142890

CATIONS DATA PACKAGE

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CH2M HILL Economists
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CASE NARRATIVE
Cations

Batch Number: 21147

Client/Project: BARR ENGINEERING COMPANY

I. **Holding Time:**
All holding times were met.

II. **Analysis:**

A. **Blanks:**
All acceptance criteria were met.

B. **Calibration:**
All acceptance criteria were met.

C. **ICP Interference Check Sample:**
All acceptance criteria were met.

D. **Spike Sample Analysis:**
Prespike and postspike recoveries outside criteria are flagged accordingly.

E. **Duplicate Sample Analysis:**
All acceptance criteria were met.

F. **Laboratory Control Sample Analysis:**
All acceptance criteria were met.

G. **ICP Serial Dilution:**
ICP serial dilutions outside criteria are flagged accordingly.

H. **Other:**
The QC for 21147 is included in the 21107 data package.

III. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, for other than the conditions detailed above.

SIGNED: Kaye Walker for **DATE:** 4/7/92
Kevin A. Sanders
Inorganic Division Manager

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 1444

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

b Name: CH2M_HILL_MGM_____ Contract: 21147_____

Lab Code: NA____ Case No.: 21147 SAS No.: 21147_ SDG No.:21147_

SOW No.: 3/90_

EPA Sample No.	Lab Sample ID
_T-06-02_____	__S21147001___
_T-06-04_____	__S21147002___

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES
If yes - were raw data generated before application of background corrections ? Yes/No NO_

omments:
C FOR DATA PACKAGE 21147 IS INCLUDED IN DATA PACKAGE 21107._____

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Kaye Walker for Name: Kevin A. Sanders_____

Date: 4/7/92 Title: Inorganic Division Mgr__

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TT-06-02

Lab Name: CH2M_HILL_MGM_____ Contract: 21147_____

Lab Code: NA____ Case No.: 21147 SAS No.: 21147_ SDG No.: 21147_

Matrix (soil/water): SOIL_ Lab Sample ID: S21147001_

Level (low/med): LOW__ Date Received: 03/10/92

% Solids: _87.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	945			P_
7440-36-0	Antimony_	3.9	B	N	P_
7440-38-2	Arsenic__	0.92	B	N	F_
7440-39-3	Barium___	3.2	B	E	P_
7440-41-7	Beryllium	0.13	B		P_
7440-43-9	Cadmium__	0.67	U		P_
7440-70-2	Calcium__	18700			P_
7440-47-3	Chromium_	3.5			P_
7440-48-4	Cobalt___	1.6	B		P_
7440-50-8	Copper___	5.8			P_
7439-89-6	Iron____	2700			P_
7439-92-1	Lead____	1.8		N	F_
7439-95-4	Magnesium	9420			P_
7439-96-5	Manganese	88.3			P_
7439-97-6	Mercury__	0.08	U	N	CV
7440-02-0	Nickel___	4.2	B		P_
7440-09-7	Potassium	162	U		P_
7782-49-2	Selenium_	0.30	B	N	F_
7440-22-4	Silver___	0.39	U		P_
7440-23-5	Sodium___	274	B		P_
7440-28-0	Thallium_	0.25	U	N	F_
7440-62-2	Vanadium_	5.5	B		P_
7440-66-6	Zinc____	80.5		E	P_
	Cyanide__				NR

Color Before: GREY_____ Clarity Before: N/A___ Texture: SAND__

Color After: CLEAR____ Clarity After: CLEAR_ Artifacts: _____

Comments:
THE_"N"_QUALIFIER_INDICATES_POOR_PRESPIKE_RECOVERY.
THE_"E"_QUALIFIER_INDICATES_A_GREATER_THAN_10%_DIFFERENCE_BETWEEN
THE_SERIAL_DILUTION_AND_SAMPLE_RESULTS.

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TT-06-04

Lab Name: CH2M_HILL_MGM_____ Contract: 21147_____

Lab Code: NA____ Case No.: 21147 SAS No.: 21147_ SDG No.: 21147_

Matrix (soil/water): SOIL_ Lab Sample ID: S21147002_

Level (low/med): LOW__ Date Received: 03/10/92

% Solids: _85.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	3230	_		P_
7440-36-0	Antimony_	2.9	B	N	P_
7440-38-2	Arsenic__	6.5	_	N	F_
7440-39-3	Barium___	23.4	B	E	P_
7440-41-7	Beryllium	1.8	_		P_
7440-43-9	Cadmium__	0.68	U		P_
7440-70-2	Calcium__	25000	_		P_
7440-47-3	Chromium_	4.2	_		P_
7440-48-4	Cobalt___	14.8	_		P_
7440-50-8	Copper___	68.3	_		P_
7439-89-6	Iron_____	4370	_		P_
7439-92-1	Lead_____	11.5	_	N	F_
7439-95-4	Magnesium	14700	_		P_
7439-96-5	Manganese	61.1	_		P_
7439-97-6	Mercury__	0.09	U	N	CV
7440-02-0	Nickel___	15.7	_		P_
7440-09-7	Potassium	165	U		P_
7782-49-2	Selenium_	1.9	_	WN	F_
7440-22-4	Silver___	0.40	U		P_
7440-23-5	Sodium___	286	B		P_
7440-28-0	Thallium_	0.25	U	N	F_
7440-62-2	Vanadium_	6.0	B		P_
7440-66-6	Zinc_____	33.9	_	E	P_
	Cyanide__		_		NR
			_		

Color Before: GREY_____ Clarity Before: N/A___ Texture: SAND__

Color After: CLEAR____ Clarity After: CLEAR_ Artifacts: _____

Comments:
THE_"W"_QUALIFIER_REFLECTS_POOR_POSTSPIKE_RECOVERY.

7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER N° 01911
13/49-003/5L31

NO: WAUKEGAN COKE PLANT RI

JIM LANGSETH
PROJECT CONTACT: MARY MACKEY
LABORATORY: CH2M HILL

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC-CLP T	SEMIVOLATILE ORGANIC	METALS-CLP-T	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	EXTRACTABLES-CLP TCL	PESTICIDES/PCB-CLP TCL	PAH's	PAH's/PHENOLS	TCLP						TOTAL NO. OF CONTAINERS	REMARKS/ ANALYSIS REQUIRED:
TT-06-02	3/9/92	PM	X			X		X									X	X								01	5	~~AOT~~
1																											10	
TT-06-04	3/9/92	P.M.	X			X		X									X	X			X	AMS				02	5	(10 TOTAL CONTAINERS)
M-03	3/9/92	P.M.	X																		X					03	5	
Sample listed separately, below, due to LIMS limitation.																										AMS 3/10/92		
TT-06-04	3/9/92	PM	✓																		X					04		
								✓																		2S		
																					✓					2W		

FOR LAB USE ONLY
LAB # 21749
PROJ # LMG 03486.XX
ACK 3/11 VERIFIED 3/10/92
HAZWRAP NEESA Y N
QC LEVEL 1 2 3
COC Y
ANA REQ Y
CUST SEAL Y
SAMPLE COND. Soil
ICE 4°C
TEMP
PH

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
(JMF)		3/9				
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY: 3/10/92 1015	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER: 358650164 5

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS: YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY

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APR 15 92

April 7, 1992

LMG33486.XY

Ms. Marti Harding-Smith
Barr Engineering Company
8300 Norman Center Drive
Suite 300
Minneapolis, Minnesota 55437-1026

RE: Analytical Data for LMG Laboratory No. 21147

Dear Ms. Harding-Smith:

On March 10, 1992, the CH2M HILL Montgomery Laboratory received two samples with a request for analysis of selected organic parameters.

The analytical results and associated quality control data are enclosed. Any unusual difficulties encountered during the analyses of these samples are discussed in the case narratives.

If you should have any questions concerning the data, please inquire.

The CH2M HILL policy is to store samples for up to 30 days after reporting. If you desire, our laboratory will maintain your samples for a longer period at a cost of $5.00 per sample per month. Samples determined to be hazardous can either be returned to you or disposed of at a cost of $25.00 per sample.

Sincerely,

Wanda L. Hall

Wanda L. Hall
Data Package Supervisor

Enclosures

cc: Mr. Jim Langseth

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EPA - DEFINED QUALIFIERS

ORGANICS

Definitions for the EPA-defined qualifiers:

U -- Indicates the compound was analyzed for but not detected. The number adjacent to the "U" qualifier indicates the quantitation limit for that compound. The detection limit can vary from sample to sample depending on dilution factors or percent moisture adjustment when indicated.

J -- Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound below the stated quantitation limit. The "J" qualifier is not used with pesticide results.

C -- This flag applies to pesticide results only. The "C" flag indicates the presence of this compound has been confirmed by GC/MS analysis.

B -- This flag is used when the analyte is found in the associated blank as well as the sample. This notation indicates possible blank contamination and suggests the data user evaluate these compounds and their amounts carefully.

E -- This flag applies to GC/MS only. The "E" qualifier indicates a compound may be above or below the linear range of the instrument. If the particular compound level is deemed above the linear calibration range, then the sample should be reanalyzed at an appropriate dilution. Therefore, the "E" qualified amount is an estimated concentration. The results for the dilution will be reported on a separate Form I and will be flagged with a "D" if the dilution brings the concentration within proper calibration.

D -- This flag identifies compounds which have been run at a dilution to bring the concentration of that compound within the linear range of the instrument. "D" qualifiers are only used for samples that have been run initially with results above acceptable ranges. For secondary dilutions the "DL" suffix is appended to the sample number on the Form I.

A -- Indicates the Tentatively Identified Compound (TIC) is a suspected aldol-condensation product.

X -- Indicates the compound concentration has been manually modified or the EPA qualifier has been manually modified or added.

JX -- The compound was detected and quantitated below the Contract Required Quantitation Limit.

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CLIENT SAMPLE ID QUALIFIERS

LEVEL 3

The qualifiers that GC/MS and GC use with the client sample ID are defined below:

DL -- Dilution Run

R -- Rerun (may be followed by a digit to indicate multiple reruns)

RD -- Diluted Rerun

RX -- Re-extraction Analysis

MS -- Matrix Spike (may be followed by a digit to indicate multiple matrix spikes within a sample set)

MSD -- Matrix Spike Duplicate (may be followed by a digit to indicate multiple matrix spike duplicates within a sample set)

VBLK -- Volatile Blank (will be followed by a "W" for waters, "S" for soils run at a low level, or "SM" for soils run at a medium level -- these letters may be followed by a digit to indicate multiple blanks of that type).

SBLK -- Semivolatile Blank (will be followed by a "W" for waters, "S" for soils run at a low level, or "SM" for soils run at a medium level -- these letters may be followed by a digit to indicate multiple blanks of that type).

PBLK -- Pesticide/PCB Blank (may be followed by digits to indicate multiple blanks)

These qualifiers allow GC/MS and GC to have unique client sample ID's so that the client can get more accurate information from the data reported.

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TABLE 1

SAMPLE CROSS-REFERENCE SUMMARY

CH2M HILL Laboratory No. 21147

CH2M HILL Sample No.	Sample Description				
21147001	TT-06-02	03/09/92	GRAB	13/49-003JSL31	PO#01911
21147002	TT-06-04	03/09/92	GRAB	13/49-003JSL31	PO#01911

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INTERNAL STANDARD AND SURROGATE COMPOUNDS

VOLATILE ANALYSIS

The internal standards on the GC/MS volatile chromatograms are designated as IS1, IS2, and IS3. The surrogate standards are labelled as SS1, SS2, and SS3. The compounds corresponding to these labels are listed below.

LABEL	INTERNAL STANDARD COMPOUND
IS1	BROMOCHLOROMETHANE
IS2	1,4-DIFLUOROBENZENE
IS3	D5-CHLOROBENZENE

LABEL	SURROGATE STANDARD COMPOUND
SS1	D4-1,2-DICHLOROETHANE
SS2	D8-TOLUENE
SS3	1,4-BROMOFLUOROBENZENE

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INTERNAL STANDARD AND SURROGATE COMPOUNDS

SEMIVOLATILE ANALYSIS

The internal standards on the GC/MS semivolatile chromatograms are designated as IS1, IS2, IS3, IS4, IS5, and IS6. The surrogate standards are labelled as SS1, SS2, SS3, SS4, SS5, and SS6. The compounds corresponding to these labels are listed below.

LABEL	INTERNAL STANDARD COMPOUND
IS1	D4-1,4-DICHLOROBENZENE
IS2	D8-NAPHTHALENE
IS3	D10-ACENAPHTHENE
IS4	D10-PHENANTHRENE
IS5	D12-CHRYSENE
IS6	D12-PERYLENE

LABEL	SURROGATE STANDARD COMPOUND
SS1	2-FLUOROPHENOL
SS2	D5-PHENOL
SS3	D5-NITROBENZENE
SS4	2-FLUOROBIPHENYL
SS5	2,4,6-TRIBROMOPHENOL
SS6	D14-TERPHENYL

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SAMPLE DATA SUMMARY PACKAGE

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CASE NARRATIVE FOR VOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21147 SDG NO.: N/A

I. RECEIPT

A. DATE: March 10, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21147001	TT-06-02	SOIL	03/09/92	NA	03/19/92
21147002	TT-06-04	SOIL	03/09/92	NA	03/19/92
21147002R	TT-06-04R	SOIL	03/09/92	NA	03/19/92
Y03192B1	VBLKS	SOIL	NA	NA	03/19/92

C. Documentation
Exceptions : No exceptions were encountered.

II. EXTRACTION

A. Holding Times: Medium level protocol was not performed; therefore, extraction time is not applicable.

B. Extraction
Exceptions : Not applicable.

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III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : Please see attached table for information concerning methylene chloride and acetone.

The original analysis of sample 21147002 (TT-06-04) showed the absolute response of internal standards below QC limits. The sample was reanalyzed with similar results. Therefore, these low responses may possibly be due to a matrix effect. The results of both analyses have been reported.

The original analysis of sample 21147002 showed target compounds above the calibration range. The sample was reanalyzed with all targets within calibration range. The results of both analyses have been reported.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : The original analysis of sample 21147002 showed surrogate recoveries below QC limits. The sample was reanalyzed with similar results. Therefore, the low recoveries may possibly be due to a matrix effect. The results of both analyses have been reported. All other samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21107.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for Jared V. Smiley 4/7/92

for Herb Kelly Date
Manager, Organic Division

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METHYLENE CHLORIDE/ACETONE SUMMARY

Due to the level of target compounds, the following samples required large dilutions for analysis. As required by the Statement of Work, these dilution factors have been applied, without background subtraction, to all detected compounds, particularly methylene chloride and acetone. As methylene chloride and acetone are common laboratory contaminants, the following table is being provided to present a more accurate perspective of these compounds. Included in the table is 1) the amount of methylene chloride and acetone, detected at the instrument, prior to multiplication by the dilution factor; and 2) the amount of methylene chloride and acetone for that particular sample's laboratory method blank.

SAMPLE	METHYLENE CHLORIDE	ACETONE	METHOD BLANK	METHYLENE CHLORIDE	ACETONE
21147001	14 ug/Kg	25 ug/Kg	Y03192B1	9 ug/Kg	5 ug/Kg

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Quality Analytical Laboratories
2567 Fairlane Drive. P O. Box 230548. Montgomery. Alabama 36116
205 271 1444

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CASE NARRATIVE FOR SEMIVOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21147 SDG NO.: N/A

I. RECEIPT

A. DATE: March 10, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21147001	TT-06-02	SOIL	03/09/92	03/11/92	03/31/92
21147002	TT-06-04	SOIL	03/09/92	03/11/92	03/30/92
S03112B1	SBLKS	SOIL	NA	03/11/92	03/30/92

C. Documentation Exceptions : Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

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II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Sample 21147001 (TT-06-02) required a large dilution for analysis. Therefore, surrogate recoveries could not be determined for this sample.

All other samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21107.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for Herb Kelly — 4/7/92
Manager, Organic Division — Date

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CASE NARRATIVE FOR PESTICIDE/PCB GAS CHROMATOGRAPHY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21147 SDG NO.: N/A

I. RECEIPT

A. DATE: March 10, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21147001	TT-06-02	SOIL	03/09/92	03/11/92	03/28/92
21147002	TT-06-04	SOIL	03/09/92	03/11/92	03/29/92
S03112B1	PBLK11	SOIL	NA	03/11/92	03/28/92

C. Documentation
Exceptions : No exceptions were encountered.

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II. EXTRACTION

A. Holding times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : Internal standards were added to the pesticide/PCB samples before injection for internal QC purposes only. According to CLP protocol, only external standard calculations were performed for this report.

Both field samples were diluted for analysis because of the chemical noise not removed by our cleanup procedures. Reporting limits were raised beyond the values predicted by the dilution factor alone to reflect the chemical noise present in the chromatograms.

As summarized on Form 8D for the SPB-608 chromatographic column, decachlorobiphenyl exceeded the retention time window for several injections. As a corrective action, larger than normal retention time windows were used to interpret the chromatographic data for this column.

No additional exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Decachlorobiphenyl could not be determined for samples 21147001 (TT-06-02) and 21147002 (TT-06-04) on either column due to interferences.

All other samples met acceptable QC limits.

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C. Matrix Spike
Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21136.

D. Special
Conditions : Primary and confirmation data was acquired by a single injection into a dual column/ECD system.

Please note that Forms II, IV, VI PEST-4, VIII, IX PEST-1, and IX PEST-2 have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for Herb Kelly — Jewell W. Smiley — 4/7/92
Manager, Organic Division — Date

CH2M HILL
Quality
Analytical Laboratories
256 Fairlane Drive, P.O. Box 230548,
Montgomery, Alabama 36116
205 271 1444

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-06-02

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21147001

Sample wt/vol: 1.0 (g/mL) G Lab File ID: C2VO021065

Level: (low/med) LOW Date Received: 03/10/92

% Moisture: not dec. 16 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	60	U
74-83-9	Bromomethane	60	U
75-01-4	Vinyl Chloride	60	U
75-00-3	Chloroethane	60	U
75-09-2	Methylene Chloride	80	B
67-64-1	Acetone	150	B
75-15-0	Carbon Disulfide	60	U
75-35-4	1,1-Dichloroethene	60	U
75-34-3	1,1-Dichloroethane	60	U
540-59-0	1,2-Dichloroethene (total)	60	U
67-66-3	Chloroform	60	U
107-06-2	1,2-Dichloroethane	60	U
78-93-3	2-Butanone	45	J
71-55-6	1,1,1-Trichloroethane	60	U
56-23-5	Carbon Tetrachloride	60	U
75-27-4	Bromodichloromethane	60	U
78-87-5	1,2-Dichloropropane	60	U
10061-01-5	cis-1,3-Dichloropropene	60	U
79-01-6	Trichloroethene	60	U
124-48-1	Dibromochloromethane	60	U
79-00-5	1,1,2-Trichloroethane	60	U
71-43-2	Benzene	60	U
10061-02-6	trans-1,3-Dichloropropene	60	U
75-25-2	Bromoform	60	U
591-78-6	2-Hexanone	60	U
108-10-1	4-Methyl-2-Pentanone	60	U
127-18-4	Tetrachloroethene	60	U
79-34-5	1,1,2,2-Tetrachloroethane	60	U
108-88-3	Toluene	60	U
108-90-7	Chlorobenzene	60	U
100-41-4	Ethylbenzene	35	J
100-42-5	Styrene	60	U
1330-20-7	Xylene (total)	140	

MS

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-06-02

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21147001

Sample wt/vol: 1.0 (g/mL) G Lab File ID: C2VO021065

Level: (low/med) LOW Date Received: 03/10/92

% Moisture: not dec. 16 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		BENZENE, METHYL-, (1-METHYLE	21.25	520	J
2.		NOT IDENTIFIED	21.92	530	J
3.		BENZENE, ETHYL-, DIMETHYL- I	22.07	1600	J
4.		BENZENE, ETHYL-, DIMETHYL- I	22.64	450	J
5.		BENZENE, METHYL-, (1-METHYLE	22.57	530	J
6.		BENZENE, ETHYL-, DIMETHYL- I	22.80	1300	J
7.	1587-04-8	BENZENE, 1-METHYL-2-(2-PROPE	23.00	470	J
8.	824-63-5	1H-INDENE, 2,3-DIHYDRO-2-MET	23.17	1700	J
9.		BENZENE, TETRAMETHYL- ISOMER	23.49	900	J
10.		BENZENE, TETRAMETHYL- ISOMER	23.64	890	J

MSC

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-06-04

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21147002

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021066

Level: (low/med) LOW Date Received: 03/10/92

% Moisture: not dec. 12 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	260	BE
67-64-1	Acetone	67	B
75-15-0	Carbon Disulfide	19	
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
591-78-6	2-Hexanone	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	10	J

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-06-04

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21147002

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021066

Level: (low/med) LOW Date Received: 03/10/92

% Moisture: not dec. 12 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	8.60	32	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-06-04_R

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21147002R

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C4VO021077

Level: (low/med) LOW Date Received: 03/10/92

% Moisture: not dec. 12 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	96	B
67-64-1	Acetone	23	B
75-15-0	Carbon Disulfide	5	J
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
591-78-6	2-Hexanone	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-06-04_R

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21147002R

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C4VO021077

Level: (low/med) LOW Date Received: 03/10/92

% Moisture: not dec. 12 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	8.47	17	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-06-02

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21147001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A2BA013500

Level: (low/med) LOW Date Received: 03/10/92

% Moisture: 13 decanted: (Y/N) N Date Extracted: 03/11/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 100.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	38000	U
111-44-4	bis(2-Chloroethyl)Ether	38000	U
95-57-8	2-Chlorophenol	38000	U
541-73-1	1,3-Dichlorobenzene	38000	U
106-46-7	1,4-Dichlorobenzene	38000	U
95-50-1	1,2-Dichlorobenzene	38000	U
95-48-7	2-Methylphenol	38000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	38000	U
106-44-5	4-Methylphenol	38000	U
621-64-7	N-Nitroso-Di-n-Propylamine	38000	U
67-72-1	Hexachloroethane	38000	U
98-95-3	Nitrobenzene	38000	U
78-59-1	Isophorone	38000	U
88-75-5	2-Nitrophenol	38000	U
105-67-9	2,4-Dimethylphenol	38000	U
111-91-1	bis(2-Chloroethoxy)Methane	38000	U
120-83-2	2,4-Dichlorophenol	38000	U
120-82-1	1,2,4-Trichlorobenzene	38000	U
91-20-3	Naphthalene	38000	U
106-47-8	4-Chloroaniline	38000	U
87-68-3	Hexachlorobutadiene	38000	U
59-50-7	4-Chloro-3-Methylphenol	38000	U
91-57-6	2-Methylnaphthalene	38000	U
77-47-4	Hexachlorocyclopentadiene	38000	U
88-06-2	2,4,6-Trichlorophenol	38000	U
95-95-4	2,4,5-Trichlorophenol	92000	U
91-58-7	2-Chloronaphthalene	38000	U
88-74-4	2-Nitroaniline	92000	U
131-11-3	Dimethylphthalate	38000	U
208-96-8	Acenaphthylene	38000	U
606-20-2	2,6-Dinitrotoluene	38000	U
99-09-2	3-Nitroaniline	92000	U
83-32-9	Acenaphthene	180000	

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-06-02

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21147001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A2BA013500

Level: (low/med) LOW Date Received: 03/10/92

% Moisture: 13 decanted: (Y/N) N Date Extracted: 03/11/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 100.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	92000	U
100-02-7	4-Nitrophenol	92000	U
132-64-9	Dibenzofuran	150000	
121-14-2	2,4-Dinitrotoluene	38000	U
84-66-2	Diethylphthalate	38000	U
7005-72-3	4-Chlorophenyl-phenylether	38000	U
86-73-7	Fluorene	170000	
100-10-6	4-Nitroaniline	92000	U
534-52-1	4,6-Dinitro-2-methylphenol	92000	U
86-30-6	N-Nitrosodiphenylamine (1)	38000	U
101-55-3	4-Bromophenyl-phenylether	38000	U
118-74-1	Hexachlorobenzene	38000	U
87-86-5	Pentachlorophenol	92000	U
85-01-8	Phenanthrene	280000	
120-12-7	Anthracene	38000	
86-74-8	Carbazole	38000	U
84-74-2	Di-n-Butylphthalate	38000	U
206-44-0	Fluoranthene	99000	
129-00-0	Pyrene	61000	
85-68-7	Butylbenzylphthalate	38000	U
91-94-1	3,3'-Dichlorobenzidine	38000	U
56-55-3	Benzo(a)Anthracene	14000	J
218-01-9	Chrysene	11000	J
117-81-7	bis(2-Ethylhexyl)Phthalate	38000	U
117-84-0	Di-n-Octyl Phthalate	38000	U
205-99-2	Benzo(b)Fluoranthene	38000	U
207-08-9	Benzo(k)Fluoranthene	3900	J
50-32-8	Benzo(a)Pyrene	38000	U
193-39-5	Indeno(1,2,3-cd)Pyrene	38000	U
53-70-3	Dibenz(a,h)Anthracene	38000	U
191-24-2	Benzo(g,h,i)Perylene	38000	U

MSC

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-06-02

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21147001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A2BA013500

Level: (low/med) LOW Date Received: 03/10/92

% Moisture: 13 decanted: (Y/N) N Date Extracted: 03/11/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 100.0

GPC Cleanup: (Y/N) Y pH: ____

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	5.08	20000	J
2. 90-12-0	NAPHTHALENE, 1-METHYL-	14.74	170000	J
3. 92-52-4	1,1'-BIPHENYL	15.84	23000	J
4.	NAPHTHALENE, DIMETHYL- ISOME	16.22	89000	J
5.	NAPHTHALENE, DIMETHYL- ISOME	16.45	99000	J
6.	NAPHTHALENE, DIMETHYL- ISOME	16.50	47000	J
7.	NAPHTHALENE, DIMETHYL- ISOME	16.75	34000	J
8.	NAPHTHALENE, DIMETHYL- ISOME	16.99	21000	J
9.	NAPHTHALENE, TRIMETHYL- ISOM	18.34	29000	J
10.	NAPHTHALENE, TRIMETHYL- ISOM	18.59	23000	J
11. 2489-86-3	NAPHTHALENE, 1-(2-PROPENYL)-	19.15	51000	J
12. 7320-53-8	DIBENZOFURAN, 4-METHYL-	19.40	41000	J
13. 3218-36-8	[1,1'-BIPHENYL]-4-CARBOXALDE	19.60	58000	J
14.	9H-FLUORENE, METHYL- ISOMER	20.47	27000	J
15. 132-65-0	DIBENZOTHIOPHENE	21.20	45000	J
16.	ANTHRACENE, METHYL- ISOMER	22.99	30000	J
17.	ANTHRACENE, METHYL- ISOMER	23.05	35000	J
18.	NOT IDENTIFIED	23.27	39000	J
19. 612-94-2	NAPHTHALENE, 2-PHENYL-	23.90	23000	J
20.	NOT IDENTIFIED	25.64	19000	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-06-04

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21147002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013490

