	1.0	*
trans-1,2-Dichloroethene	1.0	*
Chloroform	1.0	*
1,2-Dichloroethane	1.0	*
1,1,1-Trichloroethane	1.0	*
Carbon Tetrachloride	1.0	*
Bromodichloromethane	1.0	*
1,2-Dichloropropane	1.0	*
trans-1,3-Dichloropropene	1.0	*
Trichloroethene	1.0	*
Dibromochloromethane	1.0	*
1,1,2-Trichloroethane	1.0	*
cis-1,3-Dichloropropene	1.0	*
Bromoform	1.0	*
1,1,2,2-Tetrachloroethane	1.0	*
Tetrachloroethene	1.0	*
Chlorobenzene	1.0	*
1,3-Dichlorobenzene	1.0	*
1,2-Dichlorobenzene	1.0	*
1,4-Dichlorobenzene	1.0	*

(*) Compound not detected above method detection limit.

HITTMAN EBASCO ASSOCIATES INC.
A Subsidiary of EBASCO SERVICES INCORPORATED
9151 Rumsey Road, Columbia, MD 21045
(301) 730-8525

HITTMAN EBASCO

11/3/88

VOLATILE ORGANIC ANALYSIS BY GC

CLIENT: VIAR & CO. CONTRACT NUMBER: VIAR-7010-023

HEAI# 3811
Analysis date ~~06/22/88~~ 6/29/88 CLIENT ID: 005

COMPOUND	Detection Limit (ug/L)	Sample Result (ug/L)
Chloromethane	1.0	*
Bromomethane	1.0	*
Dichlorodifluoromethane	1.0	*
Vinyl chloride	1.0	*
Chloroethane	1.0	*
Methylene chloride	1.0	*
Trichlorofluoromethane	1.0	1.9
1,1-Dichloroethene	1.0	*
1,1-Dichloroethane	1.0	*
trans-1,2-Dichloroethene	1.0	*
Chloroform	1.0	*
1,2-Dichloroethane	1.0	*
1,1,1-Trichloroethane	1.0	*
Carbon Tetrachloride	1.0	*
Bromodichloromethane	1.0	*
1,2-Dichloropropane	1.0	*
trans-1,3-Dichloropropene	1.0	*
Trichloroethene	1.0	*
Dibromochloromethane	1.0	*
1,1,2-Trichloroethane	1.0	*
cis-1,3-Dichloropropene	1.0	*
Bromoform	1.0	*
1,1,2,2-Tetrachloroethane	1.0	*
Tetrachloroethene	1.0	*
Chlorobenzene	1.0	*
1,3-Dichlorobenzene	1.0	*
1,2-Dichlorobenzene	1.0	*
1,4-Dichlorobenzene	1.0	*

(*) Compound not detected above method detection limit.

Hittman Ebasco Associates Inc.