Level: (low/med) LOW Date Received: 03/10/92

% Moisture: 10 decanted: (Y/N) N Date Extracted: 03/11/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	370	U
111-44-4	bis(2-Chloroethyl)Ether	370	U
95-57-8	2-Chlorophenol	370	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
95-50-1	1,2-Dichlorobenzene	370	U
95-48-7	2-Methylphenol	370	U
108-60-1	2,2'-oxybis(1-Chloropropane)	370	U
106-44-5	4-Methylphenol	370	U
621-64-7	N-Nitroso-Di-n-Propylamine	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
88-75-5	2-Nitrophenol	370	U
105-67-9	2,4-Dimethylphenol	370	U
111-91-1	bis(2-Chloroethoxy)Methane	370	U
120-83-2	2,4-Dichlorophenol	370	U
120-82-1	1,2,4-Trichlorobenzene	370	U
91-20-3	Naphthalene	330	J
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
59-50-7	4-Chloro-3-Methylphenol	370	U
91-57-6	2-Methylnaphthalene	160	J
77-47-4	Hexachlorocyclopentadiene	370	U
88-06-2	2,4,6-Trichlorophenol	370	U
95-95-4	2,4,5-Trichlorophenol	890	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	890	U
131-11-3	Dimethylphthalate	370	U
208-96-8	Acenaphthylene	180	J
606-20-2	2,6-Dinitrotoluene	370	U
99-09-2	3-Nitroaniline	890	U
83-32-9	Acenaphthene	56	J

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-06-04

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21147002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013490

Level: (low/med) LOW Date Received: 03/10/92

% Moisture: 10 decanted: (Y/N) N Date Extracted: 03/11/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	890	U
100-02-7	4-Nitrophenol	890	U
132-64-9	Dibenzofuran	160	J
121-14-2	2,4-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-phenylether	370	U
86-73-7	Fluorene	300	J
100-10-6	4-Nitroaniline	890	U
534-52-1	4,6-Dinitro-2-methylphenol	890	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
87-86-5	Pentachlorophenol	890	U
85-01-8	Phenanthrene	1000	
120-12-7	Anthracene	300	J
86-74-8	Carbazole	140	J
84-74-2	Di-n-Butylphthalate	240	BJ
206-44-0	Fluoranthene	1200	
129-00-0	Pyrene	940	
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(a)Anthracene	650	
218-01-9	Chrysene	1100	
117-81-7	bis(2-Ethylhexyl)Phthalate	43	BJ
117-84-0	Di-n-Octyl Phthalate	370	U
205-99-2	Benzo(b)Fluoranthene	750	
207-08-9	Benzo(k)Fluoranthene	440	
50-32-8	Benzo(a)Pyrene	500	
193-39-5	Indeno(1,2,3-cd)Pyrene	320	J
53-70-3	Dibenz(a,h)Anthracene	190	J
191-24-2	Benzo(g,h,i)Perylene	240	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-06-04

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21147002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013490

Level: (low/med) LOW Date Received: 03/10/92

% Moisture: 10 decanted: (Y/N) N Date Extracted: 03/11/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

umber TICs found: 19

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	7.08	490	J
2.	NOT IDENTIFIED	7.48	480	J
3. 3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	8.03	900	J
4. 18641-71-9	3-HEPTANONE, 2,4-DIMETHYL-	9.04	400	J
5.	NOT IDENTIFIED	10.15	610	J
6. 575-37-1	NAPHTHALENE, 1,7-DIMETHYL-	16.45	400	J
7.	NOT IDENTIFIED	20.34	280	J
8. 84-64-0	1,2-BENZENEDICARBOXYLIC ACID	22.64	360	J
9. 613-12-7	ANTHRACENE, 2-METHYL-	23.00	450	J
10. 2531-84-2	PHENANTHRENE, 2-METHYL-	23.09	500	J
11.	NOT IDENTIFIED	23.70	560	J
12. 612-94-2	NAPHTHALENE, 2-PHENYL-	23.94	340	J
13. 3674-65-5	PHENANTHRENE, 2,3-DIMETHYL-	24.65	280	J
14. 2381-21-7	PYRENE, 1-METHYL-	26.67	360	J
15.	NOT IDENTIFIED	28.14	190	J
16. 1705-84-6	TRIPHENYLENE, 2-METHYL-	30.36	390	J
17. 205-99-2	BENZ[E]ACEPHENANTHRYLENE	32.76	450	J
18.	NOT IDENTIFIED	34.31	850	J
19.	NOT IDENTIFIED	5.23	18000	J

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-06-02

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21147001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 13 decanted: (Y/N) N Date Received: 03/10/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/11/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 03/28/92

Injection Volume: 2.00 (uL) Dilution Factor: 4.00

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	39	U
319-85-7	beta-BHC	39	U
319-86-8	delta-BHC	39	U
58-89-9	gamma-BHC (Lindane)	39	U
76-44-8	Heptachlor	39	U
309-00-2	Aldrin	39	U
1024-57-3	Heptachlor epoxide	39	U
959-98-8	Endosulfan I	39	U
60-57-1	Dieldrin	75	U
72-55-9	4,4'-DDE	75	U
72-20-8	Endrin	75	U
33213-65-9	Endosulfan II	75	U
72-54-8	4,4'-DDD	75	U
1031-07-8	Endosulfan sulfate	75	U
50-29-3	4,4'-DDT	75	U
72-43-5	Methoxychlor	390	U
53494-70-5	Endrin ketone	75	U
7421-36-3	Endrin aldehyde	75	U
5103-71-9	alpha-Chlordane	39	U
5103-74-2	gamma-Chlordane	39	U
8001-35-2	Toxaphene	3900	U
12674-11-2	Aroclor-1016	750	U
11104-28-2	Aroclor-1221	1600	U
11141-16-5	Aroclor-1232	750	U
53469-21-9	Aroclor-1242	750	U
12672-29-6	Aroclor-1248	750	U
11097-69-1	Aroclor-1254	750	U
11096-82-5	Aroclor-1260	750	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-06-04

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21147002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 10 decanted: (Y/N) N Date Received: 03/10/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/11/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 03/29/92

Injection Volume: 2.00 (uL) Dilution Factor: 4.00

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	19	U
319-85-7	beta-BHC	19	U
319-86-8	delta-BHC	19	U
58-89-9	gamma-BHC (Lindane)	19	U
76-44-8	Heptachlor	19	U
309-00-2	Aldrin	19	U
1024-57-3	Heptachlor epoxide	19	U
959-98-8	Endosulfan I	19	U
60-57-1	Dieldrin	38	U
72-55-9	4,4'-DDE	38	U
72-20-8	Endrin	38	U
33213-65-9	Endosulfan II	38	U
72-54-8	4,4'-DDD	38	U
1031-07-8	Endosulfan sulfate	38	U
50-29-3	4,4'-DDT	38	U
72-43-5	Methoxychlor	38	U
53494-70-5	Endrin ketone	38	U
7421-36-3	Endrin aldehyde	38	U
5103-71-9	alpha-Chlordane	19	U
5103-74-2	gamma-Chlordane	19	U
8001-35-2	Toxaphene	1900	U
12674-11-2	Aroclor-1016	380	U
11104-28-2	Aroclor-1221	750	U
11141-16-5	Aroclor-1232	380	U
53469-21-9	Aroclor-1242	380	U
12672-29-6	Aroclor-1248	380	U
11097-69-1	Aroclor-1254	380	U
11096-82-5	Aroclor-1260	380	U

2B

SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Level:(low/med) LOW

	EPA SAMPLE NO.	SMC1 (TOL)#	SMC2 (BFB)#	SMC3 (DCE)#	OTHER	TOT OUT
01	TT-06-02	102	88	98	0	0
02	TT-06-04	174 *	59	92	0	1
03	TT-06-04_R	173 *	50 *	96	0	2
04	VBLKS	110	88	101	0	0

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(84-138)
SMC2 (BFB)	= Bromofluorobenzene	(59-113)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

2D

SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

J-V Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Level:(low/med) LOW

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	S7 (2CP)#	S8 (DCB)#	TOT OUT
01	TT-06-02	0 D	0 D	0 D	0 D	0 D	0 D	0 D	0 D	0
02	TT-06-04	87	88	88	98	94	94	93	85	0
03	SBLKS	93	87	95	103	97	89	96	90	0

		QC LIMITS	
S1 (NBZ)	= Nitrobenzene-d5	(23-120)	
S2 (FBP)	= 2-Fluorobiphenyl	(30-115)	
S3 (TPH)	= Terphenyl-d14	(18-137)	
S4 (PHL)	= Phenol-d5	(24-113)	
S5 (2FP)	= 2-Fluorophenol	(25-121)	
S6 (TBP)	= 2,4,6-Tribromophenol	(19-122)	
S7 (2CP)	= 2-Chlorophenol-d4	(20-130)	(advisory)
S8 (DCB)	= 1,2-Dichlorobenzene-d4	(20-130)	(advisory)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

2F

SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: 21147 SAS No.: _____ SDG No.: _____

GC Column(1): SPB-5 ID: 0.53(mm) GC Column(2): SPB-608 ID: 0.53(mm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	PBLK11	103	90	91	97			0
02	TT-06-02	79	103	0*	0*			2
03	TT-06-04	90	100	0*	0*			2

	ADVISORY QC LIMITS
TCX = Tetrachloro-m-xylene	(60-150)
DCB = Decachlorobiphenyl	(60-150)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

4A
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Lab File ID: CBV0021063 Lab Sample ID: Y03192B1

Date Analyzed: 03/19/92 Time Analyzed: 1236

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) Y

Instrument ID: 4500

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	TT-06-02	21147001	C2V0021065	1348
02	TT-06-04	21147002	C1V0021066	1422
03	TT-06-04_R	21147002R	C4V0021077	2115

COMMENTS: CLP,21128,,VBLKS,L,S,Y03192B1,V,BLANK,
10DG TO 200DG @8DG/MIN IH=3MIN

FORM IV VOA 3/90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y03192B1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBV0021063

Level: (low/med) LOW Date Received: 03/19/92

% Moisture: not dec. 0 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	9	J
67-64-1	Acetone	5	J
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y03192B1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBVO021063

Level: (low/med) LOW Date Received: 03/19/92

% Moisture: not dec. 0 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

4B
SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Lab File ID: ABBA013485 Lab Sample ID: S03112B1

Instrument ID: 4000 Date Extracted: 03/11/92

Matrix: (soil/water) SOIL Date Analyzed: 03/30/92

Level:(low/med) LOW Time Analyzed: 1419

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TT-06-02	21147001	A2BA013500	03/31/92
02	TT-06-04	21147002	A1BA013490	03/30/92

COMMENTS: CLP,21136,,SBLKS,L,S,S03112B1,B,BLANK,
20DG TO 310DG @4DG/MIN IH=10MIN

FORM IV SV 3/90

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: S03112B1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: ABBA013485

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: 0 decanted: (Y/N) N Date Extracted: 03/11/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	800	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	330	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: S03112B1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: ABBA013485

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: 0 decanted: (Y/N) N Date Extracted: 03/11/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	800	U
100-02-7	4-Nitrophenol	800	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-10-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	100	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: S03112B1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: ABBA013485

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: 0 decanted: (Y/N) N Date Extracted: 03/11/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

mber TICs found: 8

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	7.07	480	J
2. 112-36-7	ETHANE, 1,1'-OXYBIS[2-ETHOXY	9.17	260	J
3. 541-02-6	CYCLOPENTASILOXANE, DECAMETH	12.00	360	J
4. 17851-53-5	1,2-BENZENEDICARBOXYLIC ACID	22.69	250	J
5. 57-10-3	HEXADECANOIC ACID	23.72	93	J
6.	NOT IDENTIFIED	4.08	740	J
7.	NOT IDENTIFIED	5.17	17000	J
8. 20019-64-1	2(5H)-FURANONE, 5,5-DIMETHYL	7.98	420	J

4C

PESTICIDE METHOD BLANK SUMMARY

EPA SAMPLE NO.

PBLK11

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: 21147 SAS No.: _____ SDG No.: _____

Lab Sample ID: S03112B1 Lab File ID: _____

Matrix:(soil/water) SOIL Extraction:(SepF/Cont/Sonc) SONC

Sulfur Cleanup: (Y/N) Y Date Extracted: 03/11/92

Date Analyzed (1): 03/28/92 Date Analyzed (2): 03/28/92

Time Analyzed (1): 0939 Time Analyzed (2): 0939

Instrument ID (1): V6000A Instrument ID (2): V6000B

GC Column (1): SPB-5 ID: 0.53 (mm) GC Column (2): SPB-608 ID: 0.53 (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	TT-06-02	21147001	03/28/92	03/28/92
02	TT-06-04	21147002	03/29/92	03/28/92

COMMENTS:

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK11

Lab Name: CH2M HILL/MGM Contract: _____

Code: CH2M Case No.: 21147 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: S03112B1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/11/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 03/28/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.0 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.3	U
72-55-9	4,4'-DDE	3.3	U
72-20-8	Endrin	3.3	U
33213-65-9	Endosulfan II	3.3	U
72-54-8	4,4'-DDD	3.3	U
1031-07-8	Endosulfan sulfate	3.3	U
50-29-3	4,4'-DDT	3.3	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.3	U
7421-36-3	Endrin aldehyde	3.3	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	67	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): CSVO021062 Date Analyzed: 03/19/92

Instrument ID: 4500 Time Analyzed: 1142

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) Y

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	67178	11.00	293103	12.52	238151	17.42
	UPPER LIMIT	134356	11.50	586206	13.02	476302	17.92
	LOWER LIMIT	33589	10.50	146552	12.02	119076	16.92
	EPA SAMPLE NO.						
01	TT-06-02	66593	11.00	262248	12.52	198119	17.42
02	TT-06-04	10090 *	11.02	50095 *	12.54	18778 *	17.44
03	TT-06-04_R	17835 *	10.95	104384 *	12.50	39029 *	17.42
04	VBLKS	64952	11.00	255421	12.52	191565	17.44

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): ASBA013484 Date Analyzed: 03/30/92

Instrument ID: 4000 Time Analyzed: 1329

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	12 HOUR STD	18066	9.09	69081	12.45	32510	17.34
	UPPER LIMIT	36132	9.59	138162	12.95	65020	17.84
	LOWER LIMIT	9033	8.59	34540	11.95	16255	16.84
	EPA SAMPLE NO.						
01	TT-06-02	14705	9.15	65871	12.47	34470	17.39
02	TT-06-04	15164	9.12	68066	12.49	32592	17.39
03	SBLKS	13987	9.10	57773	12.50	30655	17.44

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21147 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): ASBA013484 Date Analyzed: 03/30/92

Instrument ID: 4000 Time Analyzed: 1329

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	45087	21.47	39029	29.09	37910	32.94
	UPPER LIMIT	90174	21.97	78058	29.59	75820	33.44
	LOWER LIMIT	22544	20.97	19514	28.59	18955	32.44
	EPA SAMPLE NO.						
01	TT-06-02	47610	21.52	40202	29.14	34165	32.97
02	TT-06-04	44482	21.52	39100	29.19	37720	33.04
03	SBLKS	42038	21.57	35934	29.19	35199	33.04

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

SAMPLE DATA PACKAGE

SAMPLE DATA PACKAGE

CASE NARRATIVE

Engineers
Planners
CH2M HILL Economists
Scientists

CASE NARRATIVE FOR VOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21147 SDG NO.: N/A

I. RECEIPT

A. DATE: March 10, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21147001	TT-06-02	SOIL	03/09/92	NA	03/19/92
21147002	TT-06-04	SOIL	03/09/92	NA	03/19/92
21147002R	TT-06-04R	SOIL	03/09/92	NA	03/19/92
Y03192B1	VBLKS	SOIL	NA	NA	03/19/92

C. Documentation
Exceptions : No exceptions were encountered.

II. EXTRACTION

A. Holding Times: Medium level protocol was not performed; therefore, extraction time is not applicable.

B. Extraction
Exceptions : Not applicable.

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III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : Please see attached table for information concerning methylene chloride and acetone.

The original analysis of sample 21147002 (TT-06-04) showed the absolute response of internal standards below QC limits. The sample was reanalyzed with similar results. Therefore, these low responses may possibly be due to a matrix effect. The results of both analyses have been reported.

The original analysis of sample 21147002 showed target compounds above the calibration range. The sample was reanalyzed with all targets within calibration range. The results of both analyses have been reported.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : The original analysis of sample 21147002 showed surrogate recoveries below QC limits. The sample was reanalyzed with similar results. Therefore, the low recoveries may possibly be due to a matrix effect. The results of both analyses have been reported. All other samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21107.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for Jared V. Smiley 4/7/92

for Herb Kelly Date
Manager, Organic Division

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271 1444

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METHYLENE CHLORIDE/ACETONE SUMMARY

Due to the level of target compounds, the following samples required large dilutions for analysis. As required by the Statement of Work, these dilution factors have been applied, without background subtraction, to all detected compounds, particularly methylene chloride and acetone. As methylene chloride and acetone are common laboratory contaminants, the following table is being provided to present a more accurate perspective of these compounds. Included in the table is 1) the amount of methylene chloride and acetone, detected at the instrument, prior to multiplication by the dilution factor; and 2) the amount of methylene chloride and acetone for that particular sample's laboratory method blank.

SAMPLE	METHYLENE CHLORIDE	ACETONE	METHOD BLANK	METHYLENE CHLORIDE	ACETONE
21147001	14 ug/Kg	25 ug/Kg	Y03192B1	9 ug/Kg	5 ug/Kg

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205 271 1444

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CASE NARRATIVE FOR SEMIVOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21147 SDG NO.: N/A

I. RECEIPT

A. DATE: March 10, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21147001	TT-06-02	SOIL	03/09/92	03/11/92	03/31/92
21147002	TT-06-04	SOIL	03/09/92	03/11/92	03/30/92
S03112B1	SBLKS	SOIL	NA	03/11/92	03/30/92

C. Documentation Exceptions : Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

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II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Sample 21147001 (TT-06-02) required a large dilution for analysis. Therefore, surrogate recoveries could not be determined for this sample.

All other samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21107.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for Jewell W. Smiley 4/7/92

Herb Kelly Date
Manager, Organic Division

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271.1444

Engineers
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CASE NARRATIVE FOR PESTICIDE/PCB GAS CHROMATOGRAPHY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21147 SDG NO.: N/A

I. RECEIPT

A. DATE: March 10, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21147001	TT-06-02	SOIL	03/09/92	03/11/92	03/28/92
21147002	TT-06-04	SOIL	03/09/92	03/11/92	03/29/92
S03112B1	PBLK11	SOIL	NA	03/11/92	03/28/92

C. Documentation
Exceptions : No exceptions were encountered.

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II. EXTRACTION

A. Holding times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : Internal standards were added to the pesticide/PCB samples before injection for internal QC purposes only. According to CLP protocol, only external standard calculations were performed for this report.

Both field samples were diluted for analysis because of the chemical noise not removed by our cleanup procedures. Reporting limits were raised beyond the values predicted by the dilution factor alone to reflect the chemical noise present in the chromatograms.

As summarized on Form 8D for the SPB-608 chromatographic column, decachlorobiphenyl exceeded the retention time window for several injections. As a corrective action, larger than normal retention time windows were used to interpret the chromatographic data for this column.

No additional exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Decachlorobiphenyl could not be determined for samples 21147001 (TT-06-02) and 21147002 (TT-06-04) on either column due to interferences.

All other samples met acceptable QC limits.

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C. Matrix Spike
Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21136.

D. Special
Conditions : Primary and confirmation data was acquired by a single injection into a dual column/ECD system.

Please note that Forms II, IV, VI PEST-4, VIII, IX PEST-1, and IX PEST-2 have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for Herb Kelly — Jewell W. Smiley — 4/7/92
Manager, Organic Division — Date

CH2M HILL
Quality
Analytical Laboratories
2567 Fairlane Drive, P.O. Box 230548,
Montgomery, Alabama 36116
205.271 1444

SAMPLE DATA PACKAGE

SHIPPING RECEIPTS

7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER N° 01911
13/49-003USL31

NO: WAUKEGAN COKE PLANT RI

PROJECT CONTACT: JIM LANGSETH / MARY MACKEY

LABORATORY: CH2M HILL

REMARKS/ ANALYSIS REQUIRED:

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC-CLP TCL	SEMIVOLATILE ORGANIC	METALS-CLP-TCL	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	EXTRACTABLES-CLP TCL	PESTICIDES/PCB-CLP TCL	PAH's	PAH's/PHENOLS	TCLP						TOTAL NO. OF CONTAINERS	REMARKS/ ANALYSIS REQUIRED
TT-06-02	3/9/92	PM	X			X		X									X	X							01		5	~~AOT~~
																											10	
TT-06-04	3/9/92	P.M.	X			X		X									X	X			X	A			02		5	(10 TOTAL CONTAINERS)
M-03	3/9/92	P.M.	X																		X				03		5	
Sample listed separately below due to LIMS limitation.																												
TT-06-04	3/9/92	PM	✓																		X				04			
								✓																	2S			
																					✓				2W			

FOR LAB USE ONLY
LAB # 21147
PROJ LMG 3486.XV
ACK 3/13/92 VERIFIED 3/16/92
HAZWRAP/NEESA Y (N) BS
QC LEVEL 1 2 (3)
COC Y ICE 4°C
ANA REQ Y TEMP
CUST SEAL Y PH
SAMPLE COND. Soil

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
(JMF)		3/9				
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY: 3/10/92 1015	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME

REMARKS:

SAMPLES SHIPPED VIA ☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER ☐ OTHER

AIR BILL NUMBER: 3586501645

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS; YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY

000050

Laboratory No. 21158

-- Volatiles

-- Semivolatiles (includes PAH/Phenolic Compounds)

-- Pesticides/PCBS

-- Metals

Five investigative soil samples (TT0301, TT0302, T05E01, SS01, and SS07) were collected March 10, 1992. Five samples were analyzed for volatiles; two samples were analyzed for semivolatiles and pesticide/PCBS; and three samples were analyzed for PAH/phenols and metals. The results of these analyses were reported in this case and qualified as described in the following sections.

Holding Times

Holding times were met on all samples and analyses using the EPA holding time criteria for water samples.

Instrument Tuning

Volatiles

GC/MS Tuning met the established method performance criteria for compounds, concentrations, frequencies and relative ion abundances for the volatiles analyses.

Semivolatiles

GC/MS Tuning met the established method performance criteria for compounds, concentrations, frequencies and relative ion abundances for the semivolatiles analyses.

Pesticides

Instrument performance was acceptable for retention times, retention time windows, and DDT and Endrin degradation for all samples.

Metals

Instrument tuning does not apply to the metals analyses.

Instrument Calibration

Volatiles

Initial calibration percent relative standard deviation (%RSD) and continuing calibration percent difference (%D) values for several volatile parameters were outside the appropriate control limits. Control limits for %RSD and %D were ≤30 percent and ≤25 percent, respectively.

The volatiles analyses initial calibration parameters and %RSD values for chloromethane (30.2 percent) and 2-butanone (57.0) were beyond control limits. Chloromethane was not detected in any of the samples, so no action was taken. Positive results for 2-Butanone were qualified as estimated and flagged "J." Continuing calibration relative response factors and %D values were acceptable.

Semivolatiles

The semivolatiles analyses initial calibration compound and associated %RSD value beyond control limits was the surrogate standard 1,2-dichlorobenzene-d4 (36.4 percent). A continuing calibration had a %D outlier value (30.0 percent) for the same surrogate compound. Since this was a surrogate standard, no sample data were qualified.

Pesticides

Pesticide/PCB analyses instrument calibration %RSD and %D were within the appropriate quality control limits. The resolution check mixture and performance evaluation mixture samples were analyzed at the proper frequency. All retention time and RPD values were within the appropriate quality control limits.

Metals

Instrument calibrations were completed the proper number of times using the appropriate number and type of standards and blanks. Initial and continuing calibration percent recovery values were acceptable for all metals analyses.

Blanks

Volatiles

Methylene chloride (9 J and 240 J µg/kg) and acetone (5 J and 740 J µg/kg) were detected in the volatiles blanks. Sample results less than ten times the associated blank concentration of either compound were qualified as nondetects and flagged "U."

Semivolatiles

No compounds were detected in the semivolatiles method blank.

Pesticides

No compounds were detected in the pesticide/PCB method blank.

Metals

Total metals analyses calibration and preparation blanks had concentrations of aluminum, arsenic, beryllium, calcium, chromium, copper, cyanide, iron, lead, magnesium, nickel, selenium, sodium, thallium, and zinc. These concentrations were greater than the instrument detection limit (IDL) but less than the contract required detection limit (CRDL). Sample results for these compounds less than five times the blank concentration were qualified as nondetects and flagged "U."

Surrogate Recovery

Volatiles

The volatiles system monitoring compound toluene-d8 had average recoveries of 81 percent on samples TT0302, TT0302_R, TT0301DLMS and TT0301DLMSD. These recoveries were beyond control limits (84-138 percent). The recoveries in sample TT0302 were confirmed by a reanalysis and are most likely due to a matrix affect. No data were qualified.

Semivolatiles

All semivolatile samples had acceptable surrogate recoveries.

Pesticides

Pesticide/PCB surrogate recoveries were within control limits for all samples.

Metals

Total metals analyses ICP interference check sample recoveries and laboratory control sample results were within the appropriate quality control limits.

Matrix Spike/Matrix Spike Duplicate

Volatiles

Volatiles analyses matrix spike/matrix spike duplicate samples percent recovery and RPD values were within the appropriate control limits for all spike compounds.

Semivolatiles

Semivolatiles analyses matrix spike/matrix spike duplicate samples recoveries for 2,4-dinitrotoluene (93 percent and 100 percent) were beyond quality control limits. The RPD value for acenaphthene (24 percent) was also beyond control limits. Since 2,4-dinitrotoluene recoveries were high, it was not detected in the associated samples, and all other spike compounds met the established performance criteria, no action was taken.

PAH/Phenol analyses matrix spike/matrix spike duplicate samples had several compounds with recoveries and RPD values beyond control limits. These results may be due to the high level of spike compounds in the native sample, so no data were qualified.

Pesticides

Pesticide/PCB matrix spike/matrix spike duplicate samples had acceptable recovery and RPD values for all compounds.

Metals

Metals analyses quality control samples included a ^Duplicate sample, a spike sample, post digestion spike samples, and an ICP serial dilution sample.

The duplicate samples RPD values for cadmium (124.4 percent), lead (103.1 percent), manganese (42.5 percent), selenium percent), thallium (144.8 percent) and cyanide (23.3 percent) were beyond the related quality control limits. Results for these compounds in the investigative samples were qualified as estimated and flagged as "J."

The spike sample had recoveries beyond control limits (75-125 percent) for antimony (21.0 percent), cadmium (73.8 percent), manganese (144.2 percent), selenium (71.2 percent) and cyanide (-3.1 percent). Results for antimony in samples SS01 and SS07 were less than the IDL, were qualified as unusable, and were flagged "R." Positive antimony results and results for the remaining outlier compounds were qualified as estimated and flagged "J."

The laboratory control sample post digestion spike recovery for selenium (70.7 percent) was outside the 85-115 percent control limits. Selenium (77.1 percent) also recovered beyond control limits on Sample SS07. Selenium results on sample SS07 were qualified as estimated and flagged "J." All other samples in this case had acceptable recoveries for all furnace analyzed compounds.

ICP serial dilution results for barium (12.0 percent) were outside the 10 percent difference control limit. This compound was qualified as estimated and flagged "J" in samples SS01 and SS07.

Field Duplicates

Field duplicate samples were not collected.

Overall Assessment

All data are considered acceptable with the recommended qualifiers except the "R" qualified antimony results in samples SS01 and SS07. These data are not usable.

Engineers
Planners
CH2M HILL Economists
Scientists

April 16, 1992

LMG33486.XY

Ms. Marti Harding-Smith
Barr Engineering Company
8300 Norman Center Drive
Suite 300
Minneapolis, Minnesota 55437-1026

RE: Analytical Data for LMG Laboratory No. 21158

Dear Ms. Harding-Smith:

On March 11, 1992, the CH2M HILL Montgomery Laboratory received three samples with a request for analysis of selected inorganic parameters.