VOLATILES BY GC
Standard Summary

Date of Analysis : 6/24/88
GC Column : DB-624

COMPOUND	retention time window	Corr.	y-inter	slope	RF low	RF med	RF high	MEAN RF	%RSD	
Chloromethane	2.47 - 2.52	10.99889	1-333521.	1398447.77	12.67E-06	12.76E-06	12.54E-06	12.65E-06	4.2	+ co-elu
Bromomethane	3.37 - 3.44	10.99408	1-440563.	1172472.10	12.45E-05	15.90E-06	16.35E-06	11.22E-05	86.6	co-elu
Dichlorodifluoromethane	2.47 - 2.52	10.99889	1-333521.	1398447.77	12.67E-06	12.76E-06	12.54E-06	12.65E-06	4.2	co-elu
Vinyl chloride	2.87 - 2.93	10.99160	1-3612015	11222559.9	11.15E-06	11.14E-06	18.57E-07	11.05E-06	13.8	
Chloroethane	3.51 - 3.58	10.44986	18024337.	1307295.49	11.99E-06	17.55E-07	12.66E-06	11.80E-06	53.7	co-elut
Methylene chloride	5.79 - 5.91	10.99289	128994938	12007167.3	11.38E-07	12.70E-07	13.73E-07	12.60E-07	45.3	
Trichlorofluoromethane	3.91 - 3.99	10.99516	1584501.9	11439243.4	15.31E-07	17.55E-07	16.74E-07	16.53E-07	17.4	
1,1-Dichloroethene	4.82 - 4.92	10.99965	1-1491237	11314707.4	19.12E-07	18.30E-07	17.78E-07	18.40E-07	8.0	
1,1-Dichloroethane	7.22 - 7.36	10.99687	1-148158.	11920272.6	16.50E-07	14.84E-07	15.31E-07	15.55E-07	15.4	
trans-1,2-Dichloroethene	6.35 - 6.48	10.99720	1-1383431	11743626.2	18.58E-07	15.54E-07	15.95E-07	16.69E-07	24.7	
Chloroform	9.19 - 9.38	10.99739	127624270	11101922.7	11.55E-07	13.90E-07	15.63E-07	13.70E-07	35.4	co-elut
1,2-Dichloroethane	10.43 - 10.64	10.99732	1-77463.2	11782913.7	16.82E-07	15.23E-07	15.71E-07	15.92E-07	13.8	
1-Trichloroethane	9.56 - 9.75	10.98693	13091993.	11742030.8	15.87E-07	14.58E-07	15.69E-07	15.38E-07	13.0	
Carbon tetrachloride	9.92 - 10.13	10.98288	14901261.	11807102.7	14.99E-07	14.18E-07	15.39E-07	14.85E-07	12.7	