The analytical results and associated quality control data are enclosed. Any unusual difficulties encountered during the analyses of these samples are discussed in the case narratives.

If you should have any questions concerning the data, please inquire.

The CH2M HILL policy is to store samples for up to 30 days after reporting. If you desire, our laboratory will maintain your samples for a longer period at a cost of $5.00 per sample per month. Samples determined to be hazardous can either be returned to you or disposed of at a cost of $25.00 per sample.

Sincerely,

Wanda L. Hall

Wanda L. Hall
Data Package Supervisor

Enclosures

cc: Mr. Jim Langseth

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271 1444

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CH2M HILL Laboratory No. 21158

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EPA QUALIFIERS

INORGANIC ANALYSES

- C (Concentration) Qualifier -- Enter "B" if the reported value obtained was less than the CRDL but greater than or equal to the IDL. Enter "U" if the value was less than the IDL or was not detected.

- Q Qualifier -- Entries and their meanings are:

  E - The reported value is estimated because of interference. An explanatory comment must be included under "Comments" on the Cover Page if the problem applies to all samples in this data package or on the individual FORM I if it is an isolated problem.

  M - Duplicate injection precision was not met (two analyses of the same sample did not agree).

  N - Spiked sample recovery not within control limits.

  S - The reported value was determined by the Method of Standard Additions (MSA).

  W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

  * - Duplicate analysis not within control limits.

  + - Correlation coefficient for the MSA is less than 0.995.

  Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field.

- M (Method) Qualifier -- Enter one of the following:

  P - ICP
  A - Flame AA
  F - Furnace AA
  CV - Manual Cold Vapor AA
  AV - Automated Cold Vapor AA
  AS - Semi-Automated Spectrophotometric
  C - Manual Spectrophotometric
  T - Titrimetric
  NR - Analyte was not required by your lab

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TABLE 1

SAMPLE CROSS-REFERENCE SUMMARY

CH2M HILL Laboratory No. 21158

CH2M HILL Sample No.	Sample Description				
21158002	TT-03-01	03/10/92	GRAB	13/49-003JSL31	PO#01265
21158004	SS-01	03/10/92	GRAB	13/49-003JSL31	PO#01265
21158005	SS-07	03/10/92	GRAB	13/49-003JSL31	PO#01265

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CATIONS DATA PACKAGE

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CASE NARRATIVE
Cations

Batch Number: 21158

Client/Project: BARR ENGINEERING COMPANY

I. **Holding Time:**
All holding times were met.

II. **Analysis:**

A. **Blanks:**
All acceptance criteria were met.

B. **Calibration:**
All acceptance criteria were met.

C. **ICP Interference Check Sample:**
All acceptance criteria were met.

D. **Spike Sample Analysis:**
Prespike and postspike recoveries outside criteria are flagged accordingly.

E. **Duplicate Sample Analysis:**
Duplicate precision outside criteria are flagged accordingly.

F. **Laboratory Control Sample Analysis:**
All acceptance criteria were met.

G. **ICP Serial Dilution:**
ICP serial dilutions outside criteria are flagged accordingly.

H. **Other:**
The QC for 21158 is included in the 21232 data package. The mercury QC is included in the 21107 data package.

III. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, for other than the conditions detailed above.

SIGNED: Kaye Walker for **DATE:** 4/17/92
Kevin A. Sanders
Inorganic Division Manager

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Engineers
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CASE NARRATIVE
General Chemistry

Batch Number: 21158

Client/Project: BARR ENGINEERING COMPANY

I. Holding Time: All criteria were met.

II. Analysis:

A.	Calibration:	Acceptance criteria met.
B.	Blanks:	Acceptance criteria met.
C.	Matrix Spike:	Acceptance criteria met.
D.	Duplicate Analysis:	Acceptance criteria met.
E.	Lab Control Sample:	Acceptance criteria met.
F.	Other:	None.

III. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, for other than the conditions detailed above.

SIGNED: Kaye Walker for DATE: 4/17/92
Kevin A. Sanders
Inorganic Division Manager

000003

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: CH2M_HILL_MGM_____ Contract: 21158_____

Lab Code: NA____ Case No.: 21158 SAS No.: 21158_ SDG No.:21158_

SOW No.: 3/90_

EPA Sample No.	Lab Sample ID
_SS-01_____	__S21158004___
_SS-07_____	__S21158005___
_T-03-01_____	__S21158002___

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES
If yes - were raw data generated before application of background corrections ? Yes/No NO_

Comments:
QC FOR 21158 IS INCLUDED IN THE 21232 DATA PACKAGE. MERCURY QC IS INCLUDED IN THE 21107 DATA PACKAGE.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Kevin A. Sanders_____

Date: 10 APR 92 Title: Inorganic Division Mgr__

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TT-03-01

Lab Name: CH2M_HILL_MGM Contract: 21158

Lab Code: NA Case No.: 21158 SAS No.: 21158 SDG No.: 21158

Matrix (soil/water): SOIL Lab Sample ID: S21158002

Level (low/med): LOW Date Received: 03/11/92

% Solids: 61.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	360		*	F
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide	8.0			CA

Color Before: BLACK Clarity Before: N/A Texture: MUD

Color After: CLEAR Clarity After: CLEAR Artifacts: YES

Comments:
THE "*" QUALIFIER INDICATES POOR DUPLICATE PRECISION.

FORM I - IN

3/90

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS-01

Lab Name: CH2M_HILL_MGM_____ Contract: 21158_____

Lab Code: NA____ Case No.: 21158 SAS No.: 21158_ SDG No.: 21158_

Matrix (soil/water): SOIL_ Lab Sample ID: S21158004_

Level (low/med): LOW__ Date Received: 03/11/92

% Solids: _86.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	6690		*	P
7440-36-0	Antimony_	2.5	U	N	P
7440-38-2	Arsenic__	7.2		*	F
7440-39-3	Barium___	38.5	B	E	P
7440-41-7	Beryllium	0.40	B		P
7440-43-9	Cadmium__	0.68	U	N*	P
7440-70-2	Calcium__	11200			P
7440-47-3	Chromium_	13.9			P
7440-48-4	Cobalt___	6.4	B		P
7440-50-8	Copper___	18.1		*	P
7439-89-6	Iron____	18400			P
7439-92-1	Lead____	11.7		N*	F
7439-95-4	Magnesium	6970			P
7439-96-5	Manganese	484		N*	P
7439-97-6	Mercury__	0.08	U	N	CV
7440-02-0	Nickel___	15.1			P
7440-09-7	Potassium	866	B		P
7782-49-2	Selenium_	0.57	B	N	F
7440-22-4	Silver___	0.48	B		P
7440-23-5	Sodium___	1240			P
7440-28-0	Thallium_	0.38	U		F
7440-62-2	Vanadium_	20.7			P
7440-66-6	Zinc____	85.4			P
	Cyanide__				NR

Color Before: BROWN____ Clarity Before: N/A___ Texture: LOAM__

Color After: CLEAR____ Clarity After: CLEAR_ Artifacts: YES___

Comments:
THE_"E"_QUALIFIER_INDICATES_A_GREATER_THAN_10%_DIFFERENCE_BETWEEN_THE_NATIVE_CONCENTRATION_AND_THE_SERIAL_DILUTION_RESULTS.__THE_"N_____ QUALIFIER_DENOTES_POOR_PRESPIKE_RECOVERY._____

FORM I - IN

3/90

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS-07

Lab Name: CH2M_HILL_MGM_____ Contract: 21158_____

Lab Code: NA____ Case No.: 21158 SAS No.: 21158_ SDG No.: 21158_

Matrix (soil/water): SOIL_ Lab Sample ID: S21158005_

Level (low/med): LOW__ Date Received: 03/11/92

% Solids: _83.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	6120		*	P
7440-36-0	Antimony_	2.6	U	N	P
7440-38-2	Arsenic__	4.2		*	F
7440-39-3	Barium___	23.3	B	E	P
7440-41-7	Beryllium	0.39	B		P
7440-43-9	Cadmium__	1.9		N*	P
7440-70-2	Calcium__	13700			P
7440-47-3	Chromium_	12.2			P
7440-48-4	Cobalt___	6.9	B		P
7440-50-8	Copper___	19.7		*	P
7439-89-6	Iron____	13300			P
7439-92-1	Lead____	10.8		N*	F
7439-95-4	Magnesium	8640			P
7439-96-5	Manganese	399		N*	P
7439-97-6	Mercury__	0.07	U	N	CV
7440-02-0	Nickel___	17.0			P
7440-09-7	Potassium	684	B		P
7782-49-2	Selenium_	0.54	B	WN	F
7440-22-4	Silver___	0.41	U		P
7440-23-5	Sodium___	239	B		P
7440-28-0	Thallium_	0.40	U		F
7440-62-2	Vanadium_	17.7			P
7440-66-6	Zinc____	62.4			P
	Cyanide__				NR

Color Before: BROWN____ Clarity Before: N/A___ Texture: MUD___

Color After: CLEAR____ Clarity After: CLEAR_ Artifacts: YES___

Comments:
THE_"W"_QUALIFIER_INDICATES_POOR_POSTSPIKE_RECOVERY.

BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER Nº 01265
13/49-003NSL31

NO: WAUKEGAN COKE PLANT RI

JIM LANGSETH
PROJECT CONTACT: MARY MACKEY
LABORATORY: CH2M HILL
REMARKS/ ANALYSIS REQUIRED:

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC-CLP TCL	SEMIVOLATILE ORGANIC	METALS-CLP TAL	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	EXTRACTABLES CLP TCL	PESTICIDES/PCB CLP TCL	PAHs	PAH/PHENOLS	ARSENIC						TOTAL NO. OF CONTAINERS
TT-05E-01	3/10/92	PM	X			X													X						001		3
TT-03-01	3/10/92	PM	X			X					X								X		X				002		3
TT-03-02	3/10/92	PM	X	X		X														X					003		3
SS-01	3/10/92		X			X		X									X	X							004		4
SS-07	3/10/92		X			X		X									X	X							005		4
Method Blank																								1	2	51	

FOR LAB USE ONLY
LAB # 21158
PROJ # LMG 33486.X1
DATE 3/12 RECEIVED
TIME
QC LEVEL 1 2 3
COC Y
ANA REQ Y
CUST SEAL Y
SAMPLE CONDITION Soil
TEMP 39C
PH N/A

PLEASE NOTE: CYANIDE AND ARSENIC MIXED TOGETHER WITH PAH ON 21158002. BS 3/11/92
↳ 1.8L, [illegible]

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
(JMF) [signature]	(JMF) [signature]	3/10/92	PM			
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY: Brad Stearns 3/11/92 0915	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
REMARKS:	SAMPLES SHIPPED VIA ☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER ☐ OTHER			AIR BILL NUMBER: 3586501634 CB43557		

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS; YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY

000303

CH2M HILL
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April 29, 1992

LMG33486.XY

AR 3

Ms. Marti Harding-Smith
Barr Engineering Company
8300 Norman Center Drive
Suite 300
Minneapolis, Minnesota 55437-1026

RE: Analytical Data for LMG Laboratory No. 21158

Dear Ms. Harding-Smith:

On March 11, 1992, the CH2M HILL Montgomery Laboratory received five samples with a request for analysis of selected organic parameters.

The analytical results and associated quality control data are enclosed. Any unusual difficulties encountered during the analyses of these samples are discussed in the case narratives.

If you should have any questions concerning the data, please inquire.

The CH2M HILL policy is to store samples for up to 30 days after reporting. If you desire, our laboratory will maintain your samples for a longer period at a cost of $5.00 per sample per month. Samples determined to be hazardous can either be returned to you or disposed of at a cost of $25.00 per sample.

Sincerely,

Wanda L. Hall

Wanda L. Hall
Data Package Supervisor

Enclosures

cc: Mr. Jim Langseth

CH2M HILL | Quality Analytical Laboratories | 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 | 205.271.1444

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EPA - DEFINED QUALIFIERS

ORGANICS

Definitions for the EPA-defined qualifiers:

U -- Indicates the compound was analyzed for but not detected. The number adjacent to the "U" qualifier indicates the quantitation limit for that compound. The detection limit can vary from sample to sample depending on dilution factors or percent moisture adjustment when indicated.

J -- Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound below the stated quantitation limit. The "J" qualifier is not used with pesticide results.

C -- This flag applies to pesticide results only. The "C" flag indicates the presence of this compound has been confirmed by GC/MS analysis.

B -- This flag is used when the analyte is found in the associated blank as well as the sample. This notation indicates possible blank contamination and suggests the data user evaluate these compounds and their amounts carefully.

E -- This flag applies to GC/MS only. The "E" qualifier indicates a compound may be above or below the linear range of the instrument. If the particular compound level is deemed above the linear calibration range, then the sample should be reanalyzed at an appropriate dilution. Therefore, the "E" qualified amount is an estimated concentration. The results for the dilution will be reported on a separate Form I and will be flagged with a "D" if the dilution brings the concentration within proper calibration.

D -- This flag identifies compounds which have been run at a dilution to bring the concentration of that compound within the linear range of the instrument. "D" qualifiers are only used for samples that have been run initially with results above acceptable ranges. For secondary dilutions the "DL" suffix is appended to the sample number on the Form I.

A -- Indicates the Tentatively Identified Compound (TIC) is a suspected aldol-condensation product.

X -- Indicates the compound concentration has been manually modified or the EPA qualifier has been manually modified or added.

JX -- The compound was detected and quantitated below the Contract Required Quantitation Limit.

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CLIENT SAMPLE ID QUALIFIERS

LEVEL 3

The qualifiers that GC/MS and GC use with the client sample ID are defined below:

DL -- Dilution Run

R -- Rerun (may be followed by a digit to indicate multiple reruns)

RD -- Diluted Rerun

RX -- Re-extraction Analysis

MS -- Matrix Spike (may be followed by a digit to indicate multiple matrix spikes within a sample set)

MSD -- Matrix Spike Duplicate (may be followed by a digit to indicate multiple matrix spike duplicates within a sample set)

VBLK -- Volatile Blank (will be followed by a "W" for waters, "S" for soils run at a low level, or "SM" for soils run at a medium level -- these letters may be followed by a digit to indicate multiple blanks of that type).

SBLK -- Semivolatile Blank (will be followed by a "W" for waters, "S" for soils run at a low level, or "SM" for soils run at a medium level -- these letters may be followed by a digit to indicate multiple blanks of that type).

PBLK -- Pesticide/PCB Blank (may be followed by digits to indicate multiple blanks)

These qualifiers allow GC/MS and GC to have unique client sample ID's so that the client can get more accurate information from the data reported.

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TABLE 1

SAMPLE CROSS-REFERENCE SUMMARY

CH2M HILL Laboratory No. 21158

CH2M HILL Sample No.	Sample Description				
21158001	TT-05E-01	03/10/92	GRAB	13/49-003JSL31	PO#01265
21158002	TT-03-01	03/10/92	GRAB	13/49-003JSL31	PO#01265
21158003	TT-03-02	03/10/92	GRAB	13/49-003JSL31	PO#01265
21158004	SS-01	03/10/92	GRAB	13/49-003JSL31	PO#01265
21158005	SS-07	03/10/92	GRAB	13/49-003JSL31	PO#01265

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205 271 1444

INTERNAL STANDARD AND SURROGATE COMPOUNDS

VOLATILE ANALYSIS

The internal standards on the GC/MS volatile chromatograms are designated as IS1, IS2, and IS3. The surrogate standards are labelled as SS1, SS2, and SS3. The compounds corresponding to these labels are listed below.

LABEL	INTERNAL STANDARD COMPOUND
IS1	BROMOCHLOROMETHANE
IS2	1,4-DIFLUOROBENZENE
IS3	D5-CHLOROBENZENE

LABEL	SURROGATE STANDARD COMPOUND
SS1	D4-1,2-DICHLOROETHANE
SS2	D8-TOLUENE
SS3	1,4-BROMOFLUOROBENZENE

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INTERNAL STANDARD AND SURROGATE COMPOUNDS

SEMIVOLATILE ANALYSIS

The internal standards on the GC/MS semivolatile chromatograms are designated as IS1, IS2, IS3, IS4, IS5, and IS6. The surrogate standards are labelled as SS1, SS2, SS3, SS4, SS5, and SS6. The compounds corresponding to these labels are listed below.

LABEL	INTERNAL STANDARD COMPOUND
IS1	D4-1,4-DICHLOROBENZENE
IS2	D8-NAPHTHALENE
IS3	D10-ACENAPHTHENE
IS4	D10-PHENANTHRENE
IS5	D12-CHRYSENE
IS6	D12-PERYLENE

LABEL	SURROGATE STANDARD COMPOUND
SS1	2-FLUOROPHENOL
SS2	D5-PHENOL
SS3	D5-NITROBENZENE
SS4	2-FLUOROBIPHENYL
SS5	2,4,6-TRIBROMOPHENOL
SS6	D14-TERPHENYL

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SAMPLE DATA SUMMARY PACKAGE

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CASE NARRATIVE FOR VOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21158 SDG NO.: N/A

I. RECEIPT

A. DATE: March 11, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21158001	TT-05E-01	SOIL	03/10/92	NA	03/19/92
21158002	TT-03-01	SOIL	03/10/92	NA	03/19/92
21158002DL	TT-03-01_DL	SOIL	03/10/92	03/19/92	03/23/92
21158003	TT-03-02	SOIL	03/10/92	03/19/92	03/19/92
21158003R	TT-03-02_R	SOIL	03/10/92	03/19/92	03/23/92
21158004	SS-01	SOIL	03/10/92	NA	03/19/92
21158005	SS-07	SOIL	03/10/92	NA	03/19/92
21158M02	TT-0301DLMS	SOIL	03/10/92	03/19/92	03/23/92
21158D02	TT-0301DLMSD	SOIL	03/10/92	03/19/92	03/23/92
Y03192B1	VBLKS	SOIL	NA	NA	03/19/92
L03232B1	VBLKSM	SOIL	NA	03/19/92	03/23/92

C. Documentation
Exceptions : No exceptions were encountered.

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 1444

II. EXTRACTION

A. Holding Times: All holding times were met. Samples 21158002DL (TT-03-01_DL), 21158003 (TT-03-02), 21158M02 (TT-03-1DLMS), and 21158D02 (TT-0301DLMSD) were analyzed using medium level soil protocols.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : The original analysis of sample 21158002 (TT-03-01) showed target compounds above the calibration range. The sample was diluted and reanalzyed with all targets within calibration range. The results of both analyses have been reported.

Please see attached table for information concerning methylene chloride and acetone.

No other exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : The original analysis of sample 21158003 (TT-03-02) showed one surrogate below QC limits. The sample was reanalyzed with with similar results. Therefore, the low recovery may possibly be due to a matrix effect. The results of both analyses have been reported.

The analysis of the matrix spike samples 21158M02 and 21158D02 showed one surrogate below QC limits. Since the native sample (21158002DL) showed all surrogates within QC limits, the laboratory took no further action.

All other samples met acceptable QC limits.

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C. Matrix Spike
Results : All spike recoveries for samples 21158M02 and 21158D02 were within CLP advisory limits. These results represent samples 21158002DL and 21158003.

The native sample, matrix spike, and matrix spike duplicate results for samples 21158001, 21158002, 21158004, and 21158005 are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21136.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

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Herb Kelly 4/29/92
Herb Kelly Date
Manager, Organic Division

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METHYLENE CHLORIDE/ACETONE SUMMARY

Due to the level of target compounds, the following samples required large dilutions for analysis. As required by the Statement of Work, these dilution factors have been applied, without background subtraction, to all detected compounds, particularly methylene chloride and acetone. As methylene chloride and acetone are common laboratory contaminants, the following table is being provided to present a more accurate perspective of these compounds. Included in the table is 1) the amount of methylene chloride and acetone, detected at the instrument, prior to multiplication by the dilution factor; and 2) the amount of methylene chloride and acetone for that particular sample's laboratory method blank.

SAMPLE	METHYLENE CHLORIDE	ACETONE	METHOD BLANK	METHYLENE CHLORIDE	ACETONE
21158002DL	4 ug/Kg	3 ug/Kg	L03232B1	2 ug/Kg	6 ug/Kg
21158003	5 ug/Kg	7 ug/Kg	L03232B1	2 ug/Kg	6 ug/Kg
21158003R	6 ug/Kg	8 ug/Kg	L03232B1	2 ug/Kg	6 ug/Kg
21158M02	4 ug/Kg	7 ug/Kg	L03232B1	2 ug/Kg	6 ug/Kg
21158D02	4 ug/Kg	6 ug/Kg	L03232B1	2 ug/Kg	6 ug/Kg

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CASE NARRATIVE FOR SEMIVOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21158 SDG NO.: N/A

I. RECEIPT

A. DATE: March 11, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21158004	SS-01	SOIL	03/10/92	03/12/92	03/30/92
21158005	SS-07	SOIL	03/10/92	03/12/92	03/31/92
21158005DL	SS-07 DL	SOIL	03/10/92	03/12/92	04/02/92
S03122B3	SBLKS	SOIL	NA	03/12/92	03/30/92

C. Documentation Exceptions : Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

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II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : The original analysis of sample 21158005 (SS-07) showed target compounds above the calibration range. The sample was diluted and reanalyzed. The results of both analyses have been reported.

No other exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21107.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

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Herb Kelly 4/29/92

Herb Kelly Date
Manager, Organic Division

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CASE NARRATIVE FOR PNA/PHENOL MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21158 SDG NO.: N/A

I. RECEIPT

A. DATE: March 11, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21158001	TT-05E-01	SOIL	03/10/92	03/12/92	04/01/92
21158002	TT-03-01	SOIL	03/10/92	03/12/92	04/01/92
21158003	TT-03-02	SOIL	03/10/92	03/12/92	04/02/92
S03122B1	SBLKS	SOIL	NA	03/12/92	04/01/92

C. Documentation Exceptions : Tentatively Identified Compounds were not requested as part of this analysis. Therefore, these forms will not be included.

As you have requested, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported separately. Due to the low concentrations analyzed for, there may be instances where the native matrix offers chromatographic interferences in this region of the chromatogram, making it difficult to correctly quantitate these isomers as separate compounds. In that case, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported as total Benzo(b&k)fluoranthene. An "NR" (not reported) qualifier will then be used for the compounds for which are not reported.

Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

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II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Samples 21158002 (TT-03-01) and 21158003 (TT-03-02) required large dilutions for analysis. Therefore, surrogate recoveries could not be determined for these samples.

All other samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21128.

Please note that Forms IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Herb Kelly 4/29/92
Herb Kelly Date
Manager, Organic Division

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CASE NARRATIVE FOR PESTICIDE/PCB GAS CHROMATOGRAPHY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21158 SDG NO.: N/A

I. RECEIPT

A. DATE: March 11, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21158004	SS-01	SOIL	03/10/92	03/17/92	04/08/92
21158004DL	SS-01DL	SOIL	03/10/92	03/17/92	04/08/92
21158005	SS-07	SOIL	03/10/92	03/17/92	04/08/92
S03172B1	PBLK17	SOIL	NA	03/17/92	04/08/92

C. Documentation
Exceptions : No exceptions were encountered.

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II. EXTRACTION

A. Holding times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : Internal standards were added to the pesticide/PCB samples before injection for internal QC purposes only. According to CLP protocol, only external standard calculations were performed for this report.

No additional exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks and instrument blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21107.

D. Special Conditions : Primary and confirmation data was acquired by a single injection into a dual column/ECD system.

Please note that Forms II, IV, VI PEST-4, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

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Herb Kelly 4/29/92

Herb Kelly Date
Manager, Organic Division

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-05E-01

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158001

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021067

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: not dec. 20 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	49	B
67-64-1	Acetone	18	B
75-15-0	Carbon Disulfide	2	J
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	12	U
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	8	J
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
591-78-6	2-Hexanone	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	3	J

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-05E-01

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158001

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021067

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: not dec. 20 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NAPHTHALENE, DIMETHYL- ISOME	24.07	13	J
2.	BENZO[B]THIOPHENE, METHYL- I	24.22	7	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-03-01

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158002

Sample wt/vol: 1.0 (g/mL) G Lab File ID: C1VO021068

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: not dec. 44 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	89	U
74-83-9	Bromomethane	89	U
75-01-4	Vinyl Chloride	89	U
75-00-3	Chloroethane	89	U
75-09-2	Methylene Chloride	350	B
67-64-1	Acetone	120	B
75-15-0	Carbon Disulfide	44	J
75-35-4	1,1-Dichloroethene	89	U
75-34-3	1,1-Dichloroethane	89	U
540-59-0	1,2-Dichloroethene (total)	89	U
67-66-3	Chloroform	89	U
107-06-2	1,2-Dichloroethane	89	U
78-93-3	2-Butanone	89	U
71-55-6	1,1,1-Trichloroethane	89	U
56-23-5	Carbon Tetrachloride	89	U
75-27-4	Bromodichloromethane	89	U
78-87-5	1,2-Dichloropropane	89	U
10061-01-5	cis-1,3-Dichloropropene	89	U
79-01-6	Trichloroethene	89	U
124-48-1	Dibromochloromethane	89	U
79-00-5	1,1,2-Trichloroethane	89	U
71-43-2	Benzene	430	
10061-02-6	trans-1,3-Dichloropropene	89	U
75-25-2	Bromoform	89	U
591-78-6	2-Hexanone	89	U
108-10-1	4-Methyl-2-Pentanone	89	U
127-18-4	Tetrachloroethene	89	U
79-34-5	1,1,2,2-Tetrachloroethane	89	U
108-88-3	Toluene	970	
108-90-7	Chlorobenzene	89	U
100-41-4	Ethylbenzene	330	
100-42-5	Styrene	89	U
1330-20-7	Xylene (total)	6800	E

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-03-01

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158002

Sample wt/vol: 1.0 (g/mL) G Lab File ID: C1VO021068

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: not dec. 44 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	124-18-5	DECANE	19.64	3400	J
2.		BENZENE, TRIMETHYL- ISOMER	20.09	6300	J
3.		BENZENE, TRIMETHYL- ISOMER	20.79	5800	J
4.		NOT IDENTIFIED	20.99	1900	J
5.	271-89-6	BENZOFURAN	21.45	1700	J
6.		BENZENE, TRIMETHYL- ISOMER	21.64	2000	J
7.	871-83-0	NONANE, 2-METHYL-	21.82	3800	J
8.		BENZENE, ETHYL-, DIMETHYL- I	22.10	1300	J
9.		BENZENE, ETHENYL-, METHYL- I	22.20	1400	J
10.		BENZENE, ETHYNYL-, METHYL- I	22.60	11000	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-03-01_DL

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158002DL

Sample wt/vol: 4.0 (g/mL) G Lab File ID: B1VM014636

Level: (low/med) MED Date Received: 03/11/92

% Moisture: not dec. 44 Date Analyzed: 03/23/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 100 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	2100	U
74-83-9	Bromomethane	2100	U
75-01-4	Vinyl Chloride	2100	U
75-00-3	Chloroethane	2100	U
75-09-2	Methylene Chloride	790	BDJ
67-64-1	Acetone	680	BDJ
75-15-0	Carbon Disulfide	2100	U
75-35-4	1,1-Dichloroethene	2100	U
75-34-3	1,1-Dichloroethane	2100	U
540-59-0	1,2-Dichloroethene (total)	2100	U
67-66-3	Chloroform	350	BDJ
107-06-2	1,2-Dichloroethane	2100	U
78-93-3	2-Butanone	2100	U
71-55-6	1,1,1-Trichloroethane	2100	U
56-23-5	Carbon Tetrachloride	2100	U
75-27-4	Bromodichloromethane	2100	U
78-87-5	1,2-Dichloropropane	2100	U
10061-01-5	cis-1,3-Dichloropropene	2100	U
79-01-6	Trichloroethene	2100	U
124-48-1	Dibromochloromethane	2100	U
79-00-5	1,1,2-Trichloroethane	2100	U
71-43-2	Benzene	330	DJ
10061-02-6	trans-1,3-Dichloropropene	2100	U
75-25-2	Bromoform	2100	U
591-78-6	2-Hexanone	2100	U
108-10-1	4-Methyl-2-Pentanone	2100	U
127-18-4	Tetrachloroethene	2100	U
79-34-5	1,1,2,2-Tetrachloroethane	2100	U
108-88-3	Toluene	660	DJ
108-90-7	Chlorobenzene	2100	U
100-41-4	Ethylbenzene	270	DJ
100-42-5	Styrene	2100	U
1330-20-7	Xylene (total)	6200	D

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-03-01_DL

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21158 SAS No.: _____ SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 21158002DL

Sample wt/vol: 4.0 (g/mL) G Lab File ID: B1VM014636

Level: (low/med) MED Date Received: 03/11/92

% Moisture: not dec. 44 Date Analyzed: 03/23/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 100 (uL)

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	BENZENE, TRIMETHYL- ISOMER	19.07	4800	J
2.	BENZENE, TRIMETHYL- ISOMER	19.77	6100	J
3.	BENZENE, TRIMETHYL- ISOMER	20.62	2200	J
4.	BENZENE, ETHYL- DIMETHYL- IS	21.08	1400	J
5. 766-97-2	BENZENE, 1-ETHYNYL-4-METHYL-	21.55	15000	J

Msc

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-03-02

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158003

Sample wt/vol: 4.0 (g/mL) G Lab File ID: B1VM014637

Level: (low/med) MED Date Received: 03/11/92

% Moisture: not dec. 39 Date Analyzed: 03/23/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 100 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	2000	U
74-83-9	Bromomethane	2000	U
75-01-4	Vinyl Chloride	2000	U
75-00-3	Chloroethane	2000	U
75-09-2	Methylene Chloride	980	BJ
67-64-1	Acetone	1500	BJ
75-15-0	Carbon Disulfide	2000	U
75-35-4	1,1-Dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
540-59-0	1,2-Dichloroethene (total)	2000	U
67-66-3	Chloroform	290	BJ
107-06-2	1,2-Dichloroethane	2000	U
78-93-3	2-Butanone	1600	BJ
71-55-6	1,1,1-Trichloroethane	2000	U
56-23-5	Carbon Tetrachloride	2000	U
75-27-4	Bromodichloromethane	2000	U
78-87-5	1,2-Dichloropropane	2000	U
10061-01-5	cis-1,3-Dichloropropene	2000	U
79-01-6	Trichloroethene	2000	U
124-48-1	Dibromochloromethane	2000	U
79-00-5	1,1,2-Trichloroethane	2000	U
71-43-2	Benzene	540	J
10061-02-6	trans-1,3-Dichloropropene	2000	U
75-25-2	Bromoform	2000	U
591-78-6	2-Hexanone	2000	U
108-10-1	4-Methyl-2-Pentanone	2000	U
127-18-4	Tetrachloroethene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
108-88-3	Toluene	960	J
108-90-7	Chlorobenzene	2000	U
100-41-4	Ethylbenzene	390	J
100-42-5	Styrene	2000	U
1330-20-7	Xylene (total)	6600	

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-03-02

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158003

Sample wt/vol: 4.0 (g/mL) G Lab File ID: B1VM014637

Level: (low/med) MED Date Received: 03/11/92

% Moisture: not dec. 39 Date Analyzed: 03/23/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 100 (uL)

Number TICs found: 9

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	BENZENE, TRIMETHYL- ISOMER	19.04	8500	J
2.	BENZENE, TRIMETHYL- ISOMER	19.74	9500	J
3.	BENZENE, TRIMETHYL- ISOMER	20.59	3500	J
4. 25340-17-4	BENZENE, DIETHYL-	20.92	1000	J
5.	BENZENE, ETHENYL-, METHYL- I	21.14	7500	J
6.	BENZENE, ETHYNYL-, METHYL- I	21.50	3800	J
7.	BENZENE, ETHYL-, DIMETHYL- I	21.77	1100	J
8.	NOT IDENTIFIED	22.15	1200	J
9.	BENZENE, TETRAMETHYL- ISOMER	22.62	2400	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-03-02_R

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158003R

Sample wt/vol: 4.0 (g/mL) G Lab File ID: B2VM014641

Level: (low/med) MED Date Received: 03/11/92

% Moisture: not dec. 39 Date Analyzed: 03/23/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 100 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	2000	U
74-83-9	Bromomethane	2000	U
75-01-4	Vinyl Chloride	2000	U
75-00-3	Chloroethane	2000	U
75-09-2	Methylene Chloride	1200	BJ
67-64-1	Acetone	1600	BJ
75-15-0	Carbon Disulfide	320	J
75-35-4	1,1-Dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
540-59-0	1,2-Dichloroethene (total)	2000	U
67-66-3	Chloroform	260	BJ
107-06-2	1,2-Dichloroethane	2000	U
78-93-3	2-Butanone	1600	BJ
71-55-6	1,1,1-Trichloroethane	2000	U
56-23-5	Carbon Tetrachloride	2000	U
75-27-4	Bromodichloromethane	2000	U
78-87-5	1,2-Dichloropropane	2000	U
10061-01-5	cis-1,3-Dichloropropene	2000	U
79-01-6	Trichloroethene	2000	U
124-48-1	Dibromochloromethane	2000	U
79-00-5	1,1,2-Trichloroethane	2000	U
71-43-2	Benzene	700	J
10061-02-6	trans-1,3-Dichloropropene	2000	U
75-25-2	Bromoform	2000	U
591-78-6	2-Hexanone	2000	U
108-10-1	4-Methyl-2-Pentanone	2000	U
127-18-4	Tetrachloroethene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
108-88-3	Toluene	1100	J
108-90-7	Chlorobenzene	2000	U
100-41-4	Ethylbenzene	370	J
100-42-5	Styrene	2000	U
1330-20-7	Xylene (total)	6600	

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-03-02_R

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158003R

Sample wt/vol: 4.0 (g/mL) G Lab File ID: B2VM014641

Level: (low/med) MED Date Received: 03/11/92

% Moisture: not dec. 39 Date Analyzed: 03/23/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 100 (uL)

Number TICs found: 8

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	BENZENE, TRIMETHYL- ISOMER	19.04	8400	J
2.	BENZENE, TRIMETHYL- ISOMER	19.74	9700	J
3.	BENZENE, TRIMETHYL- ISOMER	20.59	3600	J
4. 25340-17-4	BENZENE, DIETHYL-	20.92	1500	J
5.	BENZENE, ETHENYL-, METHYL- I	21.14	7600	J
6.	BENZENE, ETHYNYL-, METHYL- I	21.50	3100	J
7.	NOT IDENTIFIED	22.15	1300	J
8.	BENZENE, TETRAMETHYL- ISOMER	22.62	1400	J

MSC

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-01

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158004

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C2VO021073

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: not dec. 15 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	8	BJ
67-64-1	Acetone	12	U
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	4	J
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
591-78-6	2-Hexanone	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	12	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-01

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158004

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C2VO021073

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: not dec. 15 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-07

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158005

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C2VO021074

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: not dec. 16 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	18	B
67-64-1	Acetone	31	B
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	12	U
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	12	
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
591-78-6	2-Hexanone	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	1	J
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	3	J
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	10	J

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-07

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158005

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C2VO021074

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: not dec. 16 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		BENZENE, TRIMETHYL- ISOMER	20.77	15	J
2.		BENZENE, TRIMETHYL- ISOMER	21.64	8	J
3.	496-11-7	1H-INDENE, 2,3-DIHYDRO-	22.20	59	J
4.	95-13-6	1H-INDENE	22.57	170	J
5.		BENZOFURAN, METHYL- ISOMER	23.65	14	J
.		BENZOFURAN, METHYL- ISOMER	23.72	12	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-01

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013498

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: 13 decanted: (Y/N) N Date Extracted: 03/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	380	U
111-44-4	bis(2-Chloroethyl)Ether	380	U
95-57-8	2-Chlorophenol	380	U
541-73-1	1,3-Dichlorobenzene	380	U
106-46-7	1,4-Dichlorobenzene	380	U
95-50-1	1,2-Dichlorobenzene	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	2,2'-oxybis(1-Chloropropane)	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-Di-n-Propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
111-91-1	bis(2-Chloroethoxy)Methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
120-82-1	1,2,4-Trichlorobenzene	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
59-50-7	4-Chloro-3-Methylphenol	380	U
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	920	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	920	U
131-11-3	Dimethylphthalate	380	U
208-96-8	Acenaphthylene	380	U
606-20-2	2,6-Dinitrotoluene	380	U
99-09-2	3-Nitroaniline	920	U
83-32-9	Acenaphthene	380	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-01

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013498

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: 13 decanted: (Y/N) N Date Extracted: 03/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	920	U
100-02-7	4-Nitrophenol	920	U
132-64-9	Dibenzofuran	380	U
121-14-2	2,4-Dinitrotoluene	380	U
84-66-2	Diethylphthalate	380	U
7005-72-3	4-Chlorophenyl-phenylether	380	U
86-73-7	Fluorene	380	U
100-10-6	4-Nitroaniline	920	U
534-52-1	4,6-Dinitro-2-methylphenol	920	U
86-30-6	N-Nitrosodiphenylamine (1)	380	U
101-55-3	4-Bromophenyl-phenylether	380	U
118-74-1	Hexachlorobenzene	380	U
87-86-5	Pentachlorophenol	920	U
85-01-8	Phenanthrene	39	J
120-12-7	Anthracene	380	U
86-74-8	Carbazole	380	U
84-74-2	Di-n-Butylphthalate	51	J
206-44-0	Fluoranthene	49	J
129-00-0	Pyrene	41	J
85-68-7	Butylbenzylphthalate	380	U
91-94-1	3,3'-Dichlorobenzidine	380	U
56-55-3	Benzo(a)Anthracene	380	U
218-01-9	Chrysene	40	J
117-81-7	bis(2-Ethylhexyl)Phthalate	380	U
117-84-0	Di-n-Octyl Phthalate	380	U
205-99-2	Benzo(b)Fluoranthene	380	U
207-08-9	Benzo(k)Fluoranthene	380	U
50-32-8	Benzo(a)Pyrene	380	U
193-39-5	Indeno(1,2,3-cd)Pyrene	380	U
53-70-3	Dibenz(a,h)Anthracene	380	U
191-24-2	Benzo(g,h,i)Perylene	380	U

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-01

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013498

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: 13 decanted: (Y/N) N Date Extracted: 03/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

Number TICs found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	7.18	650	J
2. 3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	8.10	800	J
3. 18641-71-9	3-HEPTANONE, 2,4-DIMETHYL-	9.04	400	J
4. 17851-53-5	1,2-BENZENEDICARBOXYLIC ACID	22.65	150	BJ
5.	NOT IDENTIFIED	5.42	23000	J
6.	NOT IDENTIFIED	4.62	1500	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-07

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013499

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: 15 decanted: (Y/N) N Date Extracted: 03/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	390	U
111-44-4	bis(2-Chloroethyl)Ether	390	U
95-57-8	2-Chlorophenol	390	U
541-73-1	1,3-Dichlorobenzene	390	U
106-46-7	1,4-Dichlorobenzene	390	U
95-50-1	1,2-Dichlorobenzene	390	U
95-48-7	2-Methylphenol	390	U
108-60-1	2,2'-oxybis(1-Chloropropane)	390	U
106-44-5	4-Methylphenol	390	U
621-64-7	N-Nitroso-Di-n-Propylamine	390	U
67-72-1	Hexachloroethane	390	U
98-95-3	Nitrobenzene	390	U
78-59-1	Isophorone	390	U
88-75-5	2-Nitrophenol	390	U
105-67-9	2,4-Dimethylphenol	390	U
111-91-1	bis(2-Chloroethoxy)Methane	390	U
120-83-2	2,4-Dichlorophenol	390	U
120-82-1	1,2,4-Trichlorobenzene	390	U
91-20-3	Naphthalene	7200	E
106-47-8	4-Chloroaniline	390	U
87-68-3	Hexachlorobutadiene	390	U
59-50-7	4-Chloro-3-Methylphenol	390	U
91-57-6	2-Methylnaphthalene	100	J
77-47-4	Hexachlorocyclopentadiene	390	U
88-06-2	2,4,6-Trichlorophenol	390	U
95-95-4	2,4,5-Trichlorophenol	940	U
91-58-7	2-Chloronaphthalene	390	U
88-74-4	2-Nitroaniline	940	U
131-11-3	Dimethylphthalate	390	U
208-96-8	Acenaphthylene	850	
606-20-2	2,6-Dinitrotoluene	390	U
99-09-2	3-Nitroaniline	940	U
83-32-9	Acenaphthene	150	J

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-07

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013499

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: 15 decanted: (Y/N) N Date Extracted: 03/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	940	U
100-02-7	4-Nitrophenol	940	U
132-64-9	Dibenzofuran	52	J
121-14-2	2,4-Dinitrotoluene	390	U
84-66-2	Diethylphthalate	390	U
7005-72-3	4-Chlorophenyl-phenylether	390	U
86-73-7	Fluorene	390	U
100-10-6	4-Nitroaniline	940	U
534-52-1	4,6-Dinitro-2-methylphenol	940	U
86-30-6	N-Nitrosodiphenylamine (1)	390	U
101-55-3	4-Bromophenyl-phenylether	390	U
118-74-1	Hexachlorobenzene	390	U
87-86-5	Pentachlorophenol	940	U
85-01-8	Phenanthrene	110	J
120-12-7	Anthracene	390	U
86-74-8	Carbazole	390	U
84-74-2	Di-n-Butylphthalate	50	J
206-44-0	Fluoranthene	110	J
129-00-0	Pyrene	48	J
85-68-7	Butylbenzylphthalate	390	U
91-94-1	3,3'-Dichlorobenzidine	390	U
56-55-3	Benzo(a)Anthracene	390	U
218-01-9	Chrysene	51	J
117-81-7	bis(2-Ethylhexyl)Phthalate	390	U
117-84-0	Di-n-Octyl Phthalate	390	U
205-99-2	Benzo(b)Fluoranthene	40	J
207-08-9	Benzo(k)Fluoranthene	45	J
50-32-8	Benzo(a)Pyrene	390	U
193-39-5	Indeno(1,2,3-cd)Pyrene	390	U
53-70-3	Dibenz(a,h)Anthracene	390	U
191-24-2	Benzo(g,h,i)Perylene	390	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-07

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013499

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: 15 decanted: (Y/N) N Date Extracted: 03/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

nber TICs found: 17

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 4305-26-4	2-HEXANONE, 6-(ACETYLOXY)-	7.13	570	J
2. 20019-64-1	2(5H)-FURANONE, 5,5-DIMETHYL	8.05	620	J
3. 18641-71-9	3-HEPTANONE, 2,4-DIMETHYL-	9.04	340	J
4. 496-11-7	1H-INDENE, 2,3-DIHYDRO-	9.67	1200	J
5. 766-97-2	BENZENE, 1-ETHYNYL-4-METHYL-	9.87	3100	J
6. 104-55-2	2-PROPENAL, 3-PHENYL-	11.05	360	J
7. 2749-93-1	BENZENE, 1-METHYL-4-(1-PROPY	11.90	490	J
8. 65051-83-4	BENZENE, (1-METHYL-2-CYCLOPR	12.02	700	J
9. 95-15-8	BENZO[B]THIOPHENE	12.74	1500	J
10. 90-12-0	NAPHTHALENE, 1-METHYL-	14.74	1700	J
11. 92-52-4	1,1'-BIPHENYL	15.84	170	J
12. 17851-53-5	1,2-BENZENEDICARBOXYLIC ACID	22.62	250	BJ
3. 57-10-3	HEXADECANOIC ACID	23.65	180	J
14. 259-79-0	BIPHENYLENE	31.51	560	J
15.	NOT IDENTIFIED	33.72	470	J
16.	NOT IDENTIFIED	4.13	1100	J
17.	NOT IDENTIFIED	5.30	20000	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-07_DL

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158005DL

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A2BA013526

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: 15 decanted: (Y/N) N Date Extracted: 03/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/02/92

Injection Volume: 2.0(uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	1200	U
111-44-4	bis(2-Chloroethyl)Ether	1200	U
95-57-8	2-Chlorophenol	1200	U
541-73-1	1,3-Dichlorobenzene	1200	U
106-46-7	1,4-Dichlorobenzene	1200	U
95-50-1	1,2-Dichlorobenzene	1200	U
95-48-7	2-Methylphenol	1200	U
108-60-1	2,2'-oxybis(1-Chloropropane)	1200	U
106-44-5	4-Methylphenol	1200	U
621-64-7	N-Nitroso-Di-n-Propylamine	1200	U
67-72-1	Hexachloroethane	1200	U
98-95-3	Nitrobenzene	1200	U
78-59-1	Isophorone	1200	U
88-75-5	2-Nitrophenol	1200	U
105-67-9	2,4-Dimethylphenol	1200	U
111-91-1	bis(2-Chloroethoxy)Methane	1200	U
120-83-2	2,4-Dichlorophenol	1200	U
120-82-1	1,2,4-Trichlorobenzene	1200	U
91-20-3	Naphthalene	9400	D
106-47-8	4-Chloroaniline	1200	U
87-68-3	Hexachlorobutadiene	1200	U
59-50-7	4-Chloro-3-Methylphenol	1200	U
91-57-6	2-Methylnaphthalene	1200	U
77-47-4	Hexachlorocyclopentadiene	1200	U
88-06-2	2,4,6-Trichlorophenol	1200	U
95-95-4	2,4,5-Trichlorophenol	2800	U
91-58-7	2-Chloronaphthalene	1200	U
88-74-4	2-Nitroaniline	2800	U
131-11-3	Dimethylphthalate	1200	U
208-96-8	Acenaphthylene	1100	DJ
606-20-2	2,6-Dinitrotoluene	1200	U
99-09-2	3-Nitroaniline	2800	U
83-32-9	Acenaphthene	170	DJ

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-07_DL

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158005DL

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A2BA013526

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: 15 decanted: (Y/N) N Date Extracted: 03/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/02/92

Injection Volume: 2.0(uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) Y pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	2800	U
100-02-7	4-Nitrophenol	2800	U
132-64-9	Dibenzofuran	1200	U
121-14-2	2,4-Dinitrotoluene	1200	U
84-66-2	Diethylphthalate	1200	U
7005-72-3	4-Chlorophenyl-phenylether	1200	U
86-73-7	Fluorene	1200	U
100-10-6	4-Nitroaniline	2800	U
534-52-1	4,6-Dinitro-2-methylphenol	2800	U
86-30-6	N-Nitrosodiphenylamine (1)	1200	U
101-55-3	4-Bromophenyl-phenylether	1200	U
118-74-1	Hexachlorobenzene	1200	U
87-86-5	Pentachlorophenol	2800	U
85-01-8	Phenanthrene	120	DJ
120-12-7	Anthracene	1200	U
86-74-8	Carbazole	1200	U
84-74-2	Di-n-Butylphthalate	1200	U
206-44-0	Fluoranthene	1200	U
129-00-0	Pyrene	1200	U
85-68-7	Butylbenzylphthalate	1200	U
91-94-1	3,3'-Dichlorobenzidine	1200	U
56-55-3	Benzo(a)Anthracene	1200	U
218-01-9	Chrysene	1200	U
117-81-7	bis(2-Ethylhexyl)Phthalate	1200	U
117-84-0	Di-n-Octyl Phthalate	1200	U
205-99-2	Benzo(b)Fluoranthene	1200	U
207-08-9	Benzo(k)Fluoranthene	1200	U
50-32-8	Benzo(a)Pyrene	1200	U
193-39-5	Indeno(1,2,3-cd)Pyrene	1200	U
53-70-3	Dibenz(a,h)Anthracene	1200	U
191-24-2	Benzo(g,h,i)Perylene	1200	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-07_DL

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158005DL

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A2BA013526

Level: (low/med) LOW Date Received: 03/11/92

% Moisture: 15 decanted: (Y/N) N Date Extracted: 03/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/02/92

Injection Volume: 2.0(uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) Y pH: _____

Number TICs found: 13

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	6.67	580	J
2. 3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	7.67	670	J
3. 496-11-7	1H-INDENE, 2,3-DIHYDRO-	9.30	1200	J
4. 766-97-2	BENZENE, 1-ETHYNYL-4-METHYL-	9.50	3900	J
5. 104-55-2	2-PROPENAL, 3-PHENYL-	10.70	430	J
6.	BENZENE, (-METHYL-CYCLOPROPE	11.57	550	J
7.	BENZENE, (-METHYL-CYCLOPROPE	11.67	850	J
8. 95-15-8	BENZO[B]THIOPHENE	12.37	1800	J
9. 90-12-0	NAPHTHALENE, 1-METHYL-	14.40	2200	J
10. 17851-53-5	1,2-BENZENEDICARBOXYLIC ACID	22.27	280	BJ
11.	NOT IDENTIFIED	31.07	760	J
12.	NOT IDENTIFIED	33.29	640	J
13.	NOT IDENTIFIED	4.63	23000	J

ORGANICS ANALYSIS DATA SHEET

ratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/12/92
Lab Sample ID:	21158001	Sample Matrix:	SOIL	Date Analyzed:	04/01/92
Client Sample ID:	TT-05E-01	Percent Moisture:	18.0	Dilution Factor:	1.0

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	400	U	260-94-6	Acridine	400	U
496-11-7	2,3-Dihydro-1h-Indene	400	U	229-87-8	Phenanthridine	400	U
95-13-6	1H-Indene	400	U	86-74-8	Carbazole	81	J
91-20-3	Naphthalene	400	U	206-44-0	Fluoranthene	3200	
95-15-8	Benzo(b)thiophene	400	U	129-00-0	Pyrene	2800	
91-22-5	Quinoline	400	U	56-55-3	Benzo(a)anthracene	1200	
119-65-3	Isoquinoline	400	U	218-01-9	Chrysene/Triphenylene	2200	
91-57-6	2-Methylnaphthalene	400	U	NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	400	U	57-97-6	7,12-Dimethylbenz(a)anthrac	400	U
90-12-0	1-Methylnaphthalene	400	U	192-97-2	Benzo(e)pyrene	1000	
-52-4	Biphenyl	400	U	50-32-8	Benzo(a)pyrene	1100	
208-96-8	Acenaphthylene	310	J	198-55-0	Perylene	200	J
83-32-9	Acenaphthene	400	U	56-49-5	3-Methylcholanthrene	400	U
132-64-9	Dibenzofuran	400	U	193-39-5	Indeno(1,2,3-cd)pyrene	750	
86-73-7	Fluorene	43	J	53-70-3	Dibenz(a,h)anthracene	260	J
132-65-0	Dibenzothiophene	400	U	191-24-2	Benzo(g,h,i,)perylene	450	
85-01-8	Phenanthrene	550		205-99-2	Benzo(b)fluoranthene	1900	
120-12-7	Anthracene	310	J	207-08-9	Benzo(k)fluoranthene	1000	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/12/92
Lab Sample ID:	21158002	Sample Matrix:	SOIL	Date Analyzed:	04/01/92
Client Sample ID:	TT-03-01	Percent Moisture:	37.0	Dilution Factor:	200

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	100000	U	260-94-6	Acridine	100000	U
496-11-7	2,3-Dihydro-1h-Indene	100000	U	229-87-8	Phenanthridine	100000	U
95-13-6	1H-Indene	28000	J	86-74-8	Carbazole	12000	J
91-20-3	Naphthalene	710000		206-44-0	Fluoranthene	23000	J
95-15-8	Benzo(b)thiophene	100000	U	129-00-0	Pyrene	15000	J
91-22-5	Quinoline	100000	U	56-55-3	Benzo(a)anthracene	100000	U
119-65-3	Isoquinoline	100000	U	218-01-9	Chrysene/Triphenylene	100000	U
91-57-6	2-Methylnaphthalene	100000	J	NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	100000	U	57-97-6	7,12-Dimethylbenz(a)anthrac	100000	U
90-12-0	1-Methylnaphthalene	53000	J	192-97-2	Benzo(e)pyrene	100000	U
92-52-4	Biphenyl	11000	J	50-32-8	Benzo(a)pyrene	100000	U
208-96-8	Acenaphthylene	26000	J	198-55-0	Perylene	100000	U
83-32-9	Acenaphthene	100000	U	56-49-5	3-Methylcholanthrene	100000	U
132-64-9	Dibenzofuran	19000	J	193-39-5	Indeno(1,2,3-cd)pyrene	100000	U
86-73-7	Fluorene	32000	J	53-70-3	Dibenz(a,h)anthracene	100000	U
132-65-0	Dibenzothiophene	100000	U	191-24-2	Benzo(g,h,i,)perylene	100000	U
85-01-8	Phenanthrene	54000	J	205-99-2	Benzo(b)fluoranthene	100000	U
120-12-7	Anthracene	14000	J	207-08-9	Benzo(k)fluoranthene	100000	U

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/12/92
Lab Sample ID:	21158003	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	TT-03-02	Percent Moisture:	36.0	Dilution Factor:	50

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	26000	U	260-94-6	Acridine	26000	U
496-11-7	2,3-Dihydro-1h-Indene	3800	J	229-87-8	Phenanthridine	26000	U
95-13-6	1H-Indene	9600	J	86-74-8	Carbazole	12000	J
91-20-3	Naphthalene	170000		206-44-0	Fluoranthene	120000	
95-15-8	Benzo(b)thiophene	4900	J	129-00-0	Pyrene	93000	
91-22-5	Quinoline	26000	U	56-55-3	Benzo(a)anthracene	56000	
119-65-3	Isoquinoline	26000	U	218-01-9	Chrysene/Triphenylene	56000	
91-57-6	2-Methylnaphthalene	33000		NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	6100	J	57-97-6	7,12-Dimethylbenz(a)anthrac	26000	U
90-12-0	1-Methylnaphthalene	74000		192-97-2	Benzo(e)pyrene	24000	J
[illegible]-52-4	Biphenyl	8800	J	50-32-8	Benzo(a)pyrene	35000	
208-96-8	Acenaphthylene	18000	J	198-55-0	Perylene	7300	J
83-32-9	Acenaphthene	26000	U	56-49-5	3-Methylcholanthrene	26000	U
132-64-9	Dibenzofuran	32000		193-39-5	Indeno(1,2,3-cd)pyrene	22000	J
86-73-7	Fluorene	26000	U	53-70-3	Dibenz(a,h)anthracene	26000	U
132-65-0	Dibenzothiophene	26000		191-24-2	Benzo(g,h,i,)perylene	15000	J
85-01-8	Phenanthrene	140000		205-99-2	Benzo(b)fluoranthene	38000	
120-12-7	Anthracene	33000		207-08-9	Benzo(k)fluoranthene	33000	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/12/92
Lab Sample ID:	21158003	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	TT-03-02	Percent Moisture:	36.0	Dilution Factor:	50