Bromodichloromethane	13.02 - 13.28	10.99694	12611565.	11654907.8	15.32E-07	15.22E-07	15.91E-07	15.48E-07	6.8	
1,2-Dichloropropane	12.34 - 12.59	10.99582	12620675.	11608436.5	15.58E-07	15.30E-07	16.09E-07	15.66E-07	7.1	
trans-1,3-Dichloropropene	14.07 - 14.35	10.98953	15677879.	11687653.7	14.43E-07	14.50E-07	15.63E-07	14.86E-07	13.8	
Trichloroethene	11.86 - 12.10	10.98519	15876843.	11493389.8	14.83E-07	14.88E-07	16.31E-07	15.34E-07	15.7	
Dibromochloromethane	16.80 - 17.14	10.99989	1-2410022	11599241.6	18.54E-07	16.87E-07	16.48E-07	17.30E-07	15.0	
1,1,2-Trichloroethane	15.84 - 16.16	10.97207	13936395.	11525930.2	16.84E-07	14.77E-07	16.47E-07	16.03E-07	18.3	
cis-1,3-Dichloropropene	15.57 - 15.89	1-0.3372	142690705	1-325308.3	19.70E-08	11.12E-06	11.07E-06	17.61E-07	75.7	co-elu
2-Chloroethylvinyl ether	0.00 - 0.00	ERR	0	0	ERR	ERR	ERR	ERR	ERR	
Bromoform	20.39 - 20.80	10.99183	1-3103679	11055556.2	11.34E-06	11.31E-06	19.93E-07	11.21E-06	15.8	
1,1,2,2-Tetrachloroethane	21.75 - 22.19	10.99741	1-2940757	11632117.6	17.60E-07	17.32E-07	16.31E-07	17.08E-07	9.6	
Tetrachloroethene	16.17 - 16.50	10.98621	13044691.	11668056.3	16.13E-07	14.76E-07	15.94E-07	15.61E-07	13.3	
Chlorobenzene	18.28 - 18.65	10.98535	116135401	11885121.0	12.29E-07	13.31E-07	14.51E-07	13.37E-07	32.9	
1,3-Dichlorobenzene	24.88 - 25.38	10.94826	119414443	11910432.6	12.32E-07	12.83E-07	14.43E-07	13.19E-07	34.5	
1,2-Dichlorobenzene	26.91 - 27.46	10.97329	116336452	12869840.5	12.19E-07	12.29E-07	13.19E-07	12.56E-07	21.7	
1,4-Dichlorobenzene	25.27 - 25.78	10.96836	117208910	12640881.5	12.22E-07	12.39E-07	13.42E-07	12.67E-07	24.3	
Benzene	0.00 - 0.00	ERR	0	0	ERR	ERR	ERR	ERR	ERR	
Toluene	0.00 - 0.00	ERR	0	0	ERR	ERR	ERR	ERR	ERR	
Ethylbenzene	0.00 - 0.00	ERR	0	0	ERR	ERR	ERR	ERR	ERR	