PHENOL COMPOUNDS

CAS Number		ug/Kg		CAS Number	ug/Kg
108-95-2	Phenol	26000			
95-57-8	2-Chlorophenol	26000	U		
95-48-7	2-Methylphenol	9300	J		
106-44-5	4-Methylphenol	24000	J		
88-75-5	2-Nitrophenol	26000	U		
105-67-9	2,4-Dimethylphenol	5500	J		
120-83-2	2,4-Dichlorophenol	26000	U		
65-85-0	Benzoic acid	62000	U		
59-50-7	4-Chloro-3-Methylphenol	26000	U		
88-06-2	2,4,6-Trichlorophenol	26000	U		
95-95-4	2,4,5-Trichlorophenol	62000	U		
51-28-5	2,4-Dinitrophenol	62000	U		
100-02-7	4-Nitrophenol	62000	U		
534-52-1	4,6-Dinitro-2-Methylphenol	62000	U		
87-86-5	Pentachlorophenol	62000	U		

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-01

Lab Name: CH2M HILL/MGM Contract: _____

I Code: CH2M Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 14 decanted: (Y/N) N Date Received: 03/11/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/17/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/08/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 9.0 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	3.8	U
72-55-9	4,4'-DDE	3.8	U
72-20-8	Endrin	3.8	U
33213-65-9	Endosulfan II	3.8	U
72-54-8	4,4'-DDD	3.8	U
1031-07-8	Endosulfan sulfate	3.8	U
50-29-3	4,4'-DDT	3.8	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	3.8	U
7421-36-3	Endrin aldehyde	3.8	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	78	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	160	P
11097-69-1	Aroclor-1254	38	U
11096-82-5	Aroclor-1260	38	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-01DL

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158004DL

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 14 decanted: (Y/N) N Date Received: 03/11/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/17/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/08/92

Injection Volume: 2.00 (uL) Dilution Factor: 5.00

GPC Cleanup: (Y/N) Y pH: 9.0 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	9.9	U
319-85-7	beta-BHC	9.9	U
319-86-8	delta-BHC	9.9	U
58-89-9	gamma-BHC (Lindane)	9.9	U
76-44-8	Heptachlor	9.9	U
309-00-2	Aldrin	9.9	U
1024-57-3	Heptachlor epoxide	9.9	U
959-98-8	Endosulfan I	9.9	U
60-57-1	Dieldrin	19	U
72-55-9	4,4'-DDE	19	U
72-20-8	Endrin	19	U
33213-65-9	Endosulfan II	19	U
72-54-8	4,4'-DDD	19	U
1031-07-8	Endosulfan sulfate	19	U
50-29-3	4,4'-DDT	19	U
72-43-5	Methoxychlor	99	U
53494-70-5	Endrin ketone	19	U
7421-36-3	Endrin aldehyde	19	U
5103-71-9	alpha-Chlordane	9.9	U
5103-74-2	gamma-Chlordane	9.9	U
8001-35-2	Toxaphene	990	U
12674-11-2	Aroclor-1016	190	U
11104-28-2	Aroclor-1221	390	U
11141-16-5	Aroclor-1232	190	U
53469-21-9	Aroclor-1242	190	U
12672-29-6	Aroclor-1248	170	DJP
11097-69-1	Aroclor-1254	190	U
11096-82-5	Aroclor-1260	190	U

JWS

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-07

Lab Name: CH2M HILL/MGM Contract: _____

Code: CH2M Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21158005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 16 decanted: (Y/N) N Date Received: 03/11/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/17/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/08/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	10	U
319-85-7	beta-BHC	10	U
319-86-8	delta-BHC	10	U
58-89-9	gamma-BHC (Lindane)	10	U
76-44-8	Heptachlor	10	U
309-00-2	Aldrin	10	U
1024-57-3	Heptachlor epoxide	10	U
959-98-8	Endosulfan I	10	U
60-57-1	Dieldrin	20	U
72-55-9	4,4'-DDE	20	U
72-20-8	Endrin	20	U
33213-65-9	Endosulfan II	20	U
72-54-8	4,4'-DDD	20	U
1031-07-8	Endosulfan sulfate	20	U
50-29-3	4,4'-DDT	20	U
72-43-5	Methoxychlor	100	U
53494-70-5	Endrin ketone	20	U
7421-36-3	Endrin aldehyde	20	U
5103-71-9	alpha-Chlordane	10	U
5103-74-2	gamma-Chlordane	10	U
8001-35-2	Toxaphene	1000	U
12674-11-2	Aroclor-1016	200	U
11104-28-2	Aroclor-1221	400	U
11141-16-5	Aroclor-1232	200	U
53469-21-9	Aroclor-1242	200	U
12672-29-6	Aroclor-1248	200	U
11097-69-1	Aroclor-1254	200	U
11096-82-5	Aroclor-1260	200	U

2B .

SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Level:(low/med) LOW

	EPA SAMPLE NO.	SMC1 (TOL)#	SMC2 (BFB)#	SMC3 (DCE)#	OTHER	TOT OUT
01	SS-01	102	91	96	0	0
02	SS-07	102	99	100	0	0
03	TT-03-01	117	82	103	0	0
04	TT-05E-01	101	90	95	0	0
05	VBLKS	110	88	101	0	0

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(84-138)
SMC2 (BFB)	= Bromofluorobenzene	(59-113)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM II VOA-2

3/90

000042

2B

SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Level:(low/med) MED

	EPA SAMPLE NO.	SMC1 (TOL)#	SMC2 (BFB)#	SMC3 (DCE)#	OTHER	TOT OUT
01	TT-03-01_DL	86	95	90	0	0
02	TT-03-02	80 *	85	89	0	1
03	TT-03-02_R	81 *	85	92	0	1
04	TT-0301DLMS	81 *	83	89	0	1
05	TT-0301DLMSD	83 *	87	88	0	1
06	VBLKSM	92	97	95	0	0

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(84-138)
SMC2 (BFB)	= Bromofluorobenzene	(59-113)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

2D
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Level:(low/med) LOW

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	S7 (2CP)#	S8 (DCB)#	TOT OUT
01	SS-01	87	84	87	96	95	94	96	87	0
02	SS-07	80	72	75	82	44	80	78	72	0
03	SS-07_DL	93	94	103	99	94	111	93	86	0
04	SBLKS	67	65	66	73	70	72	73	67	0

		QC LIMITS	
S1 (NBZ)	= Nitrobenzene-d5	(23-120)	
S2 (FBP)	= 2-Fluorobiphenyl	(30-115)	
S3 (TPH)	= Terphenyl-d14	(18-137)	
S4 (PHL)	= Phenol-d5	(24-113)	
S5 (2FP)	= 2-Fluorophenol	(25-121)	
S6 (TBP)	= 2,4,6-Tribromophenol	(19-122)	
S7 (2CP)	= 2-Chlorophenol-d4	(20-130)	(advisory)
S8 (DCB)	= 1,2-Dichlorobenzene-d4	(20-130)	(advisory)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM II SV-2

3/90

000044

SOIL SURROGATE PERCENT RECOVERY SUMMARY
(Page 1)

Case No. 21158 Contract Laboratory CH2M HILL/MGM

XXX Medium

SMO TRAFFIC NO.	SEMI-VOLATILE 1-Fluoronaphthalene - SS 0-81	2-Fluorophenol - SS 25-121	Phenol-d5 - SS 24-113	2,4,6-Tribromophenol - SS 19-122	Nitrobenzene-d5 - SS 9-197	2-Fluorobiphenyl - SS 9-109	Terphenyl-d14 - SS 0-143	2-Chlorophenol-d4 - SS 20-130	1,2-Dichlorobenzene - d4 20-130
TT-05E-01	45	83	84	64	66	68	60	80	62
TT-03-01	**	**	**	**	**	**	**	**	**
TT-03-02	**	**	**	**	**	**	**	**	**
SBLKS	45	75	81	54	66	67	56	78	64

REQUIRED QC LIMITS Semi-Volatiles: 0 out of 36; out

Comments:

** - Surrogate Standard not determined due to required dilution.

FORM II

2F

SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: 21158 SAS No.: _____ SDG No.: _____

GC Column(1): SPB-5 ID: 0.53(mm) GC Column(2): SPB-608 ID: 0.53(mm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	PBLK17	73	78	81	84			0
02	SS-01	94	93	94	90			0
03	SS-01DL	102	90	95	99			0
04	SS-07	82	97	92	97			0

	ADVISORY QC LIMITS
TCX = Tetrachloro-m-xylene	(60-150)
DCB = Decachlorobiphenyl	(60-150)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

3B

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: TT-03-01 DL Level:(low/med) MED

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	11200	0	14420	129	59-172
Trichloroethene	11200	0	10890	97	62-137
Benzene	11200	330.4	11290	98	66-142
Toluene	11200	662.9	9777	81	59-139
Chlorobenzene	11200	0	10160	91	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	11200	14420	129	0	22	59-172
Trichloroethene	11200	10830	97	0	24	62-137
Benzene	11200	10830	94	4	21	66-142
Toluene	11200	9576	80	1	21	59-139
Chlorobenzene	11200	10090	90	1	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: CLP,21158,,TT-03-01,M,S,21158002,V,E,
10DG TO 200DG @8DG/MIN IH=3MIN

4A
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Lab File ID: CBVO021063 Lab Sample ID: Y03192B1

Date Analyzed: 03/19/92 Time Analyzed: 1236

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) Y

Instrument ID: 4500

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	SS-01	21158004	C2VO021073	1842
02	SS-07	21158005	C2VO021074	1917
03	TT-03-01	21158002	C1VO021068	1529
04	TT-05E-01	21158001	C1VO021067	1456

COMMENTS: CLP,21128,,VBLKS,L,S,Y03192B1,V,BLANK,
10DG TO 200DG @8DG/MIN IH=3MIN

FORM IV VOA

3/90

Nsr

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y03192B1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBVO021063

Level: (low/med) LOW Date Received: 03/19/92

% Moisture: not dec. 0 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	9	J
67-64-1	Acetone	5	J
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

HSu

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y03192B1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBVO021063

Level: (low/med) LOW Date Received: 03/19/92

% Moisture: not dec. 0 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

4A
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKSM

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Lab File ID: BBVM014635 Lab Sample ID: L03232B1

Date Analyzed: 03/23/92 Time Analyzed: 1342

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) N

Instrument ID: 5100B

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	TT-03-01_DL	21158002DL	B1VM014636	1458
02	TT-03-02	21158003	B1VM014637	1617
03	TT-03-02_R	21158003R	B2VM014641	1826
04	TT-0301DLMS	21158M02	BMVM014638	1652
05	TT-0301DLMSD	21158D02	BMVM014639	1723

COMMENTS: CLP,21158,,VBLKM,M,S,L03232B1,V,BLANK,
10DG TO 200DG @8DG/MIN IH=3MIN

FORM IV VOA 3/90

MS

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKSM

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: L03232B1

Sample wt/vol: 4.0 (g/mL) G Lab File ID: BBVM014635

Level: (low/med) MED Date Received: 03/23/92

% Moisture: not dec. 0 Date Analyzed: 03/23/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 100 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200	U
74-83-9	Bromomethane	1200	U
75-01-4	Vinyl Chloride	1200	U
75-00-3	Chloroethane	1200	U
75-09-2	Methylene Chloride	240	J
67-64-1	Acetone	740	J
75-15-0	Carbon Disulfide	1200	U
75-35-4	1,1-Dichloroethene	1200	U
75-34-3	1,1-Dichloroethane	1200	U
540-59-0	1,2-Dichloroethene (total)	1200	U
67-66-3	Chloroform	180	J
107-06-2	1,2-Dichloroethane	1200	U
78-93-3	2-Butanone	900	J
71-55-6	1,1,1-Trichloroethane	1200	U
56-23-5	Carbon Tetrachloride	1200	U
75-27-4	Bromodichloromethane	1200	U
78-87-5	1,2-Dichloropropane	1200	U
10061-01-5	cis-1,3-Dichloropropene	1200	U
79-01-6	Trichloroethene	1200	U
124-48-1	Dibromochloromethane	1200	U
79-00-5	1,1,2-Trichloroethane	1200	U
71-43-2	Benzene	1200	U
10061-02-6	trans-1,3-Dichloropropene	1200	U
75-25-2	Bromoform	1200	U
591-78-6	2-Hexanone	1200	U
108-10-1	4-Methyl-2-Pentanone	1200	U
127-18-4	Tetrachloroethene	1200	U
79-34-5	1,1,2,2-Tetrachloroethane	1200	U
108-88-3	Toluene	1200	U
108-90-7	Chlorobenzene	1200	U
100-41-4	Ethylbenzene	1200	U
100-42-5	Styrene	1200	U
1330-20-7	Xylene (total)	1200	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKSM

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: L03232B1

Sample wt/vol: 4.0 (g/mL) G Lab File ID: BBVM014635

Level: (low/med) MED Date Received: 03/23/92

% Moisture: not dec. 0 Date Analyzed: 03/23/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 100 (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

4B

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Lab File ID: ABBA013486 Lab Sample ID: S03122B3

Instrument ID: 4000 Date Extracted: 03/12/92

Matrix: (soil/water) SOIL Date Analyzed: 03/30/92

Level:(low/med) LOW Time Analyzed: 1458

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SS-01	21158004	A1BA013498	03/30/92
02	SS-07	21158005	A1BA013499	03/31/92
03	SS-07_DL	21158005DL	A2BA013526	04/02/92

COMMENTS: CLP,21158,,SBLKS,L,S,S03122B3,B,BLANK,
20DG TO 310DG @4DG/MIN IH=10MIN

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: S03122B3

Sample wt/vol: 30.0 (g/mL) G Lab File ID: ABBA013486

Level: (low/med) LOW Date Received: 03/12/92

% Moisture: 0 decanted: (Y/N) N Date Extracted: 03/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	800	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	330	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: S03122B3

Sample wt/vol: 30.0 (g/mL) G Lab File ID: ABBA013486

Level: (low/med) LOW Date Received: 03/12/92

% Moisture: 0 decanted: (Y/N) N Date Extracted: 03/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	800	U
100-02-7	4-Nitrophenol	800	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-10-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: S03122B3

Sample wt/vol: 30.0 (g/mL) G Lab File ID: ABBA013486

Level: (low/med) LOW Date Received: 03/12/92

% Moisture: 0 decanted: (Y/N) N Date Extracted: 03/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

mber TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	7.15	380	J
2.	NOT IDENTIFIED	8.10	180	J
3. 17851-53-5	1,2-BENZENEDICARBOXYLIC ACID	22.69	220	J
4.	NOT IDENTIFIED	4.37	850	J
5.	NOT IDENTIFIED	5.35	13000	J

4B

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Lab File ID: DBPA010354 Lab Sample ID: S03122B1

Instrument ID: 5100D Date Extracted: 03/12/92

Matrix: (soil/water) SOIL Date Analyzed: 04/01/92

Level:(low/med) LOW Time Analyzed: 1614

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TT-03-01	21158002	D1PA010358	04/01/92
02	TT-03-02	21158003	D1PA010375	04/02/92
03	TT-05E-01	21158001	D1PA010357	04/01/92

COMMENTS: CLP,21158,,SBLKS,L,S,S03122B1,B,B,
30DG TO 310DG @10DG/MIN IH=4MINS

ORGANICS ANALYSIS DATA SHEET

ratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/12/92
Lab Sample ID:	S03122B1	Sample Matrix:	SOIL	Date Analyzed:	04/01/92
Client Sample ID:	SBLKS	Percent Moisture:	0.0	Dilution Factor:	1.0

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	330	U	260-94-6	Acridine	330	U
496-11-7	2,3-Dihydro-1h-Indene	330	U	229-87-8	Phenanthridine	330	U
95-13-6	1H-Indene	330	U	86-74-8	Carbazole	330	U
91-20-3	Naphthalene	330	U	206-44-0	Fluoranthene	330	U
95-15-8	Benzo(b)thiophene	330	U	129-00-0	Pyrene	330	U
91-22-5	Quinoline	330	U	56-55-3	Benzo(a)anthracene	330	U
119-65-3	Isoquinoline	330	U	218-01-9	Chrysene/Triphenylene	330	U
91-57-6	2-Methylnaphthalene	330	U	NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	330	U	57-97-6	7,12-Dimethylbenz(a)anthrac	330	U
90-12-0	1-Methylnaphthalene	330	U	192-97-2	Benzo(e)pyrene	330	U
52-4	Biphenyl	330	U	50-32-8	Benzo(a)pyrene	330	U
208-96-8	Acenaphthylene	330	U	198-55-0	Perylene	330	U
83-32-9	Acenaphthene	330	U	56-49-5	3-Methylcholanthrene	330	U
132-64-9	Dibenzofuran	330	U	193-39-5	Indeno(1,2,3-cd)pyrene	330	U
86-73-7	Fluorene	330	U	53-70-3	Dibenz(a,h)anthracene	330	U
132-65-0	Dibenzothiophene	330	U	191-24-2	Benzo(g,h,i,)perylene	330	U
85-01-8	Phenanthrene	330	U	205-99-2	Benzo(b)fluoranthene	330	U
120-12-7	Anthracene	330	U	207-08-9	Benzo(k)fluoranthene	330	U

U - Compound analyzed for but not detected.
J - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

4C

PESTICIDE METHOD BLANK SUMMARY

EPA SAMPLE NO.

PBLK17

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: 21158 SAS No.: _____ SDG No.: _____

Lab Sample ID: S03172B1 Lab File ID: _____

Matrix:(soil/water) SOIL Extraction:(SepF/Cont/Sonc) SONC

Sulfur Cleanup: (Y/N) Y Date Extracted: 03/17/92

Date Analyzed (1): 04/08/92 Date Analyzed (2): 04/08/92

Time Analyzed (1): 0938 Time Analyzed (2): 0938

Instrument ID (1): V6000A Instrument ID (2): V6000B

GC Column (1): SPB-5 ID: 0.53 (mm) GC Column (2): SPB-608 ID: 0.53 (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	SS-01	21158004	04/08/92	04/08/92
02	SS-01DL	21158004DL	04/08/92	04/08/92
03	SS-07	21158005	04/08/92	04/08/92

COMMENTS:

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK17

Lab Name: CH2M HILL/MGM Contract: _____

Code: CH2M Case No.: 21158 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: S03172B1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/17/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/08/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.0 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.3	U
72-55-9	4,4'-DDE	3.3	U
72-20-8	Endrin	3.3	U
33213-65-9	Endosulfan II	3.3	U
72-54-8	4,4'-DDD	3.3	U
1031-07-8	Endosulfan sulfate	3.3	U
50-29-3	4,4'-DDT	3.3	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.3	U
7421-36-3	Endrin aldehyde	3.3	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	67	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): CSV0021062 Date Analyzed: 03/19/92

Instrument ID: 4500 Time Analyzed: 1142

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) Y

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	67178	11.00	293103	12.52	238151	17.42
	UPPER LIMIT	134356	11.50	586206	13.02	476302	17.92
	LOWER LIMIT	33589	10.50	146552	12.02	119076	16.92
	EPA SAMPLE NO.						
01	SS-01	54130	11.00	197810	12.54	174034	17.44
02	SS-07	63121	11.02	259716	12.54	210437	17.44
03	TT-03-01	58017	11.02	200671	12.54	128883	17.44
04	TT-05E-01	65389	11.00	260965	12.54	205653	17.44
05	VBLKS	64952	11.00	255421	12.52	191565	17.44

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): BSVM014634 Date Analyzed: 03/23/92

Instrument ID: 5100B Time Analyzed: 1108

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) N

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	83417	10.02	343886	11.54	277598	16.40
	UPPER LIMIT	166834	10.52	687772	12.04	555196	16.90
	LOWER LIMIT	41708	9.52	171943	11.04	138799	15.90
	EPA SAMPLE NO.						
01	TT-03-01_DL	80042	10.02	320955	11.52	273788	16.39
02	TT-03-02	77296	9.95	306823	11.47	259820	16.35
03	TT-03-02_R	79874	9.95	333383	11.49	271072	16.35
04	TT-0301DLMS	77969	9.95	315921	11.47	263886	16.34
05	TT-0301DLMSD	81622	9.99	342064	11.50	275590	16.35
06	VBLKSM	92638	10.02	365235	11.52	300682	16.39

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): ASBA013484 Date Analyzed: 03/30/92

Instrument ID: 4000 Time Analyzed: 1329

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	12 HOUR STD	18066	9.09	69081	12.45	32510	17.34
	UPPER LIMIT	36132	9.59	138162	12.95	65020	17.84
	LOWER LIMIT	9033	8.59	34540	11.95	16255	16.84
	EPA SAMPLE NO.						
01	SS-01	13125	9.14	57388	12.47	31317	17.40
02	SS-07	14261	9.14	56159	12.52	33157	17.39
03	SBLKS	14216	9.19	61063	12.54	31291	17.44

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): ASBA013484 Date Analyzed: 03/30/92

Instrument ID: 4000 Time Analyzed: 1329

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	45087	21.47	39029	29.09	37910	32.94
	UPPER LIMIT	90174	21.97	78058	29.59	75820	33.44
	LOWER LIMIT	22544	20.97	19514	28.59	18955	32.44
	EPA SAMPLE NO.						
01	SS-01	44082	21.52	39073	29.16	35169	33.01
02	SS-07	47985	21.49	41736	29.16	38120	32.99
03	SBLKS	44705	21.57	40164	29.21	37195	33.04

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): ASBA013523 Date Analyzed: 04/02/92

Instrument ID: 4000 Time Analyzed: 1410

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	12 HOUR STD	16391	8.72	64426	12.15	30275	17.05
	UPPER LIMIT	32782	9.22	128852	12.65	60550	17.55
	LOWER LIMIT	8196	8.22	32213	11.65	15138	16.55
	EPA SAMPLE NO.						
01	SS-07_DL	17061	8.77	69909	12.17	36429	17.04

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: S21158 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): ASBA013523 Date Analyzed: 04/02/92

Instrument ID: 4000 Time Analyzed: 1410

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	40409	21.17	35554	28.77	38449	32.59
	UPPER LIMIT	80818	21.67	71108	29.27	76898	33.09
	LOWER LIMIT	20204	20.67	17777	28.27	19224	32.09
	EPA SAMPLE NO.						
01	SS-07_DL	53090	21.14	43560	28.72	44768	32.56

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): DSPA010342 Date Analyzed: 04/01/92

Instrument ID: 5100D Time Analyzed: 0749

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	12 HOUR STD	11687	10.02	44656	12.90	29501	17.20
	UPPER LIMIT	23374	10.52	89312	13.40	59002	17.70
	LOWER LIMIT	5844	9.52	22328	12.40	14750	16.70
	EPA SAMPLE NO.						
01	TT-03-01	13663	10.02	49776	12.90	33848	17.17
02	TT-05E-01	14197	10.05	55478	12.90	33909	17.17
03	SBLKS	14885	10.07	57121	12.92	36226	17.17

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): DSPA010342 Date Analyzed: 04/01/92

Instrument ID: 5100D Time Analyzed: 0749

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	47290	20.85	48066	27.64	53801	31.04
	UPPER LIMIT	94580	21.35	96132	28.14	107602	31.54
	LOWER LIMIT	23645	20.35	24033	27.14	26900	30.54
	EPA SAMPLE NO.						
01	TT-03-01	55804	20.84	61689	27.59	63803	31.01
02	TT-05E-01	56883	20.82	54085	27.62	58410	31.06
03	SBLKS	58963	20.82	65589	27.59	64178	31.01

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): DSPA010362 Date Analyzed: 04/02/92

Instrument ID: 5100D Time Analyzed: 0813

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	12 HOUR STD	9234	9.82	35837	12.74	25187	17.05
	UPPER LIMIT	18468	10.32	71674	13.24	50374	17.55
	LOWER LIMIT	4617	9.32	17918	12.24	12594	16.55
	EPA SAMPLE NO.						
01	TT-03-02	9335	9.79	39632	12.65	25682	16.94

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21158 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): DSPA010362 Date Analyzed: 04/02/92

Instrument ID: 5100D Time Analyzed: 0813

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	41092	20.70	41286	27.42	47700	30.81
	UPPER LIMIT	82184	21.20	82572	27.92	95400	31.31
	LOWER LIMIT	20546	20.20	20643	26.92	23850	30.31
	EPA SAMPLE NO.						
01	TT-03-02	48782	20.57	49288	27.19	54448	30.57

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

SAMPLE DATA PACKAGE

SAMPLE DATA PACKAGE

CASE NARRATIVE

Engineers
Planners
Economists
Scientists

CASE NARRATIVE FOR VOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21158 SDG NO.: N/A

I. RECEIPT

A. DATE: March 11, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21158001	TT-05E-01	SOIL	03/10/92	NA	03/19/92
21158002	TT-03-01	SOIL	03/10/92	NA	03/19/92
21158002DL	TT-03-01_DL	SOIL	03/10/92	03/19/92	03/23/92
21158003	TT-03-02	SOIL	03/10/92	03/19/92	03/19/92
21158003R	TT-03-02_R	SOIL	03/10/92	03/19/92	03/23/92
21158004	SS-01	SOIL	03/10/92	NA	03/19/92
21158005	SS-07	SOIL	03/10/92	NA	03/19/92
21158M02	TT-0301DLMS	SOIL	03/10/92	03/19/92	03/23/92
21158D02	TT-0301DLMSD	SOIL	03/10/92	03/19/92	03/23/92
Y03192B1	VBLKS	SOIL	NA	NA	03/19/92
L03232B1	VBLKSM	SOIL	NA	03/19/92	03/23/92

C. Documentation
Exceptions : No exceptions were encountered.

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271.1444

II. EXTRACTION

A. Holding Times: All holding times were met. Samples 21158002DL (TT-03-01_DL), 21158003 (TT-03-02), 21158M02 (TT-03-1DLMS), and 21158D02 (TT-0301DLMSD) were analyzed using medium level soil protocols.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : The original analysis of sample 21158002 (TT-03-01) showed target compounds above the calibration range. The sample was diluted and reanalzyed with all targets within calibration range. The results of both analyses have been reported.

Please see attached table for information concerning methylene chloride and acetone.

No other exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : The original analysis of sample 21158003 (TT-03-02) showed one surrogate below QC limits. The sample was reanalyzed with with similar results. Therefore, the low recovery may possibly be due to a matrix effect. The results of both analyses have been reported.

The analysis of the matrix spike samples 21158M02 and 21158D02 showed one surrogate below QC limits. Since the native sample (21158002DL) showed all surrogates within QC limits, the laboratory took no further action.

All other samples met acceptable QC limits.

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C. Matrix Spike
Results : All spike recoveries for samples 21158M02 and 21158D02 were within CLP advisory limits. These results represent samples 21158002DL and 21158003.

The native sample, matrix spike, and matrix spike duplicate results for samples 21158001, 21158002, 21158004, and 21158005 are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21136.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Herb Kelly 4/29/92
Herb Kelly Date
Manager, Organic Division

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271 1444

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METHYLENE CHLORIDE/ACETONE SUMMARY

Due to the level of target compounds, the following samples required large dilutions for analysis. As required by the Statement of Work, these dilution factors have been applied, without background subtraction, to all detected compounds, particularly methylene chloride and acetone. As methylene chloride and acetone are common laboratory contaminants, the following table is being provided to present a more accurate perspective of these compounds. Included in the table is 1) the amount of methylene chloride and acetone, detected at the instrument, prior to multiplication by the dilution factor; and 2) the amount of methylene chloride and acetone for that particular sample's laboratory method blank.

SAMPLE	METHYLENE CHLORIDE	ACETONE	METHOD BLANK	METHYLENE CHLORIDE	ACETONE
21158002DL	4 ug/Kg	3 ug/Kg	L03232B1	2 ug/Kg	6 ug/Kg
21158003	5 ug/Kg	7 ug/Kg	L03232B1	2 ug/Kg	6 ug/Kg
21158003R	6 ug/Kg	8 ug/Kg	L03232B1	2 ug/Kg	6 ug/Kg
21158M02	4 ug/Kg	7 ug/Kg	L03232B1	2 ug/Kg	6 ug/Kg
21158D02	4 ug/Kg	6 ug/Kg	L03232B1	2 ug/Kg	6 ug/Kg

CH2M HILL
Quality
Analytical Laboratories
2567 Fairlane Drive, P O. Box 230548,
Montgomery, Alabama 36116
205 271 1444

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CASE NARRATIVE FOR SEMIVOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21158 SDG NO.: N/A

I. RECEIPT

A. DATE: March 11, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21158004	SS-01	SOIL	03/10/92	03/12/92	03/30/92
21158005	SS-07	SOIL	03/10/92	03/12/92	03/31/92
21158005DL	SS-07 DL	SOIL	03/10/92	03/12/92	04/02/92
S03122B3	SBLKS	SOIL	NA	03/12/92	03/30/92

C. Documentation Exceptions : Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

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II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : The original analysis of sample 21158005 (SS-07) showed target compounds above the calibration range. The sample was diluted and reanalyzed. The results of both analyses have been reported.

No other exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21107.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Herb Kelly 4/29/92
Herb Kelly Date
Manager, Organic Division

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CASE NARRATIVE FOR PNA/PHENOL MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21158 SDG NO.: N/A

I. RECEIPT

A. DATE: March 11, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21158001	TT-05E-01	SOIL	03/10/92	03/12/92	04/01/92
21158002	TT-03-01	SOIL	03/10/92	03/12/92	04/01/92
21158003	TT-03-02	SOIL	03/10/92	03/12/92	04/02/92
S03122B1	SBLKS	SOIL	NA	03/12/92	04/01/92

C. Documentation Exceptions : Tentatively Identified Compounds were not requested as part of this analysis. Therefore, these forms will not be included.

As you have requested, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported separately. Due to the low concentrations analyzed for, there may be instances where the native matrix offers chromatographic interferences in this region of the chromatogram, making it difficult to correctly quantitate these isomers as separate compounds. In that case, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported as total Benzo(b&k)fluoranthene. An "NR" (not reported) qualifier will then be used for the compounds for which are not reported.

Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

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II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Samples 21158002 (TT-03-01) and 21158003 (TT-03-02) required large dilutions for analysis. Therefore, surrogate recoveries could not be determined for these samples.

All other samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21128.

Please note that Forms IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Herb Kelly 4/29/92

Herb Kelly Date
Manager, Organic Division

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CASE NARRATIVE FOR PESTICIDE/PCB GAS CHROMATOGRAPHY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21158 SDG NO.: N/A

I. RECEIPT

A. DATE: March 11, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21158004	SS-01	SOIL	03/10/92	03/17/92	04/08/92
21158004DL	SS-01DL	SOIL	03/10/92	03/17/92	04/08/92
21158005	SS-07	SOIL	03/10/92	03/17/92	04/08/92
S03172B1	PBLK17	SOIL	NA	03/17/92	04/08/92

C. Documentation
Exceptions : No exceptions were encountered.

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II. EXTRACTION

A. Holding times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : Internal standards were added to the pesticide/PCB samples before injection for internal QC purposes only. According to CLP protocol, only external standard calculations were performed for this report.

No additional exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks and instrument blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21107.

D. Special Conditions : Primary and confirmation data was acquired by a single injection into a dual column/ECD system.

Please note that Forms II, IV, VI PEST-4, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Herb Kelly 4/29/92
Herb Kelly Date
Manager, Organic Division

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 1444

SAMPLE DATA PACKAGE

SHIPPING RECEIPTS

BARR ENGINEERING CO.
7803 ENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER No 01265
13/49-003VSL31

NO: WAUKEGAN COKE PLANT RI

PROJECT CONTACT: JIM LANY FH

PROJECT CONTACT: MARY MACKEY

LABORATORY: CH2M HILL

REMARKS/ ANALYSIS REQUIRED:

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC-CLP	SEMIVOLATILE ORGANIC	METALS-CLP TAL	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	EXTRACTABLES CLP TCL	PESTICIDES/PCB CLP TCL	PAHs	PAH/PHENOLS	ARSENIC					TOTAL NO. OF CONTAINERS
TT-05E-01	3/10/92	PM	X			X													X					001		3
TT-03-01	3/10/92	PM	X			X					X								X		X			002		3
TT-03-02	3/10/92	PM	X	X		X														X				003		3
SS-01	3/10/92		X			X		X									X	X						004		4
SS-07	3/10/92		X			X		X									X	X						005		4
Method Blank																								251		

FOR LAB USE ONLY
21158
LMG 23486.X1
TA: [redacted]
QC LEVEL
COC Y
ANA REQ Y
CUST SEAL Y
SAMPLE CONDITION Soil
PH N/A
3°C

PLEASE NOTE: CYANIDE AND ARSENIC MIXED TOGETHER WITH PAH ON 21158002. BS 3/11/92

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
(JMF)	(JMF)	3/10/92	PM			
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY: Brad Stearns 3/11/92 0915	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME

REMARKS:

SAMPLES SHIPPED VIA ☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER ☐ OTHER

AIR BILL NUMBER: 3586501634

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS; YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY

80000

Laboratory No. 21184

-- Volatiles

-- Semivolatiles (includes PAH/Phenolic Compounds)

-- Pesticides/PCBS

-- Metals

Fourteen investigative soil samples (TT0303, TT0902, TT1602, TT1701, TT2201, and TT2201 duplicate, SS06, SS08, SS09, SS10, SS11, SS12, SS13, and SS14) were collected March 11 and 12, 1992. Fourteen samples were analyzed for volatiles; eight were analyzed for semivolatiles, pesticide/PCBS and metals; and four were analyzed for PAH/phenols. The results of these analyses were reported in this case and qualified as described in the following sections.

Holding Times

Holding times were met on all samples and analyses using the EPA holding time criteria for water samples.

Instrument Tuning

Volatiles

GC/MS Tuning met the established method performance criteria for compounds, concentrations, frequencies and relative ion abundances for the volatiles analyses.

Semivolatiles

GC/MS Tuning met the established method performance criteria for compounds, concentrations, frequencies and relative ion abundances for the semivolatiles analyses.

Pesticides

These samples were processed through GPC cleanup eight days after GPC calibration, instead of within the normal seven days. The GPC calibration associated with these samples was performed on 3/11/92. The GPC did remain in calibration. Instrument performance was acceptable for retention times, retention time windows, and DDT and Endrin degradation for all samples.

Metals

Instrument tuning does not apply to the metals analyses.

Instrument Calibration

Volatiles

Initial calibration percent relative standard deviation (%RSD) and continuing calibration percent difference (%D) values for several volatile parameters were outside the appropriate control limits. Control limits for %RSD and %D were ≤30 percent and ≤25 percent, respectively.

The volatile analyses initial calibration parameter and associated %RSD value beyond control limits was chloroethane (32.4 percent). Continuing calibration compounds bromomethane (-31.7 percent) and chloroethane (-37.0 percent) were beyond the %D control limits. Neither compound was detected in the associated samples, so no data were qualified.

Chloromethane (43.6 percent and 49.0 percent), carbon disulfide (27.0 percent and 26.8 percent), 2-hexanone (30.9 percent) and vinyl chloride (27.2 percent) were beyond the continuing calibration %D control limits. Carbon disulfide was the only outlier compound detected, qualified as estimated, and flagged "J" in any of the associated samples.

Semivolatiles

The semivolatiles analyses calibration compound and associated %RSD and %D values beyond control limits was the surrogate standard 1,2-dichlorobenzene-d4 (36.4 percent and 32.5 percent). Since this was a surrogate compound, no sample data were qualified.

Pesticides

Pesticide/PCB analyses instrument calibration %RSD for methoxychlor (17.5 percent) exceeded the ≤15 percent control limits. Methoxychlor results in the associated samples were qualified as estimated and flagged "J."

The continuing calibration %D values for all compounds were within the appropriate quality control limits. The resolution check mixture and performance evaluation mixture samples were analyzed at the proper frequency. All retention time values except decachlorobiphenyl were within control limits. The retention time for decachlorobiphenyl was not within the ±0.02 minute control limits, but was within the associated retention time window, so no data were qualified. All RPD values were within the appropriate quality control limits.

Metals

Instrument calibrations were completed the proper number of times using the appropriate number and type of standards and blanks. Initial and continuing calibration percent recovery values were acceptable for all metals analyses.

Blanks

Volatiles

Methylene chloride (9 J, 4 J and 12 µg/kg), acetone (5 J and 10 µg/kg) and chloroform (2 J µg/kg) were detected in the volatiles blanks. Sample results less than five times the associated blank concentration of chloroform or less than ten times the associated blank concentration of either remaining compound were qualified as nondetects and flagged "U."

Semivolatiles

Di-n-butylphthalate (50 J µg/kg) was detected in the semivolatiles method blank. Sample results less than ten times the blank concentration of this compound were qualified as nondetects and flagged "U."

Pesticides

No compounds were detected in the pesticide/PCB method blank.

Metals

Total metals analyses calibration and preparation blanks had concentrations of aluminum, arsenic, beryllium, calcium, chromium, copper, iron, lead, manganese, nickel, selenium, silver, sodium, thallium, and zinc. These concentrations were greater than the instrument detection limit (IDL) but less than the contract required detection limit (CRDL). Sample results for these compounds less than five times the blank concentration were qualified as nondetects and flagged "U."

Surrogate Recovery

Volatiles

Recoveries for all volatiles system monitoring compounds were within the control limits for all samples.

Semivolatiles

The surrogates for samples SS14 and SS14DL could not be recovered due to the large dilutions required for analysis. No data were qualified.

Pesticides

Surrogate recoveries could not be determined for Sample SS14 due to chemical interferences and the dilution required for analysis. No data were qualified.

Metals

Total metals analyses ICP interference check sample recoveries and laboratory control sample results were within the appropriate control limits.

Matrix Spike/Matrix Spike Duplicate

Volatiles

Volatiles analyses matrix spike/matrix spike duplicate samples percent recovery and RPD values were within the appropriate control limits for all spike compounds.

Semivolatiles

Semivolatiles analyses matrix spike/matrix spike duplicate samples recoveries for 2,4-dinitrotoluene (93 percent and 100 percent) were beyond quality control limits. The percent recovery control limits for this compound were 28-89 percent. However, since the recoveries for 2,4-dinitrotoluene were high, it was not detected in any of the associated samples, and all other spike compounds met the performance criteria, no action was taken.

The semivolatiles analyses matrix spike/matrix spike duplicate samples associated with samples SS13, SS14 and SS14DL had outlier RPD values. The RPD values for penol (77 percent), acenaphthene (32 percent) and pyrene (52 percent) were beyond RPD quality control limits. Since the percent recoveries were within acceptable quality control criteria, no action was taken.

PAH/phenol analyses matrix spike/matrix spike duplicate samples had several compounds with recoveries and RPD values outside of control limits. These

results may be due to the high level of spike compounds in the native sample, so no data were qualified.

Pesticides

Pesticide/PCB matrix spike/matrix spike duplicate samples had acceptable recovery and RPD values for all compounds.

Metals

Metals analyses quality control samples included a duplicate sample, a spike sample, post digestion spike samples, and an ICP serial dilution sample.

The duplicate samples RPD values for cadmium (124.4 percent), lead (103.1 percent), manganese (42.5 percent), selenium (27.0 percent), thallium (144.8 percent), and cyanide (23.3 percent) were beyond quality control limits. Results for these compounds in the associated samples were qualified as estimated and flagged "J."

The spike sample had recoveries beyond control limits (75-125 percent) for antimony (21.0 percent), cadmium (73.8 percent), manganese (144.2 percent), selenium (71.2 percent) and cyanide (-3.1 percent). Results for antimony in Samples SS06, SS08, SS09, SS11, SS12, and SS14 were less than the IDL, were qualified as unusable, and were flagged "R." Positive antimony results and results for the remaining outlier compounds were qualified as estimated and flagged "J."

The post digestion spike recoveries for selenium and or thallium were outside of the 85-115 percent control limits on the laboratory control sample and investigative Samples SS06, SS09, SS10, SS11 and SS14. Investigative sample results related to the outlier compounds were qualified as estimated and flagged "J."

ICP serial dilution results were within control limits.

Field Duplicates

Field duplicate samples are summarized in Tables 2.3-6 through 2.3-11.

Overall Assessment

All data are considered acceptable with the recommended qualifiers except the "R" qualified Antimony results in samples SS06, SS08, SS09, SS11, SS12, and SS14. These data are not usable.

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May 1, 1992

LMG33486.XY

Ms. Marti Harding-Smith
Barr Engineering Company
8300 Norman Center Drive
Suite 300
Minneapolis, Minnesota 55437-1026

RE: Analytical Data for LMG Laboratory No. 21184

Dear Ms. Harding-Smith:

On March 13, 1992, the CH2M HILL Montgomery Laboratory received eight samples with a request for analysis of selected inorganic parameters.

The analytical results and associated quality control data are enclosed. Any unusual difficulties encountered during the analyses of these samples are discussed in the case narrative.

If you should have any questions concerning the data, please inquire.

The CH2M HILL policy is to store samples for up to 30 days after reporting. If you desire, our laboratory will maintain your samples for a longer period at a cost of $5.00 per sample per month. Samples determined to be hazardous can either be returned to you or disposed of at a cost of $25.00 per sample.

Sincerely,

Wanda L. Hall

Wanda L. Hall
Data Package Supervisor

Enclosures

cc: Mr. Jim Langseth

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EPA QUALIFIERS

INORGANIC ANALYSES

- C (Concentration) Qualifier -- Enter "B" if the reported value obtained was less than the CRDL but greater than or equal to the IDL. Enter "U" if the value was less than the IDL or was not detected.

- Q Qualifier -- Entries and their meanings are:

  E - The reported value is estimated because of interference. An explanatory comment must be included under "Comments" on the Cover Page if the problem applies to all samples in this data package or on the individual FORM I if it is an isolated problem.

  M - Duplicate injection precision was not met (two analyses of the same sample did not agree).

  N - Spiked sample recovery not within control limits.

  S - The reported value was determined by the Method of Standard Additions (MSA).

  W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

  * - Duplicate analysis not within control limits.

  + - Correlation coefficient for the MSA is less than 0.995.

  Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field.

- M (Method) Qualifier -- Enter one of the following:

  P - ICP
  A - Flame AA
  F - Furnace AA
  CV - Manual Cold Vapor AA
  AV - Automated Cold Vapor AA
  AS - Semi-Automated Spectrophotometric
  C - Manual Spectrophotometric
  T - Titrimetric
  NR - Analyte was not required by your lab

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548 Montgomery, Alabama 36116 205.271.1444

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TABLE 1

SAMPLE CROSS-REFERENCE SUMMARY

CH2M HILL Laboratory No. 21184

CH2M HILL Sample No.	Sample Description				
21184001	SS-06	03/11/92	GRAB	13/49-003JSL31	PO#01267
21184002	SS-08	03/11/92	GRAB	13/49-003JSL31	PO#01267
21184003	SS-09	03/11/92	GRAB	13/49-003JSL31	PO#01267
21184004	SS-10	03/11/92	GRAB	13/49-003JSL31	PO#01267
21184005	SS-11	03/11/92	GRAB	13/49-003JSL31	PO#01267
21184006	SS-12	03/11/92	GRAB	13/49-003JSL31	PO#01267
21184009	SS-13	03/12/92	GRAB	13/49-003JSL31	PO#01266
21184010	SS-14	03/12/92	GRAB	13/49-003JSL31	PO#01266

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CATIONS DATA PACKAGE

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CASE NARRATIVE
Cations

Batch Number: 21184

Client/Project: BARR ENGINEERING

I. **Holding Time:**
All holding times were met.

II. **Analysis:**

A. **Blanks:**
All acceptance criteria were met.

B. **Calibration:**
All acceptance criteria were met.

C. **ICP Interference Check Sample:**
All acceptance criteria were met.

D. **Spike Sample Analysis:**
Prespike and postspike recoveries outside criteria are flagged accordingly.

E. **Duplicate Sample Analysis:**
Duplicate precision outside criteria are flagged accordingly.

F. **Laboratory Control Sample Analysis:**
All acceptance criteria were met.

G. **ICP Serial Dilution:**
ICP serial dilutions outside criteria are flagged accordingly.

H. **Other:**
The QC for data package 21184 is included in data package 21232.

III. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, for other than the conditions detailed above.

SIGNED: Kaye Walker for **DATE:** 5/1/92
Kevin A. Sanders
Inorganic Division Manager

CH2M HILL
Quality Analytical Laboratories
2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116
205.271 1444

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Name: CH2M_HILL_MGM_____ Contract: 21184_____

Lab Code: NA____ Case No.: 21184 SAS No.: 21184_ SDG No.:21184_

SOW No.: 3/90_

EPA Sample No.	Lab Sample ID
_SS-06_____	__S21184001___
_SS-08_____	__S21184002___
_SS-09_____	__S21184003___
_SS-10_____	__S21184004___
_SS-10D_____	__S21184004D__
_SS-10S_____	__S21184004S__
_SS-11_____	__S21184005___
_SS-12_____	__S21184006___
_SS-13_____	__S21184009___
_SS-14_____	__S21184010___

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES
If yes - were raw data generated before application of background corrections ? Yes/No NO_

mments:
HE QC FOR DATA PACKAGE 21184 IS INCLUDED IN DATA PACKAGE 21232.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Kevin A. Sanders_____

Date: 13 APR 92 Title: Inorganic Division Mgr._

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS-06

Lab Name: CH2M_HILL_MGM Contract: 21184

Lab Code: NA Case No.: 21184 SAS No.: 21184 SDG No.: 21184

Matrix (soil/water): SOIL Lab Sample ID: S21184001

Level (low/med): LOW Date Received: 03/13/92

% Solids: 80.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4050		*	P
7440-36-0	Antimony	2.7	U	N	P
7440-38-2	Arsenic	5.5		*	F
7440-39-3	Barium	39.1	B	E	P
7440-41-7	Beryllium	0.37	B		P
7440-43-9	Cadmium	0.82	B	N*	P
7440-70-2	Calcium	17000			P
7440-47-3	Chromium	9.0			P
7440-48-4	Cobalt	5.3	B		P
7440-50-8	Copper	11.6		*	P
7439-89-6	Iron	9580			P
7439-92-1	Lead	9.7		*	F
7439-95-4	Magnesium	9670			P
7439-96-5	Manganese	214		N*	P
7439-97-6	Mercury	0.09	U		CV
7440-02-0	Nickel	8.0	B		P
7440-09-7	Potassium	397	B		P
7782-49-2	Selenium	0.65	B	WN	F
7440-22-4	Silver	0.43	U		P
7440-23-5	Sodium	271	B		P
7440-28-0	Thallium	2.1	U		F
7440-62-2	Vanadium	14.3			P
7440-66-6	Zinc	58.0			P
	Cyanide				NR

Color Before: BLACK Clarity Before: N/A Texture: LOAM

Color After: CLEAR Clarity After: CLEAR Artifacts:

Comments:
THE "W" QUALIFIER INDICATES POOR POSTSPIKE RECOVERY. THE "E" QUALIFIER DENOTES A GREATER THAN 10% DIFFERENCE BETWEEN THE NATIVE CONCENTRATION AND SERIAL DILUTION RESULTS. THE "N" INDICATES POOR PRESPIKE RECOVERY. THE "*" QUALIFIER DENOTES POOR DUPLICATE PRECISION.

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS-08

Lab Name: CH2M_HILL_MGM Contract: 21184

Lab Code: NA Case No.: 21184 SAS No.: 21184 SDG No.: 21184

Matrix (soil/water): SOIL Lab Sample ID: S21184002

Level (low/med): LOW Date Received: 03/13/92

% Solids: 61.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3490		*	P
7440-36-0	Antimony	3.5	U	N	P
7440-38-2	Arsenic	91.5		*	F
7440-39-3	Barium	56.7	B	E	P
7440-41-7	Beryllium	0.66	B		P
7440-43-9	Cadmium	1.2	B	N*	P
7440-70-2	Calcium	3430			P
7440-47-3	Chromium	6.1			P
7440-48-4	Cobalt	2.6	B		P
7440-50-8	Copper	18.9		*	P
7439-89-6	Iron	4930			P
7439-92-1	Lead	18.6		*	F
7439-95-4	Magnesium	1400	B		P
7439-96-5	Manganese	52.0		N*	P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	6.5	B		P
7440-09-7	Potassium	261	B		P
7782-49-2	Selenium	12.5		N	F
7440-22-4	Silver	0.56	U		P
7440-23-5	Sodium	382	B		P
7440-28-0	Thallium	2.7	U		F
7440-62-2	Vanadium	5.1	B		P
7440-66-6	Zinc	29.8			P
	Cyanide				NR

Color Before: BLACK Clarity Before: N/A Texture: MUD

Color After: CLEAR Clarity After: CLEAR Artifacts:

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS-09

Lab Name: CH2M_HILL_MGM Contract: 21184

Lab Code: NA Case No.: 21184 SAS No.: 21184 SDG No.: 21184

Matrix (soil/water): SOIL Lab Sample ID: S21184003

Level (low/med): LOW Date Received: 03/13/92

% Solids: 81.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12500		*	P
7440-36-0	Antimony	2.7	U	N	P
7440-38-2	Arsenic	8.7		*	F
7440-39-3	Barium	105		E	P
7440-41-7	Beryllium	0.61	B		P
7440-43-9	Cadmium	0.72	U	N*	P
7440-70-2	Calcium	10900			P
7440-47-3	Chromium	18.6			P
7440-48-4	Cobalt	10.9	B		P
7440-50-8	Copper	24.1		*	P
7439-89-6	Iron	21200			P
7439-92-1	Lead	12.2		*	F
7439-95-4	Magnesium	7880			P
7439-96-5	Manganese	973		N*	P
7439-97-6	Mercury	0.08	U		CV
7440-02-0	Nickel	21.0			P
7440-09-7	Potassium	1180	B		P
7782-49-2	Selenium	0.55	B	WN	F
7440-22-4	Silver	0.45	B		P
7440-23-5	Sodium	274	B		P
7440-28-0	Thallium	2.0	U		F
7440-62-2	Vanadium	29.9			P
7440-66-6	Zinc	65.4			P
	Cyanide				NR

Color Before: BROWN Clarity Before: N/A Texture: CLAY

Color After: CLEAR Clarity After: CLEAR Artifacts:

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS-10

Lab Name: CH2M_HILL_MGM Contract: 21184

Lab Code: NA Case No.: 21184 SAS No.: 21184 SDG No.: 21184

Matrix (soil/water): SOIL Lab Sample ID: S21184004

Level (low/med): LOW Date Received: 03/13/92

% Solids: 85.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3720		*	P
7440-36-0	Antimony	2.8	B	N	P
7440-38-2	Arsenic	6.3		*	F
7440-39-3	Barium	36.3	B	E	P
7440-41-7	Beryllium	0.33	B		P
7440-43-9	Cadmium	0.69	U	N*	P
7440-70-2	Calcium	28100			P
7440-47-3	Chromium	7.7			P
7440-48-4	Cobalt	4.0	B		P
7440-50-8	Copper	12.5		*	P
7439-89-6	Iron	9210			P
7439-92-1	Lead	17.8		*	F
7439-95-4	Magnesium	15700			P
7439-96-5	Manganese	190		N*	P
7439-97-6	Mercury	0.08	U		CV
7440-02-0	Nickel	8.3	B		P
7440-09-7	Potassium	374	B		P
7782-49-2	Selenium	0.84	B	N	F
7440-22-4	Silver	0.40	U		P
7440-23-5	Sodium	241	B		P
7440-28-0	Thallium	1.9	U	W	F
7440-62-2	Vanadium	11.5	B		P
7440-66-6	Zinc	50.1			P
	Cyanide				NR

Color Before: BLACK Clarity Before: N/A Texture: MUD

Color After: CLEAR Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS-11

Lab Name: CH2M_HILL_MGM_____ Contract: 21184_____

Lab Code: NA____ Case No.: 21184 SAS No.: 21184_ SDG No.: 21184_

Matrix (soil/water): SOIL_ Lab Sample ID: S21184005_

Level (low/med): LOW__ Date Received: 03/13/92

% Solids: _87.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	1100		*	P
7440-36-0	Antimony_	2.5	U	N	P
7440-38-2	Arsenic__	1.4	B	*	F
7440-39-3	Barium___	5.8	B	E	P
7440-41-7	Beryllium	0.04	U		P
7440-43-9	Cadmium__	0.67	U	N*	P
7440-70-2	Calcium__	25500			P
7440-47-3	Chromium_	5.0			P
7440-48-4	Cobalt___	1.1	B		P
7440-50-8	Copper___	10.5		*	P
7439-89-6	Iron_____	2970			P
7439-92-1	Lead_____	3.8		*	F
7439-95-4	Magnesium	13200			P
7439-96-5	Manganese	111		N*	P
7439-97-6	Mercury__	0.08	U		CV
7440-02-0	Nickel___	5.1	B		P
7440-09-7	Potassium	162	U		P
7782-49-2	Selenium_	0.44	B	WN	F
7440-22-4	Silver___	0.39	U		P
7440-23-5	Sodium___	295	B		P
7440-28-0	Thallium_	1.9	U		F
7440-62-2	Vanadium_	6.3	B		P
7440-66-6	Zinc_____	33.0			P
	Cyanide__				NR

Color Before: BROWN____ Clarity Before: N/A___ Texture: SAND__

Color After: CLEAR____ Clarity After: CLEAR_ Artifacts: YES___

Comments:
THE_ARTIFACTS_CONSIST_OF_ROCKS.