AR401639

tm
6/29/88

Samples 005 - 011

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Wittman Ebasco Associates Inc.

VOLATILES BY GC
Standard Summary

Date of Analysis : 6/22/88
GC Column : DB-624

COMPOUND	retention time window	Corr.	y-inter	slope	RF low	RF med	RF high	MEAN RF	%RSD
...hloromethane	2.28 - 2.32	0.99998	-193901.	1326225.16	13.53E-06	13.14E-06	13.12E-06	13.26E-06	7.1 co-elut
Bromomethane	2.63 - 2.69	0.91594	-4454086	1704940.85	11.90E-06	15.88E-06	11.51E-06	13.10E-06	78.6 co-elu
...ichlorodifluoromethane	2.28 - 2.32	0.99998	-193901.	1326225.16	13.53E-06	13.14E-06	13.12E-06	13.26E-06	7.1 co-elu
...inyl chloride	2.48 - 2.53	0.99921	-223197.	1914184.81	11.27E-06	11.06E-06	11.11E-06	11.15E-06	9.5
...loroethane	3.18 - 3.24	0.99112	-1862554	1687068.22	11.90E-06	12.00E-06	11.51E-06	11.80E-06	14.1 co-elu
...thylene chloride	5.25 - 5.36	0.98199	125579595	12594172.4	11.52E-07	12.28E-07	13.20E-07	12.34E-07	35.9
Trichlorofluoromethane	3.55 - 3.62	0.99745	14075072.	11214001.1	15.47E-07	16.64E-07	17.71E-07	16.61E-07	17.0
...1-Dichloroethene	4.36 - 4.44	0.99778	1262883.8	11209018.8	19.30E-07	17.67E-07	18.35E-07	18.44E-07	9.7
...,1-Dichloroethane	6.61 - 6.74	0.99554	12031933.	11388867.2	16.70E-07	16.16E-07	17.09E-07	16.65E-07	7.0
trans-1,2-Dichloroethene	5.77 - 5.89	0.99486	-839525.	11702803.4	18.81E-07	15.45E-07	16.08E-07	16.78E-07	26.4
...loroform	8.53 - 8.70	0.94920	120099993	11118122.6	12.34E-07	14.00E-07	16.49E-07	14.28E-07	46.9
...,2-Dichloroethane	9.76 - 9.96	0.99163	1968039.1	1859686.72	17.62E-07	11.26E-06	11.10E-06	11.04E-06	24.3
...,1,1-Trichloroethane	8.89 - 9.07	0.99874	-965600.	11430457.4	17.13E-07	17.64E-07	17.03E-07	17.27E-07	4.5
...rbon tetrachloride	9.25 - 9.43	0.99243	12625633.	11472241.3	16.34E-07	15.59E-07	16.67E-07	16.20E-07	8.9
Bromodichloromethane	12.36 - 12.61	0.98150	15302080.	11575057.1	15.19E-07	14.65E-07	16.09E-07	15.31E-07	13.7
...2-Dichloropropane	11.58 - 11.92	0.98795	14411772.	11548769.2	15.35E-07	14.96E-07	16.22E-07	15.51E-07	11.7
...rans-1,3-Dichloropropene	13.41 - 13.68	0.96814	18723206.	11564828.9	14.21E-07	14.15E-07	15.90E-07	14.75E-07	20.9
Trichloroethene	11.19 - 11.41	0.98325	16192732.	11409456.3	14.89E-07	15.04E-07	16.63E-07	15.52E-07	17.5
...bromochloromethane	16.12 - 16.45	0.99211	12182543.	11368039.3	17.12E-07	16.05E-07	17.22E-07	16.80E-07	9.5
...,1,2-Trichloroethane	15.18 - 15.49	0.95057	16838064.	11520844.1	15.74E-07	14.23E-07	16.31E-07	15.43E-07	19.8
...is-1,3-Dichloropropene	14.90 - 15.21	-0.5898	157265232	-840886.4	17.54E-08	11.16E-06	11.19E-06	18.10E-07	78.6 co-elu
...-Chloroethylvinyl ether	0.00 - 0.00	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
Bromoform	19.68 - 20.08	0.99960	-736251.	11122928.5	11.11E-06	18.94E-07	19.11E-07	19.71E-07	12.2
...1,2,2-Tetrachloroethane	21.02 - 21.44	0.98088	13976305.	11317259.2	16.63E-07	15.62E-07	17.35E-07	16.53E-07	13.3
...etrachloroethene	15.49 - 15.80	0.97304	15072179.	11535846.4	15.85E-07	14.64E-07	16.31E-07	15.60E-07	13.5
Chlorobenzene	17.59 - 17.94	0.94742	120088467	11485345.2	12.30E-07	13.34E-07	15.32E-07	13.65E-07	42.0
...3-Dichlorobenzene	23.84 - 24.32	0.93381	121344786	11695196.6	12.24E-07	12.93E-07	14.79E-07	13.32E-07	39.8
...2-Dichlorobenzene	25.56 - 26.18	0.91487	124677527	11948929.3	12.04E-07	12.47E-07	14.20E-07	12.90E-07	39.4
...4-Dichlorobenzene	24.18 - 24.67	0.94173	120979163	12240381.4	12.18E-07	12.44E-07	13.86E-07	12.83E-07	32.0
...nzene	0.00 - 0.00	ERR	0	0	ERR	ERR	ERR	ERR	ERR
Toluene	0.00 - 0.00	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
Ethylbenzene	0.00 - 0.00	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR

AR401640

tm
6/28/88

Samples 001 - 004

Hittman Ebasco Associates Inc.

VOLATILES BY GC
Sample Table

HEAI # : CHECK STD.
Client ID :
Volume of Sample : 40
Final Volume : 40
Dilution Factor : 1

GC Column : 1% SP 1000
Date Analyzed : 6/30/88

COMPOUND	retention time window	RT	AREA	Conc. curve (ug/L)	Conc. low RF (ug/L)	Conc. high RF (ug/L)	Conc. mean RF (ug/L)	% Rec
Chloromethane	1.43 - 1.45	1.44	6851146	15.14854	163.78946	111.09801	136.64323	76
Bromomethane	2.56 - 2.62	2.6	110869816	20.11894	163.72537	117.58269	134.20258	101
Dichlorodifluoromethane	3.38 - 3.44	3.42	132661056	19.37237	132.46609	117.68572	123.50585	7
Vinyl chloride	3.38 - 3.44	3.42	132661056	19.47237	132.46609	117.68572	123.50585	1 CO
Chloroethane	4.54 - 4.64	4.6	123587024	19.44600	162.75982	117.18870	133.17535	9
Methylene chloride	6.50 - 6.64	6.56	186857920	15.438110	16.881842	114.72549	10.18095	51
Trichlorofluoromethane	8.62 - 8.80	8.72	153123968	121.86052	119.51233	122.75800	121.02532	10
1,1-Dichloroethene	9.46 - 9.66	9.55	186116992	120.29745	18.428056	127.48807	118.31078	CO
1,1-Dichloroethane	10.39 - 10.59	10.5	164634368	122.02582	118.32877	123.67078	120.70631	11
trans-1,2-Dichloroethene	11.28 - 11.50	11.37	139450368	119.70758	120.38941	120.78086	119.73119	CO
Chloroform	11.45 - 11.69	11.61	196848192	125.39986	119.03039	128.33235	122.70263	CO
1,2-Dichloroethane	12.37 - 12.61	12.47	161184544	120.62792	119.52386	121.44604	120.18374	10
1,1,1-Trichloroethane	13.52 - 13.80	13.66	161564288	122.23516	120.45029	123.66815	121.40201	10
Carbon tetrachloride	13.91 - 14.19	14.06	157211936	121.64504	122.01742	122.37080	121.54549	10
Bromodichloromethane	14.30 - 14.58	14.43	163330272	121.41474	122.51796	121.75486	121.60172	10
1,2-Dichloropropane	15.80 - 16.12	15.96	149526816	123.03731	120.66616	124.27727	122.02527	CO
trans-1,3-Dichloropropene	16.03 - 16.35	16.18	169497088	122.23713	120.17861	124.15857	121.26123	CO
Trichloroethene	16.66 - 17.00	16.83	179294720	126.65576	122.92365	128.44132	124.75620	CO
Dibromochloromethane	17.20 - 17.54	17.36	1.3E+08	119.66825	120.86531	119.29749	120.04130	CO
1,1,2-Trichloroethane	17.20 - 17.54	17.36	1.3E+08	119.66825	120.86531	119.29749	120.04130	CO
cis-1,3-Dichloropropene	17.20 - 17.54	17.36	1.3E+08	119.66825	120.86531	119.29749	120.04130	CO
2-Chloroethylvinyl ether	0.00 - 0.00	0	0	ERR	ERR	ERR	ERR	
Bromoform	19.56 - 19.96	19.76	115362600	121.95273	132.20728	121.75209	124.89654	11
1,1,2,2-Tetrachloroethane	21.85 - 22.29	22.08	128419008	128.67908	117.87315	137.55561	123.95288	CO
Tetrachloroethene	22.28 - 22.73	22.47	199984512	122.94929	110.43324	127.98656	119.55343	CO
Chlorobenzene	24.71 - 25.21	24.98	1.2E+08	126.26409	119.99929	130.04312	123.32603	12
1,3-Dichlorobenzene	32.48 - 33.14	32.83	1.5E+08	-123.472	122.84959	1257.0435	1100.3257	CO
1,2-Dichlorobenzene	32.98 - 33.64	33.35	1.5E+08	1279.7254	120.91038	1108.6282	149.92679	CO
1,4-Dichlorobenzene	33.46 - 34.14	33.81	1.6E+08	-769.061	122.09773	1147.7909	163.60425	CO
Benzene	0.00 - 0.00	0	0	ERR	ERR	ERR	ERR	
Toluene	0.00 - 0.00	0	0	ERR	ERR	ERR	ERR	
Ethylbenzene	0.00 - 0.00	0	0	ERR	ERR	ERR	ERR	

Dilution Factor = Final Volume / Volume of Sample

ts
7/05/88

JM

AR401641

Hittman Ebasco Associates Inc.