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS-12

Lab Name: CH2M_HILL_MGM Contract: 21184

Lab Code: NA Case No.: 21184 SAS No.: 21184 SDG No.: 21184

Matrix (soil/water): SOIL Lab Sample ID: S21184006

Level (low/med): LOW Date Received: 03/13/92

% Solids: 82.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	913		*	P
7440-36-0	Antimony	2.7	U	N	P
7440-38-2	Arsenic	1.3	B	*	F
7440-39-3	Barium	4.6	B	E	P
7440-41-7	Beryllium	0.07	B		P
7440-43-9	Cadmium	0.72	U	N*	P
7440-70-2	Calcium	25000			P
7440-47-3	Chromium	3.2			P
7440-48-4	Cobalt	3.7	B		P
7440-50-8	Copper	7.7		*	P
7439-89-6	Iron	2780			P
7439-92-1	Lead	3.8		*	F
7439-95-4	Magnesium	12800			P
7439-96-5	Manganese	167		N*	P
7439-97-6	Mercury	0.09	U		CV
7440-02-0	Nickel	4.9	B		P
7440-09-7	Potassium	173	U		P
7782-49-2	Selenium	0.34	B	N	F
7440-22-4	Silver	0.42	U		P
7440-23-5	Sodium	233	B		P
7440-28-0	Thallium	2.0	U		F
7440-62-2	Vanadium	4.5	B		P
7440-66-6	Zinc	32.3			P
	Cyanide				NR

Color Before: BROWN Clarity Before: N/A Texture: SAND

Color After: CLEAR Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS-13

Lab Name: CH2M_HILL_MGM Contract: 21184

Lab Code: NA Case No.: 21184 SAS No.: 21184 SDG No.: 21184

Matrix (soil/water): SOIL Lab Sample ID: S21184009

Level (low/med): LOW Date Received: 03/13/92

% Solids: 86.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	919		*	P
7440-36-0	Antimony	3.2	B	N	P
7440-38-2	Arsenic	1.5	B	*	F
7440-39-3	Barium	4.9	B	E	P
7440-41-7	Beryllium	0.10	B		P
7440-43-9	Cadmium	0.75	B	N*	P
7440-70-2	Calcium	24700			P
7440-47-3	Chromium	3.6			P
7440-48-4	Cobalt	1.3	B		P
7440-50-8	Copper	4.3	B	*	P
7439-89-6	Iron	2790			P
7439-92-1	Lead	3.1		*	F
7439-95-4	Magnesium	12800			P
7439-96-5	Manganese	107		N*	P
7439-97-6	Mercury	0.08	U		CV
7440-02-0	Nickel	4.2	B		P
7440-09-7	Potassium	165	U		P
7782-49-2	Selenium	0.48	B	N	F
7440-22-4	Silver	0.40	U		P
7440-23-5	Sodium	284	B		P
7440-28-0	Thallium	1.9	U		F
7440-62-2	Vanadium	4.7	B		P
7440-66-6	Zinc	17.7			P
	Cyanide				NR

Color Before: BROWN Clarity Before: N/A Texture: SAND

Color After: CLEAR Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS-14

Lab Name: CH2M_HILL_MGM Contract: 21184

Lab Code: NA Case No.: 21184 SAS No.: 21184 SDG No.: 21184

Matrix (soil/water): SOIL Lab Sample ID: S21184010

Level (low/med): LOW Date Received: 03/13/92

% Solids: 71.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	737		*	P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	4.4		*	F
7440-39-3	Barium	22.5	B	E	P
7440-41-7	Beryllium	0.10	B		P
7440-43-9	Cadmium	0.82	U	N*	P
7440-70-2	Calcium	923	B		P
7440-47-3	Chromium	3.0			P
7440-48-4	Cobalt	1.6	B		P
7440-50-8	Copper	18.3		*	P
7439-89-6	Iron	2260			P
7439-92-1	Lead	5.1		*	F
7439-95-4	Magnesium	284	B		P
7439-96-5	Manganese	26.5		N*	P
7439-97-6	Mercury	0.09	U		CV
7440-02-0	Nickel	4.3	B		P
7440-09-7	Potassium	197	U		P
7782-49-2	Selenium	2.2		N	F
7440-22-4	Silver	0.48	U		P
7440-23-5	Sodium	337	B		P
7440-28-0	Thallium	2.3	U	W	F
7440-62-2	Vanadium	2.0	B		P
7440-66-6	Zinc	28.7			P
	Cyanide				NR

Color Before: BLACK Clarity Before: N/A Texture: LOAM

Color After: CLEAR Clarity After: CLEAR Artifacts: YES

Comments:
THE_ARTIFACTS_CONSIST_OF_ROCKS.

FORM I - IN

3/90

503 GLENHOY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER: 01266 13/149-003NSL31

NO: WAUKEGAN COKE PLANT RI

JIM LANGSETH
PROJECT CONTACT: MARY MACKEY
LABORATORY: CH2M HILL
REMARKS/ ANALYSIS REQUIRED: 2 of 2

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC - CLP	SEMIVOLATILE ORGANIC	METALS - CLP	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	EXTRACTABLES - CLP - TCL	PESTICIDES / PCB CLP-TCL	PAHs	PAH / PHENOLS						TOTAL NO. OF CONTAINERS
SS-13	3/12/92	A.M	X	X		X		X									X	X					0 09	0 64		4
SS-14	3/12/92	A.M	X	X		X		X									X	X					0 10	0 65		4
TT-16-02	3/12/92	AM	X			X													X				0 11	0 66		2
TT-17-01	3/12/92	AM	X			X														X			0 12	0 67		
TT-22-01	3/12/92	PM	X			X														[illegible]			0 13	0 68		
~~TT-22-02~~	~~3/12/92~~	~~PM~~	~~X~~			~~X~~													~~X~~							
M-04	3/12/92	AM	X			X														[illegible]			0 14	0 69		
Method Blnk																							2 51			

FOR LAB USE ONLY
LAB # 21184
PROJ # LM632486 X Y
ACK VERIFIED
HAZWRAP/NEESA Y (N)
QC LEVEL 1 2 (3)
COC Y ICE Y
ANA REQ Y TEMP 10C
CUSTODY SEAL Y PH
SAMPLE COND

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
(JMF) (SEM)	(SEM)	3/12/92	PM			
RECEIVED BY: (JMF)	RELINQUISHED BY: (JMF)	3/12/92	PM	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY: 3/13/92 0930	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME

REMARKS:

SAMPLES SHIPPED VIA ☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER ☐ OTHER

AIR BILL NUMBER: 3586501612

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS; YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY

Jims AJS 3/13/92

000416

BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER 01267
13/49-003 NSL31

NO: WAUKEGAN COKE PLANT RI

JIM LANGSETH
PROJECT CONTACT:
MARY MACKEY
LABORATORY:
CH2M HILL
REMARKS/
ANALYSIS REQUIRED:
1 of 2

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC - CLP TCL	SEMIVOLATILE ORGANIC	METALS - CLP TAL	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	EXTRACTABLES CLP TCL	PESTICIDES/PCB - CLP TCL	PAHs	PAH/PHENOLS							TOTAL NO. OF CONTAINERS
SS-06	3/11/92	a.m	X	X		X		X									X	X							001		4
SS-08	3/11/92	a.m		X		X		X									X	X							002		5
SS-09	3/11/92	a.m.	X	X		X		X									X	X							003		4
SS-10	3/11/92	p.m		X		X		X									X	X							004		5
SS-11	3/11/92	p.m	X	X		X		X									X	X							005		4
SS-12	3/11/92	p.m	X	X		X		X									X	X							006		4
TT-03-03	3/11/92	a.m.		X		X													X						007		3
TT-09-02	3/11/92	p.m		X		X													X						008		3

FOR LAB USE ONLY
21184
LMG 3486 XY
3/16 VERIFIED
Y (11)
Custody Seal Y Int Y
Analysis Y Temp 1°C
COC Y
Sample Cont. Seal

On SS-12 Post/PCB there was a cracked lid, I replaced it with a new one BS 3/13

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
(JMF) (SEM)	(SEM)	3/11/92	PM			
RECEIVED BY: (JMF)	RELINQUISHED BY: (JMF)	3/11/92	PM	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER: 3586501623

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS; YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY

0004415

Engineers
Planners
Economists
Scientists

May 2, 1992

LMG33486.XY

Ms. Marti Harding-Smith
Barr Engineering Company
8300 Norman Center Drive
Suite 300
Minneapolis, Minnesota 55437-1026

RE: Analytical Data for LMG Laboratory No. 21184

Dear Ms. Harding-Smith:

On March 13, 1992, the CH2M HILL Montgomery Laboratory received fourteen samples with a request for analysis of selected organic parameters.

The analytical results and associated quality control data are enclosed. Any unusual difficulties encountered during the analyses of these samples are discussed in the case narratives.

If you should have any questions concerning the data, please inquire.

The CH2M HILL policy is to store samples for up to 30 days after reporting. If you desire, our laboratory will maintain your samples for a longer period at a cost of $5.00 per sample per month. Samples determined to be hazardous can either be returned to you or disposed of at a cost of $25.00 per sample.

Sincerely,

Wanda L. Hall

Wanda L. Hall
Data Package Supervisor

Enclosures

cc: Mr. Jim Langseth

Engineers
Planners
CH2M HILL
Economists
Scientists

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CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 1444

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EPA - DEFINED QUALIFIERS

ORGANICS

Definitions for the EPA-defined qualifiers:

U -- Indicates the compound was analyzed for but not detected. The number adjacent to the "U" qualifier indicates the quantitation limit for that compound. The detection limit can vary from sample to sample depending on dilution factors or percent moisture adjustment when indicated.

J -- Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound below the stated quantitation limit. The "J" qualifier is not used with pesticide results.

C -- This flag applies to pesticide results only. The "C" flag indicates the presence of this compound has been confirmed by GC/MS analysis.

B -- This flag is used when the analyte is found in the associated blank as well as the sample. This notation indicates possible blank contamination and suggests the data user evaluate these compounds and their amounts carefully.

E -- This flag applies to GC/MS only. The "E" qualifier indicates a compound may be above or below the linear range of the instrument. If the particular compound level is deemed above the linear calibration range, then the sample should be reanalyzed at an appropriate dilution. Therefore, the "E" qualified amount is an estimated concentration. The results for the dilution will be reported on a separate Form I and will be flagged with a "D" if the dilution brings the concentration within proper calibration.

D -- This flag identifies compounds which have been run at a dilution to bring the concentration of that compound within the linear range of the instrument. "D" qualifiers are only used for samples that have been run initially with results above acceptable ranges. For secondary dilutions the "DL" suffix is appended to the sample number on the Form I.

A -- Indicates the Tentatively Identified Compound (TIC) is a suspected aldol-condensation product.

X -- Indicates the compound concentration has been manually modified or the EPA qualifier has been manually modified or added.

JX -- The compound was detected and quantitated below the Contract Required Quantitation Limit.

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CLIENT SAMPLE ID QUALIFIERS

LEVEL 3

The qualifiers that GC/MS and GC use with the client sample ID are defined below:

DL -- Dilution Run

R -- Rerun (may be followed by a digit to indicate multiple reruns)

RD -- Diluted Rerun

RX -- Re-extraction Analysis

MS -- Matrix Spike (may be followed by a digit to indicate multiple matrix spikes within a sample set)

MSD -- Matrix Spike Duplicate (may be followed by a digit to indicate multiple matrix spike duplicates within a sample set)

VBLK -- Volatile Blank (will be followed by a "W" for waters, "S" for soils run at a low level, or "SM" for soils run at a medium level -- these letters may be followed by a digit to indicate multiple blanks of that type).

SBLK -- Semivolatile Blank (will be followed by a "W" for waters, "S" for soils run at a low level, or "SM" for soils run at a medium level -- these letters may be followed by a digit to indicate multiple blanks of that type).

PBLK -- Pesticide/PCB Blank (may be followed by digits to indicate multiple blanks)

These qualifiers allow GC/MS and GC to have unique client sample ID's so that the client can get more accurate information from the data reported.

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TABLE 1

SAMPLE CROSS-REFERENCE SUMMARY

CH2M HILL Laboratory No. 21184

CH2M HILL Sample No.	Sample Description				
21184001	SS-06	03/11/92	GRAB	13/49-003JSL31	PO#01267
21184002	SS-08	03/11/92	COMP	13/49-003JSL31	PO#01267
21184003	SS-09	03/11/92	GRAB	13/49-003JSL31	PO#01267
21184004	SS-10	03/11/92	COMP	13/49-003JSL31	PO#01267
21184005	SS-11	03/11/92	GRAB	13/49-003JSL31	PO#01267
21184006	SS-12	03/11/92	GRAB	13/49-003JSL31	PO#01267
21184007	TT-03-03	03/11/92	COMP	13/49-003JSL31	PO#01267
21184008	TT-09-02	03/11/92	COMP	13/49-003JSL31	PO#01267
21184009	SS-13	03/12/92	GRAB	13/49-003JSL31	PO#01266
21184010	SS-14	03/12/92	GRAB	13/49-003JSL31	PO#01266
21184011	TT-16-02	03/12/92	GRAB	13/49-003JSL31	PO#01266
21184012	TT-17-01	03/12/92	GRAB	13/49-003JSL31	PO#01266
21184013	TT-22-01	03/12/92	GRAB	13/49-003JSL31	PO#01266
21184014	M-04	03/12/92	GRAB	13/49-003JSL31	PO#01266

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INTERNAL STANDARD AND SURROGATE COMPOUNDS

VOLATILE ANALYSIS

The internal standards on the GC/MS volatile chromatograms are designated as IS1, IS2, and IS3. The surrogate standards are labelled as SS1, SS2, and SS3. The compounds corresponding to these labels are listed below.

LABEL	INTERNAL STANDARD COMPOUND
IS1	BROMOCHLOROMETHANE
IS2	1,4-DIFLUOROBENZENE
IS3	D5-CHLOROBENZENE

LABEL	SURROGATE STANDARD COMPOUND
SS1	D4-1,2-DICHLOROETHANE
SS2	D8-TOLUENE
SS3	1,4-BROMOFLUOROBENZENE

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INTERNAL STANDARD AND SURROGATE COMPOUNDS

SEMIVOLATILE ANALYSIS

The internal standards on the GC/MS semivolatile chromatograms are designated as IS1, IS2, IS3, IS4, IS5, and IS6. The surrogate standards are labelled as SS1, SS2, SS3, SS4, SS5, and SS6. The compounds corresponding to these labels are listed below.

LABEL	INTERNAL STANDARD COMPOUND
IS1	D4-1,4-DICHLOROBENZENE
IS2	D8-NAPHTHALENE
IS3	D10-ACENAPHTHENE
IS4	D10-PHENANTHRENE
IS5	D12-CHRYSENE
IS6	D12-PERYLENE

LABEL	SURROGATE STANDARD COMPOUND
SS1	2-FLUOROPHENOL
SS2	D5-PHENOL
SS3	D5-NITROBENZENE
SS4	2-FLUOROBIPHENYL
SS5	2,4,6-TRIBROMOPHENOL
SS6	D14-TERPHENYL

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SAMPLE DATA SUMMARY PACKAGE

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CASE NARRATIVE FOR VOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21184 SDG NO.: N/A

I. RECEIPT

A. DATE: March 13, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21184001	SS-06	SOIL	03/11/92	NA	03/19/92
21184002	SS-08	SOIL	03/11/92	NA	03/19/92
21184003	SS-09	SOIL	03/11/92	NA	03/19/92
21184004	SS-10	SOIL	03/11/92	NA	03/25/92
21184005	SS-11	SOIL	03/11/92	NA	03/25/92
21184006	SS-12	SOIL	03/11/92	NA	03/25/92
21184007	TT-03-03	SOIL	03/11/92	NA	03/25/92
21184008	TT-09-02	SOIL	03/11/92	NA	03/25/92
21184009	SS-13	SOIL	03/12/92	NA	03/25/92
21184010	SS-14	SOIL	03/12/92	NA	03/25/92
21184011	TT-16-02	SOIL	03/12/92	NA	03/25/92
21184012	TT-17-01	SOIL	03/12/92	NA	03/25/92
21184013	TT-22-01	SOIL	03/12/92	NA	03/25/92
21184014	M-04	SOIL	03/12/92	NA	03/25/92
21184014R	M-04_R	SOIL	03/12/92	NA	03/26/92
21184M04	SS-10MS	SOIL	03/11/92	NA	03/25/92
21184D04	SS-10MSD	SOIL	03/11/92	NA	03/25/92
Y03192B1	VBLKS	SOIL	NA	NA	03/19/92
Y03242B2	VBLKS_2	SOIL	NA	NA	03/24/92
Y03262B2	VBLKS_3	SOIL	NA	NA	03/26/92

C. Documentation
Exceptions : No exceptions were encountered.

II. EXTRACTION

A. Holding Times: Medium level protocol was not performed; therefore, extraction time is not applicable.

B. Extraction
Exceptions : Not applicable.

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III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : The original analysis of sample 21184014 (M-04) showed the absolute response of two internal standards below QC limits. The sample was reanalyzed with similar results. Therefore, the low responses may possibly be due to a matrix effect. The results of both analyses have been reported.

No other exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC limits.

C. Matrix Spike Results : All spike recoveries for 21184M04 and 21184D04 were within CLP advisory limits. These results represent samples 21184004 through 21184014R.

The native sample, matrix spike, and matrix spike duplicate results for samples 21184001 through 21184003 are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21136.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for Jewell W. Smiley 5/01/92
Herb Kelly Date
Manager, Organic Division

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CASE NARRATIVE FOR SEMIVOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21184 SDG NO.: N/A

I. RECEIPT

A. DATE: March 13, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21184001	SS-06	SOIL	03/11/92	03/18/92	03/31/92
21184002	SS-08	SOIL	03/11/92	03/18/92	03/31/92
21184003	SS-09	SOIL	03/11/92	03/18/92	03/31/92
21184004	SS-10	SOIL	03/11/92	03/18/92	03/31/92
21184005	SS-11	SOIL	03/11/92	03/18/92	03/31/92
21184006	SS-12	SOIL	03/11/92	03/18/92	03/31/92
21184009	SS-13	SOIL	03/12/92	03/18/92	03/31/92
21184010	SS-14	SOIL	03/12/92	03/18/92	03/31/92
21184010DL	SS-14_DL	SOIL	03/12/92	03/18/92	04/06/92
S03182B1	SBLKS	SOIL	NA	03/18/92	03/31/92

C. Documentation Exceptions : Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

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II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : These samples were processed through GPC cleanup eight days after GPC calibration, instead of within the normal seven days. The GPC calibration associated with this sample was performed on 03/11/92.

An additional GPC calibration plot (03/24/92) is included to demonstrate that the GPC remained within criteria.

No other exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : The original analysis of sample 21184010 (SS-14) showed target compounds above the calibration range. The sample was diluted and reanalyzed. The results of both analyses have been reported.

No other exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Samples 21184010 (SS-14) and 21184010DL (SS-14DL) required large dilutions for analysis. Therefore, surrogate recoveries could not be determined for these samples.

All other samples met acceptable QC limits.

C. Matrix Spike
Results : The native sample, matrix spike, and matrix spike duplicate results are contained within other batches of samples. The results for samples 21184001 through 21184006 will be reported with the results of our laboratory contract number 21107. The results for samples 21184009 through 21184010DL will be reported with the results of our laboratory contract number 21232.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for Jewell W. Smiley 5/01/92
Herb Kelly Date
Manager, Organic Division

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CASE NARRATIVE FOR PNA/PHENOL MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21184 SDG NO.: N/A

I. RECEIPT

A. DATE: March 13, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21184007	TT-03-03	SOIL	03/11/92	03/18/92	04/02/92
21184008	TT-09-02	SOIL	03/11/92	03/18/92	04/02/92
21184011	TT-16-02	SOIL	03/12/92	03/18/92	04/02/92
21184012	TT-17-01	SOIL	03/12/92	03/18/92	04/02/92
S03182B1	SBLKS	SOIL	NA	03/18/92	04/02/92

C. Documentation Exceptions : Tentatively Identified Compounds (TIC) were not requested as part of this analysis. Therefore, the TIC forms and raw data will not be included in this package.

As you have requested, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported separately. Due to the low concentrations analyzed for, there may be instances where the native matrix offers chromatographic interferences in this region of the chromatogram, making it difficult to correctly quantitate these isomers as separate compounds. In that case, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported as total Benzo(b&k)fluoranthene. An "NR" (not reported) qualifier will then be used for the compounds which are not reported.

Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

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II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21128.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for Jewell W. Smiley 5/01/92
Herb Kelly Date
Manager, Organic Division

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CASE NARRATIVE FOR PESTICIDE/PCB GAS CHROMATOGRAPHY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21184 SDG NO.: N/A

I. RECEIPT

A. DATE: March 13, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21184001	SS-06	SOIL	03/11/92	03/17/92	04/08/92
21184001DL	SS-06DL	SOIL	03/11/92	03/17/92	04/08/92
21184002	SS-08	SOIL	03/11/92	03/17/92	04/08/92
21184003	SS-09	SOIL	03/11/92	03/17/92	04/08/92
21184004	SS-10	SOIL	03/11/92	03/17/92	04/08/92
21184005	SS-11	SOIL	03/11/92	03/17/92	04/08/92
21184006	SS-12	SOIL	03/11/92	03/17/92	04/09/92
21184009	SS-13	SOIL	03/12/92	03/17/92	04/09/92
21184010	SS-14	SOIL	03/12/92	03/17/92	04/09/92
S03172B1	PBLK17	SOIL	NA	03/17/92	04/08/92

C. Documentation
Exceptions : No exceptions were encountered.

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II. EXTRACTION

A. Holding times: All holding times were met.

B. Extraction Exceptions : These samples were processed through GPC cleanup eight days after GPC calibration, instead of within the normal seven days. The GPC calibration associated with these samples was performed on 03/11/92.

An additional GPC calibration plot (03/24/92) has been included to demonstrate that the GPC remained in calibration.

No other exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : Internal standards were added to the pesticide/PCB samples before injection for internal QC purposes only. According to CLP protocol, only external standard calculations were performed for this report.

All extracts were processed through GPC, Florisil, and sulfur cleanups. Best reporting limits were still not achieved for three samples due to chemical interferences not removed from the extracts. Samples 21184001 (SS-06), 21184002 (SS-08), and 21184010 (SS-14) were diluted for analysis. Report limits for the PCBs and Toxaphene for these samples were raised beyond values predicted from the dilution factor alone.

No additional exceptions were encountered.

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IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Surrogate recoveries could not be determined for sample 21184010 due to chemical interferences, combined with the ten-fold dilution factor.

All other samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within other batches of samples. The results for samples 21184001 through 21184006 will be reported with the results of our laboratory contract number 21107. The results for samples 21184001 through 21184006 will be reported with the results of our laboratory contract number 21232.

D. Special Conditions : Primary and confirmation data was acquired by a single injection into a dual column/ECD system.

Please note that Forms IV, VI PEST-4, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

For Jewell W. Smiley 5/01/92
Herb Kelly Date
Manager, Organic Division

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 1444

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-06

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184001

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021076

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 22 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	20	B
67-64-1	Acetone	17	B
75-15-0	Carbon Disulfide	13	U
75-35-4	1,1-Dichloroethene	13	U
75-34-3	1,1-Dichloroethane	13	U
540-59-0	1,2-Dichloroethene (total)	13	U
67-66-3	Chloroform	13	U
107-06-2	1,2-Dichloroethane	13	U
78-93-3	2-Butanone	13	U
71-55-6	1,1,1-Trichloroethane	13	U
56-23-5	Carbon Tetrachloride	13	U
75-27-4	Bromodichloromethane	13	U
78-87-5	1,2-Dichloropropane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
79-01-6	Trichloroethene	13	U
124-48-1	Dibromochloromethane	13	U
79-00-5	1,1,2-Trichloroethane	13	U
71-43-2	Benzene	13	U
10061-02-6	trans-1,3-Dichloropropene	13	U
75-25-2	Bromoform	13	U
591-78-6	2-Hexanone	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
127-18-4	Tetrachloroethene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
108-88-3	Toluene	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
100-42-5	Styrene	13	U
1330-20-7	Xylene (total)	13	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-06

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184001

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021076

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 22 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-08

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184002

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021078

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 41 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	17	U
74-83-9	Bromomethane	17	U
75-01-4	Vinyl Chloride	17	U
75-00-3	Chloroethane	17	U
75-09-2	Methylene Chloride	71	B
67-64-1	Acetone	21	B
75-15-0	Carbon Disulfide	4	J
75-35-4	1,1-Dichloroethene	17	U
75-34-3	1,1-Dichloroethane	17	U
540-59-0	1,2-Dichloroethene (total)	17	U
67-66-3	Chloroform	17	U
107-06-2	1,2-Dichloroethane	17	U
78-93-3	2-Butanone	13	J
71-55-6	1,1,1-Trichloroethane	17	U
56-23-5	Carbon Tetrachloride	17	U
75-27-4	Bromodichloromethane	17	U
78-87-5	1,2-Dichloropropane	17	U
10061-01-5	cis-1,3-Dichloropropene	17	U
79-01-6	Trichloroethene	17	U
124-48-1	Dibromochloromethane	17	U
79-00-5	1,1,2-Trichloroethane	17	U
71-43-2	Benzene	17	U
10061-02-6	trans-1,3-Dichloropropene	17	U
75-25-2	Bromoform	17	U
591-78-6	2-Hexanone	17	U
108-10-1	4-Methyl-2-Pentanone	17	U
127-18-4	Tetrachloroethene	17	U
79-34-5	1,1,2,2-Tetrachloroethane	17	U
108-88-3	Toluene	17	U
108-90-7	Chlorobenzene	17	U
100-41-4	Ethylbenzene	17	U
100-42-5	Styrene	17	U
1330-20-7	Xylene (total)	17	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-08

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184002

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021078

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 41 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-09

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184003

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021079

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 16 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	22	B
67-64-1	Acetone	11	BJ
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	12	U
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
591-78-6	2-Hexanone	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	12	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-09

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184003

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021079

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 16 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-10

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184004

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021123

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 14 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	7	BJ
67-64-1	Acetone	12	B
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	2	BJ
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
591-78-6	2-Hexanone	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	12	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-10

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184004

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021123

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 14 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-11

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184005

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021124

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 6 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	7	BJ
67-64-1	Acetone	16	B
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	1	BJ
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	9	J
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
591-78-6	2-Hexanone	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-11

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184005

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021124

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 6 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-12

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184006

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021125

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 14 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	17	B
67-64-1	Acetone	20	B
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	2	BJ
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
591-78-6	2-Hexanone	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	12	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-12

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184006

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021125

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 14 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-03-03

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184007

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021126

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 21 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	25	B
67-64-1	Acetone	55	B
75-15-0	Carbon Disulfide	13	U
75-35-4	1,1-Dichloroethene	13	U
75-34-3	1,1-Dichloroethane	13	U
540-59-0	1,2-Dichloroethene (total)	13	U
67-66-3	Chloroform	2	BJ
107-06-2	1,2-Dichloroethane	13	U
78-93-3	2-Butanone	33	
71-55-6	1,1,1-Trichloroethane	13	U
56-23-5	Carbon Tetrachloride	13	U
75-27-4	Bromodichloromethane	13	U
78-87-5	1,2-Dichloropropane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
79-01-6	Trichloroethene	13	U
124-48-1	Dibromochloromethane	13	U
79-00-5	1,1,2-Trichloroethane	13	U
71-43-2	Benzene	13	U
10061-02-6	trans-1,3-Dichloropropene	13	U
75-25-2	Bromoform	13	U
591-78-6	2-Hexanone	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
127-18-4	Tetrachloroethene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
108-88-3	Toluene	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
100-42-5	Styrene	13	U
1330-20-7	Xylene (total)	2	J

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-03-03

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184007

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021126

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 21 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-09-02

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184008

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021127

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 15 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	16	B
67-64-1	Acetone	49	B
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	2	BJ
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	37	
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
591-78-6	2-Hexanone	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	1	J
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	2	J

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-09-02

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184008

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021127

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 15 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-13

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184009

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021128

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 10 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	10	BJ
67-64-1	Acetone	25	B
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	2	BJ
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	10	J
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
591-78-6	2-Hexanone	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-13

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184009

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021128

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 10 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-14

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184010

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021129

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 27 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	14	U
74-83-9	Bromomethane	14	U
75-01-4	Vinyl Chloride	14	U
75-00-3	Chloroethane	14	U
75-09-2	Methylene Chloride	26	B
67-64-1	Acetone	28	B
75-15-0	Carbon Disulfide	3	J
75-35-4	1,1-Dichloroethene	14	U
75-34-3	1,1-Dichloroethane	14	U
540-59-0	1,2-Dichloroethene (total)	14	U
67-66-3	Chloroform	2	BJ
107-06-2	1,2-Dichloroethane	14	U
78-93-3	2-Butanone	13	J
71-55-6	1,1,1-Trichloroethane	6	J
56-23-5	Carbon Tetrachloride	14	U
75-27-4	Bromodichloromethane	14	U
78-87-5	1,2-Dichloropropane	14	U
10061-01-5	cis-1,3-Dichloropropene	14	U
79-01-6	Trichloroethene	14	U
124-48-1	Dibromochloromethane	14	U
79-00-5	1,1,2-Trichloroethane	14	U
71-43-2	Benzene	35	
10061-02-6	trans-1,3-Dichloropropene	14	U
75-25-2	Bromoform	14	U
591-78-6	2-Hexanone	14	U
108-10-1	4-Methyl-2-Pentanone	14	U
127-18-4	Tetrachloroethene	14	U
79-34-5	1,1,2,2-Tetrachloroethane	14	U
108-88-3	Toluene	7	J
108-90-7	Chlorobenzene	14	U
100-41-4	Ethylbenzene	5	J
100-42-5	Styrene	5	J
1330-20-7	Xylene (total)	47	