VOLATILES BY GC
Sample Table

HEAI # : CHECK STD.
Client ID :
Volume of Sample : 40
Final Volume : 40
Dilution Factor : 1

GC Column : DB-624
Date Analyzed : 6/23/88

COMPOUND	Retention time window		RT	AREA	Conc. curve (ug/L)	Conc. low RF (ug/L)	Conc. high RF (ug/L)	Conc. mean RF (ug/L)
Chloromethane	2.28 -	2.32	2.21	8983987	128.13360	131.69574	127.98727	129.30322
Bromomethane	2.63 -	2.69	3.02	3290640	110.98634	16.239509	14.982366	110.18590
Dichlorodifluoromethane	2.28 -	2.32	2.21	8983987	128.13360	131.69574	127.98727	129.30322
Vinyl chloride	2.48 -	2.53	2.56	124224464	126.74258	130.82214	126.89314	127.83231
Chloroethane	3.18 -	3.24	3.11	113223832	121.95762	125.07421	120.02223	123.83342
Methylene chloride	5.25 -	5.36	5.21	196524992	127.34798	114.71942	130.88185	122.55077
Trichlorofluoromethane	3.55 -	3.62	3.47	136178432	126.44425	119.78469	127.89200	123.90286
1,1-Dichloroethene	4.36 -	4.44	4.27	131357504	125.71888	129.15636	126.17173	126.46098
1,1-Dichloroethane	6.61 -	6.74	6.56	142032256	128.80068	128.18132	129.78501	127.95282
trans-1,2-Dichloroethene	5.77 -	5.89	5.7	143802592	126.21683	138.60102	126.63902	129.69969
Chloroform	8.53 -	8.70	8.55	159553376	135.28538	113.90726	138.66154	125.47102
1,2-Dichloroethane	9.76 -	9.96	9.78	148542720	135.33955	137.00857	153.45469	150.50640
1,1,1-Trichloroethane	8.89 -	9.07	8.89	152450944	137.34228	137.38470	136.88925	138.10736
Carbon tetrachloride	9.25 -	9.43	9.26	155186176	135.70103	135.00233	136.82910	134.23442
Bromodichloromethane	12.36 -	12.61	12.39	150040736	128.40446	125.98054	130.49211	126.58060
1,2-Dichloropropane	11.68 -	11.92	11.7	148463168	128.44283	125.90428	130.16620	126.70931
trans-1,3-Dichloropropene	13.41 -	13.68	13.46	152733856	128.12489	122.20470	131.10604	125.06441
Trichloroethene	11.19 -	11.41	11.22	155992896	135.33288	127.38471	137.13764	130.91937
Dibromochloromethane	16.12 -	16.45	16.18	142594528	129.58007	130.30896	130.75022	128.94854
1,1,2-Trichloroethane	15.18 -	15.49	15.25	152197504	129.82517	129.97781	132.94796	128.33322
cis-1,3-Dichloropropene	14.90 -	15.21	14.96	160711456	-4.09832	14.574882	172.27781	149.16815
2-Chloroethylvinyl ether	0.00 -	0.00	0	0	ERR	ERR	ERR	ERR
Bromoform	19.68 -	20.08	19.78	127226416	124.90153	130.16641	124.80392	126.44021
1,1,2,2-Tetrachloroethane	21.02 -	21.44	21.14	134190464	122.33713	122.65623	125.13827	122.33335
Tetrachloroethene	15.49 -	15.80	15.55	150994944	129.90062	129.82623	132.19683	128.55417
Chlorobenzene	17.59 -	17.94	17.7	170994880	134.27249	116.34119	137.78439	125.93909
1,3-Dichlorobenzene	23.84 -	24.32	24.01	173534144	130.78660	116.47174	135.21410	124.39854
1,2-Dichlorobenzene	25.56 -	26.18	25.85	194677056	135.91691	119.32896	139.78599	127.49390
1,4-Dichlorobenzene	24.18 -	24.67	24.36	189921728	130.77268	119.59816	134.69716	125.41305
Benzene	0.00 -	0.00	0	0	ERR	ERR	ERR	ERR
Toluene	0.00 -	0.00	0	0	ERR	ERR	ERR	ERR
Ethylbenzene	0.00 -	0.00	0	0	ERR	ERR	ERR	ERR

Dilution Factor = Final Volume / Volume of Sample

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