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-14

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184010

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021129

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 27 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	BENZENE, ETHYL-, METHYL- ISO	19.95	13	J
2.	BENZENE, TRIMETHYL- ISOMER	20.05	17	J
3.	BENZENE, TRIMETHYL- ISOMER	20.75	33	J
4.	BENZENE, ETHENYLMETHYL- ISOM	20.90	7	J
5. 271-89-6	BENZOFURAN	21.44	8	J
6.	BENZENE, TRIMETHYL- ISOMER	21.62	15	J
7.	BENZENE, ETHYNYLMETHYL- ISOM	22.54	120	J
8.	NOT IDENTIFIED	23.62	21	J
9. 104-55-2	2-PROPENAL, 3-PHENYL-	23.72	18	J
10.	NOT IDENTIFIED	23.82	14	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-16-02

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184011

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C2VO021138

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 13 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	22	B
67-64-1	Acetone	24	B
75-15-0	Carbon Disulfide	2	J
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	15	
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
591-78-6	2-Hexanone	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-16-02

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184011

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C2VO021138

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 13 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-17-01

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184012

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C2VO021139

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 10 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	24	B
67-64-1	Acetone	34	B
75-15-0	Carbon Disulfide	2	J
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	16	
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
591-78-6	2-Hexanone	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-17-01

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184012

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C2VO021139

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 10 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-22-01

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184013

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021132

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 26 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	14	U
74-83-9	Bromomethane	14	U
75-01-4	Vinyl Chloride	14	U
75-00-3	Chloroethane	14	U
75-09-2	Methylene Chloride	42	B
67-64-1	Acetone	42	B
75-15-0	Carbon Disulfide	6	J
75-35-4	1,1-Dichloroethene	14	U
75-34-3	1,1-Dichloroethane	14	U
540-59-0	1,2-Dichloroethene (total)	14	U
67-66-3	Chloroform	2	BJ
107-06-2	1,2-Dichloroethane	14	U
78-93-3	2-Butanone	21	
71-55-6	1,1,1-Trichloroethane	14	U
56-23-5	Carbon Tetrachloride	14	U
75-27-4	Bromodichloromethane	14	U
78-87-5	1,2-Dichloropropane	14	U
10061-01-5	cis-1,3-Dichloropropene	14	U
79-01-6	Trichloroethene	14	U
124-48-1	Dibromochloromethane	14	U
79-00-5	1,1,2-Trichloroethane	14	U
71-43-2	Benzene	14	U
10061-02-6	trans-1,3-Dichloropropene	14	U
75-25-2	Bromoform	14	U
591-78-6	2-Hexanone	14	U
108-10-1	4-Methyl-2-Pentanone	14	U
127-18-4	Tetrachloroethene	14	U
79-34-5	1,1,2,2-Tetrachloroethane	14	U
108-88-3	Toluene	14	U
108-90-7	Chlorobenzene	14	U
100-41-4	Ethylbenzene	14	U
100-42-5	Styrene	14	U
1330-20-7	Xylene (total)	14	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-22-01

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184013

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021132

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 26 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

M-04

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184014

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021133

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 28 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	14	U
74-83-9	Bromomethane	14	U
75-01-4	Vinyl Chloride	14	U
75-00-3	Chloroethane	14	U
75-09-2	Methylene Chloride	83	B
67-64-1	Acetone	98	B
75-15-0	Carbon Disulfide	10	J
75-35-4	1,1-Dichloroethene	14	U
75-34-3	1,1-Dichloroethane	14	U
540-59-0	1,2-Dichloroethene (total)	14	U
67-66-3	Chloroform	2	BJ
107-06-2	1,2-Dichloroethane	14	U
78-93-3	2-Butanone	42	
71-55-6	1,1,1-Trichloroethane	6	J
56-23-5	Carbon Tetrachloride	14	U
75-27-4	Bromodichloromethane	14	U
78-87-5	1,2-Dichloropropane	14	U
10061-01-5	cis-1,3-Dichloropropene	14	U
79-01-6	Trichloroethene	14	U
124-48-1	Dibromochloromethane	14	U
79-00-5	1,1,2-Trichloroethane	14	U
71-43-2	Benzene	14	U
10061-02-6	trans-1,3-Dichloropropene	14	U
75-25-2	Bromoform	14	U
591-78-6	2-Hexanone	14	U
108-10-1	4-Methyl-2-Pentanone	14	U
127-18-4	Tetrachloroethene	14	U
79-34-5	1,1,2,2-Tetrachloroethane	14	U
108-88-3	Toluene	14	U
108-90-7	Chlorobenzene	14	U
100-41-4	Ethylbenzene	14	U
100-42-5	Styrene	14	U
1330-20-7	Xylene (total)	14	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

M-04

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184014

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021133

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 28 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

M-04_R

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184014R

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C2VO021166

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 28 Date Analyzed: 03/26/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	14	U
74-83-9	Bromomethane	14	U
75-01-4	Vinyl Chloride	14	U
75-00-3	Chloroethane	14	U
75-09-2	Methylene Chloride	86	B
67-64-1	Acetone	88	B
75-15-0	Carbon Disulfide	26	
75-35-4	1,1-Dichloroethene	14	U
75-34-3	1,1-Dichloroethane	14	U
540-59-0	1,2-Dichloroethene (total)	14	U
67-66-3	Chloroform	14	U
107-06-2	1,2-Dichloroethane	14	U
78-93-3	2-Butanone	23	
71-55-6	1,1,1-Trichloroethane	14	U
56-23-5	Carbon Tetrachloride	14	U
75-27-4	Bromodichloromethane	14	U
78-87-5	1,2-Dichloropropane	14	U
10061-01-5	cis-1,3-Dichloropropene	14	U
79-01-6	Trichloroethene	14	U
124-48-1	Dibromochloromethane	14	U
79-00-5	1,1,2-Trichloroethane	14	U
71-43-2	Benzene	14	U
10061-02-6	trans-1,3-Dichloropropene	14	U
75-25-2	Bromoform	14	U
591-78-6	2-Hexanone	14	U
108-10-1	4-Methyl-2-Pentanone	14	U
127-18-4	Tetrachloroethene	14	U
79-34-5	1,1,2,2-Tetrachloroethane	14	U
108-88-3	Toluene	2	J
108-90-7	Chlorobenzene	14	U
100-41-4	Ethylbenzene	14	U
100-42-5	Styrene	14	U
1330-20-7	Xylene (total)	4	J

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

M-04_R

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184014R

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C2VO021166

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: not dec. 28 Date Analyzed: 03/26/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-06

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013513

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 17 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	bis(2-Chloroethyl)Ether	400	U
95-57-8	2-Chlorophenol	400	U
541-73-1	1,3-Dichlorobenzene	400	U
106-46-7	1,4-Dichlorobenzene	400	U
95-50-1	1,2-Dichlorobenzene	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-Di-n-Propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
111-91-1	bis(2-Chloroethoxy)Methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	220	J
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-Methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	960	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	960	U
131-11-3	Dimethylphthalate	400	U
208-96-8	Acenaphthylene	400	U
606-20-2	2,6-Dinitrotoluene	400	U
99-09-2	3-Nitroaniline	960	U
83-32-9	Acenaphthene	400	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-06

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013513

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 17 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	960	U
100-02-7	4-Nitrophenol	960	U
132-64-9	Dibenzofuran	400	U
121-14-2	2,4-Dinitrotoluene	400	U
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-10-6	4-Nitroaniline	960	U
534-52-1	4,6-Dinitro-2-methylphenol	960	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	960	U
85-01-8	Phenanthrene	150	J
120-12-7	Anthracene	400	U
86-74-8	Carbazole	400	U
84-74-2	Di-n-Butylphthalate	400	U
206-44-0	Fluoranthene	130	J
129-00-0	Pyrene	100	J
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	400	U
56-55-3	Benzo(a)Anthracene	58	J
218-01-9	Chrysene	120	J
117-81-7	bis(2-Ethylhexyl)Phthalate	400	U
117-84-0	Di-n-Octyl Phthalate	400	U
205-99-2	Benzo(b)Fluoranthene	65	J
207-08-9	Benzo(k)Fluoranthene	68	J
50-32-8	Benzo(a)Pyrene	55	J
193-39-5	Indeno(1,2,3-cd)Pyrene	400	U
53-70-3	Dibenz(a,h)Anthracene	400	U
191-24-2	Benzo(g,h,i)Perylene	400	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-06

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013513

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 17 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Number TICs found: 11

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	6.92	390	J
2.	NOT IDENTIFIED	7.88	350	J
3. 3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	7.93	180	BJ
4. 18641-71-9	3-HEPTANONE, 2,4-DIMETHYL-	8.90	260	BJ
5.	NOT IDENTIFIED	9.97	200	J
6. 17851-53-5	1,2-BENZENEDICARBOXYLIC ACID	22.52	170	BJ
7. 57-10-3	HEXADECANOIC ACID	23.59	230	J
8. 544-76-3	HEXADECANE	32.66	190	J
9.	NOT IDENTIFIED	36.36	380	J
10.	NOT IDENTIFIED	3.93	780	J
11.	NOT IDENTIFIED	4.95	15000	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-08

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013519

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 30 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	14000	
111-44-4	bis(2-Chloroethyl)Ether	1900	U
95-57-8	2-Chlorophenol	1900	U
541-73-1	1,3-Dichlorobenzene	1900	U
106-46-7	1,4-Dichlorobenzene	1900	U
95-50-1	1,2-Dichlorobenzene	1900	U
95-48-7	2-Methylphenol	3000	
108-60-1	2,2'-oxybis(1-Chloropropane)	1900	U
106-44-5	4-Methylphenol	9300	
621-64-7	N-Nitroso-Di-n-Propylamine	1900	U
67-72-1	Hexachloroethane	1900	U
98-95-3	Nitrobenzene	1900	U
78-59-1	Isophorone	1900	U
88-75-5	2-Nitrophenol	1900	U
105-67-9	2,4-Dimethylphenol	910	J
111-91-1	bis(2-Chloroethoxy)Methane	1900	U
120-83-2	2,4-Dichlorophenol	1900	U
120-82-1	1,2,4-Trichlorobenzene	1900	U
91-20-3	Naphthalene	5600	
106-47-8	4-Chloroaniline	1900	U
87-68-3	Hexachlorobutadiene	1900	U
59-50-7	4-Chloro-3-Methylphenol	1900	U
91-57-6	2-Methylnaphthalene	1300	J
77-47-4	Hexachlorocyclopentadiene	1900	U
88-06-2	2,4,6-Trichlorophenol	1900	U
95-95-4	2,4,5-Trichlorophenol	4600	U
91-58-7	2-Chloronaphthalene	1900	U
88-74-4	2-Nitroaniline	4600	U
131-11-3	Dimethylphthalate	1900	U
208-96-8	Acenaphthylene	1900	
606-20-2	2,6-Dinitrotoluene	1900	U
99-09-2	3-Nitroaniline	4600	U
83-32-9	Acenaphthene	210	J

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-08

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013519

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 30 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	4600	U
100-02-7	4-Nitrophenol	4600	U
132-64-9	Dibenzofuran	1700	J
121-14-2	2,4-Dinitrotoluene	1900	U
84-66-2	Diethylphthalate	1900	U
7005-72-3	4-Chlorophenyl-phenylether	1900	U
86-73-7	Fluorene	3100	
100-10-6	4-Nitroaniline	4600	U
534-52-1	4,6-Dinitro-2-methylphenol	4600	U
86-30-6	N-Nitrosodiphenylamine (1)	1900	U
101-55-3	4-Bromophenyl-phenylether	1900	U
118-74-1	Hexachlorobenzene	1900	U
87-86-5	Pentachlorophenol	4600	U
85-01-8	Phenanthrene	10000	
120-12-7	Anthracene	3600	
86-74-8	Carbazole	2300	
84-74-2	Di-n-Butylphthalate	1900	U
206-44-0	Fluoranthene	8600	
129-00-0	Pyrene	6000	
85-68-7	Butylbenzylphthalate	1900	U
91-94-1	3,3'-Dichlorobenzidine	1900	U
56-55-3	Benzo(a)Anthracene	4600	
218-01-9	Chrysene	4800	
117-81-7	bis(2-Ethylhexyl)Phthalate	1900	U
117-84-0	Di-n-Octyl Phthalate	1900	U
205-99-2	Benzo(b)Fluoranthene	3500	
207-08-9	Benzo(k)Fluoranthene	2800	
50-32-8	Benzo(a)Pyrene	2900	
193-39-5	Indeno(1,2,3-cd)Pyrene	2000	
53-70-3	Dibenz(a,h)Anthracene	760	J
191-24-2	Benzo(g,h,i)Perylene	1400	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-08

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013519

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 30 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) Y pH: ____

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 3218-36-8	[1,1'-BIPHENYL]-4-CARBOXALDE	19.57	2500	J
2.	ANTHRACENE, METHYL- ISOMER	22.97	2100	J
3.	ANTHRACENE, METHYL- ISOMER	23.05	2400	J
4.	PHENANTHRENE, METHYL- ISOMER	23.29	3900	J
5. 544-76-3	HEXADECANE	24.02	2400	J
6.	UNIDENTIFIED HYDROCARBON	25.16	3000	J
7. 629-78-7	HEPTADECANE	26.22	4200	J
8. 2381-21-7	PYRENE, 1-METHYL-	26.66	4900	J
9. 238-84-6	11H-BENZO[A]FLUORENE	26.84	4000	J
10.	UNKNOWN HYDROCARBON	27.26	5000	J
11.	NOT IDENTIFIED	27.87	2100	J
12. 630-07-9	PENTATRIACONTANE	28.26	3600	J
13.	NOT IDENTIFIED	29.77	2800	J
14.	UNKNOWN HYDROCARBON	30.12	4300	J
15.	NOT IDENTIFIED	30.66	4400	J
16.	UNKNOWN HYDROCARBON	30.99	3300	J
17.	UNKNOWN HYDROCARBON	31.86	2700	J
18.	NOT IDENTIFIED	32.69	5100	J
19.	NOT IDENTIFIED	33.47	2700	J
20.	NOT IDENTIFIED	4.67	20000	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-09

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013514

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 19 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	410	U
111-44-4	bis(2-Chloroethyl)Ether	410	U
95-57-8	2-Chlorophenol	410	U
541-73-1	1,3-Dichlorobenzene	410	U
106-46-7	1,4-Dichlorobenzene	410	U
95-50-1	1,2-Dichlorobenzene	410	U
95-48-7	2-Methylphenol	410	U
108-60-1	2,2'-oxybis(1-Chloropropane)	410	U
106-44-5	4-Methylphenol	410	U
621-64-7	N-Nitroso-Di-n-Propylamine	410	U
67-72-1	Hexachloroethane	410	U
98-95-3	Nitrobenzene	410	U
78-59-1	Isophorone	410	U
88-75-5	2-Nitrophenol	410	U
105-67-9	2,4-Dimethylphenol	410	U
111-91-1	bis(2-Chloroethoxy)Methane	410	U
120-83-2	2,4-Dichlorophenol	410	U
120-82-1	1,2,4-Trichlorobenzene	410	U
91-20-3	Naphthalene	410	U
106-47-8	4-Chloroaniline	410	U
87-68-3	Hexachlorobutadiene	410	U
59-50-7	4-Chloro-3-Methylphenol	410	U
91-57-6	2-Methylnaphthalene	410	U
77-47-4	Hexachlorocyclopentadiene	410	U
88-06-2	2,4,6-Trichlorophenol	410	U
95-95-4	2,4,5-Trichlorophenol	990	U
91-58-7	2-Chloronaphthalene	410	U
88-74-4	2-Nitroaniline	990	U
131-11-3	Dimethylphthalate	410	U
208-96-8	Acenaphthylene	410	U
606-20-2	2,6-Dinitrotoluene	410	U
99-09-2	3-Nitroaniline	990	U
83-32-9	Acenaphthene	410	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-09

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013514

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 19 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	990	U
100-02-7	4-Nitrophenol	990	U
132-64-9	Dibenzofuran	410	U
121-14-2	2,4-Dinitrotoluene	410	U
84-66-2	Diethylphthalate	410	U
7005-72-3	4-Chlorophenyl-phenylether	410	U
86-73-7	Fluorene	410	U
100-10-6	4-Nitroaniline	990	U
534-52-1	4,6-Dinitro-2-methylphenol	990	U
86-30-6	N-Nitrosodiphenylamine (1)	410	U
101-55-3	4-Bromophenyl-phenylether	410	U
118-74-1	Hexachlorobenzene	410	U
87-86-5	Pentachlorophenol	990	U
85-01-8	Phenanthrene	410	U
120-12-7	Anthracene	410	U
86-74-8	Carbazole	410	U
84-74-2	Di-n-Butylphthalate	45	BJ
206-44-0	Fluoranthene	410	U
129-00-0	Pyrene	410	U
85-68-7	Butylbenzylphthalate	410	U
91-94-1	3,3'-Dichlorobenzidine	410	U
56-55-3	Benzo(a)Anthracene	410	U
218-01-9	Chrysene	410	U
117-81-7	bis(2-Ethylhexyl)Phthalate	410	U
117-84-0	Di-n-Octyl Phthalate	410	U
205-99-2	Benzo(b)Fluoranthene	410	U
207-08-9	Benzo(k)Fluoranthene	410	U
50-32-8	Benzo(a)Pyrene	410	U
193-39-5	Indeno(1,2,3-cd)Pyrene	410	U
53-70-3	Dibenz(a,h)Anthracene	410	U
191-24-2	Benzo(g,h,i)Perylene	410	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-09

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013514

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 19 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

nber TICs found: 12

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	4.25	340	J
2.	NOT IDENTIFIED	7.02	460	J
3. 3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	7.97	410	BJ
4. 18641-71-9	3-HEPTANONE, 2,4-DIMETHYL-	8.92	200	BJ
5. 628-68-2	ETHANOL, 2,2'-OXYBIS-, DIACE	9.20	140	J
6.	NOT IDENTIFIED	10.00	270	J
7. 6938-94-9	HEXANEDIOIC ACID, BIS(1-METH	16.87	130	J
8. 17851-53-5	1,2-BENZENEDICARBOXYLIC ACID	22.52	150	BJ
9. 57-10-3	HEXADECANOIC ACID	23.55	99	J
10.	NOT IDENTIFIED	29.11	84	J
11.	NOT IDENTIFIED	35.66	340	J
12.	NOT IDENTIFIED	5.18	16000	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-10

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013515

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 15 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	390	U
111-44-4	bis(2-Chloroethyl)Ether	390	U
95-57-8	2-Chlorophenol	390	U
541-73-1	1,3-Dichlorobenzene	390	U
106-46-7	1,4-Dichlorobenzene	390	U
95-50-1	1,2-Dichlorobenzene	390	U
95-48-7	2-Methylphenol	390	U
108-60-1	2,2'-oxybis(1-Chloropropane)	390	U
106-44-5	4-Methylphenol	390	U
621-64-7	N-Nitroso-Di-n-Propylamine	390	U
67-72-1	Hexachloroethane	390	U
98-95-3	Nitrobenzene	390	U
78-59-1	Isophorone	390	U
88-75-5	2-Nitrophenol	390	U
105-67-9	2,4-Dimethylphenol	390	U
111-91-1	bis(2-Chloroethoxy)Methane	390	U
120-83-2	2,4-Dichlorophenol	390	U
120-82-1	1,2,4-Trichlorobenzene	390	U
91-20-3	Naphthalene	390	U
106-47-8	4-Chloroaniline	390	U
87-68-3	Hexachlorobutadiene	390	U
59-50-7	4-Chloro-3-Methylphenol	390	U
91-57-6	2-Methylnaphthalene	390	U
77-47-4	Hexachlorocyclopentadiene	390	U
88-06-2	2,4,6-Trichlorophenol	390	U
95-95-4	2,4,5-Trichlorophenol	940	U
91-58-7	2-Chloronaphthalene	390	U
88-74-4	2-Nitroaniline	940	U
131-11-3	Dimethylphthalate	390	U
208-96-8	Acenaphthylene	390	U
606-20-2	2,6-Dinitrotoluene	390	U
99-09-2	3-Nitroaniline	940	U
83-32-9	Acenaphthene	390	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-10

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013515

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 15 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	940	U
100-02-7	4-Nitrophenol	940	U
132-64-9	Dibenzofuran	390	U
121-14-2	2,4-Dinitrotoluene	390	U
84-66-2	Diethylphthalate	390	U
7005-72-3	4-Chlorophenyl-phenylether	390	U
86-73-7	Fluorene	390	U
100-10-6	4-Nitroaniline	940	U
534-52-1	4,6-Dinitro-2-methylphenol	940	U
86-30-6	N-Nitrosodiphenylamine (1)	390	U
101-55-3	4-Bromophenyl-phenylether	390	U
118-74-1	Hexachlorobenzene	390	U
87-86-5	Pentachlorophenol	940	U
85-01-8	Phenanthrene	150	J
120-12-7	Anthracene	390	U
86-74-8	Carbazole	390	U
84-74-2	Di-n-Butylphthalate	39	BJ
206-44-0	Fluoranthene	380	J
129-00-0	Pyrene	310	J
85-68-7	Butylbenzylphthalate	390	U
91-94-1	3,3'-Dichlorobenzidine	390	U
56-55-3	Benzo(a)Anthracene	240	J
218-01-9	Chrysene	300	J
117-81-7	bis(2-Ethylhexyl)Phthalate	280	J
117-84-0	Di-n-Octyl Phthalate	390	U
205-99-2	Benzo(b)Fluoranthene	260	J
207-08-9	Benzo(k)Fluoranthene	280	J
50-32-8	Benzo(a)Pyrene	190	J
193-39-5	Indeno(1,2,3-cd)Pyrene	160	J
53-70-3	Dibenz(a,h)Anthracene	60	J
191-24-2	Benzo(g,h,i)Perylene	170	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-10

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013515

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 15 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Number TICs found: 12

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	6.88	400	J
2. 3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	7.85	400	BJ
3. 18641-71-9	3-HEPTANONE, 2,4-DIMETHYL-	8.89	340	BJ
4. 628-68-2	ETHANOL, 2,2'-OXYBIS-, DIACE	9.17	160	J
5.	NOT IDENTIFIED	9.99	470	J
6. 17851-53-5	1,2-BENZENEDICARBOXYLIC ACID	22.52	230	BJ
7. 57-10-3	HEXADECANOIC ACID	23.55	140	J
8.	NOT IDENTIFIED	28.26	81	J
9. 205-82-3	BENZO[J]FLUORANTHENE	32.59	250	J
10.	NOT IDENTIFIED	35.64	410	J
11.	NOT IDENTIFIED	3.80	870	J
12.	NOT IDENTIFIED	4.95	15000	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-11

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013516

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 11 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	370	U
111-44-4	bis(2-Chloroethyl)Ether	370	U
95-57-8	2-Chlorophenol	370	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
95-50-1	1,2-Dichlorobenzene	370	U
95-48-7	2-Methylphenol	370	U
108-60-1	2,2'-oxybis(1-Chloropropane)	370	U
106-44-5	4-Methylphenol	370	U
621-64-7	N-Nitroso-Di-n-Propylamine	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
88-75-5	2-Nitrophenol	370	U
105-67-9	2,4-Dimethylphenol	370	U
111-91-1	bis(2-Chloroethoxy)Methane	370	U
120-83-2	2,4-Dichlorophenol	370	U
120-82-1	1,2,4-Trichlorobenzene	370	U
91-20-3	Naphthalene	370	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
59-50-7	4-Chloro-3-Methylphenol	370	U
91-57-6	2-Methylnaphthalene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
88-06-2	2,4,6-Trichlorophenol	370	U
95-95-4	2,4,5-Trichlorophenol	900	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	900	U
131-11-3	Dimethylphthalate	370	U
208-96-8	Acenaphthylene	43	J
606-20-2	2,6-Dinitrotoluene	370	U
99-09-2	3-Nitroaniline	900	U
83-32-9	Acenaphthene	370	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-11

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013516

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 11 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	900	U
100-02-7	4-Nitrophenol	900	U
132-64-9	Dibenzofuran	370	U
121-14-2	2,4-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-phenylether	370	U
86-73-7	Fluorene	370	U
100-10-6	4-Nitroaniline	900	U
534-52-1	4,6-Dinitro-2-methylphenol	900	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
87-86-5	Pentachlorophenol	900	U
85-01-8	Phenanthrene	80	J
120-12-7	Anthracene	370	U
86-74-8	Carbazole	370	U
84-74-2	Di-n-Butylphthalate	47	BJ
206-44-0	Fluoranthene	370	J
129-00-0	Pyrene	300	J
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(a)Anthracene	120	J
218-01-9	Chrysene	220	J
117-81-7	bis(2-Ethylhexyl)Phthalate	350	J
117-84-0	Di-n-Octyl Phthalate	370	U
205-99-2	Benzo(b)Fluoranthene	150	J
207-08-9	Benzo(k)Fluoranthene	200	J
50-32-8	Benzo(a)Pyrene	120	J
193-39-5	Indeno(1,2,3-cd)Pyrene	96	J
53-70-3	Dibenz(a,h)Anthracene	370	U
191-24-2	Benzo(g,h,i)Perylene	63	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-11

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013516

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 11 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

mber TICs found: 15

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	6.97	350	J
2. 80-56-8	.ALPHA.-PINENE (ACN)	7.18	490	J
3.	NOT IDENTIFIED	7.37	230	J
4. 3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	7.95	280	BJ
5. 127-91-3	.BETA.-PINENE	8.22	220	J
6. 18641-71-9	3-HEPTANONE, 2,4-DIMETHYL-	8.90	190	BJ
7. 628-68-2	ETHANOL, 2,2'-OXYBIS-, DIACE	9.20	130	J
8.	NOT IDENTIFIED	10.00	280	J
9. 6938-94-9	HEXANEDIOIC ACID, BIS(1-METH	16.87	120	J
10. 17851-53-5	1,2-BENZENEDICARBOXYLIC ACID	22.52	210	BJ
11. 57-10-3	HEXADECANOIC ACID	23.55	150	J
12.	NOT IDENTIFIED	28.26	87	J
13.	NOT IDENTIFIED	29.24	180	J
14.	NOT IDENTIFIED	4.12	690	J
15.	NOT IDENTIFIED	5.17	13000	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-12

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184006

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013517

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 17 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	bis(2-Chloroethyl)Ether	400	U
95-57-8	2-Chlorophenol	400	U
541-73-1	1,3-Dichlorobenzene	400	U
106-46-7	1,4-Dichlorobenzene	400	U
95-50-1	1,2-Dichlorobenzene	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-Di-n-Propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
111-91-1	bis(2-Chloroethoxy)Methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-Methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	960	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	960	U
131-11-3	Dimethylphthalate	400	U
208-96-8	Acenaphthylene	400	U
606-20-2	2,6-Dinitrotoluene	400	U
99-09-2	3-Nitroaniline	960	U
83-32-9	Acenaphthene	400	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-12

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184006

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013517

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 17 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	960	U
100-02-7	4-Nitrophenol	960	U
132-64-9	Dibenzofuran	400	U
121-14-2	2,4-Dinitrotoluene	400	U
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-10-6	4-Nitroaniline	960	U
534-52-1	4,6-Dinitro-2-methylphenol	960	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	960	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
86-74-8	Carbazole	400	U
84-74-2	Di-n-Butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	400	U
56-55-3	Benzo(a)Anthracene	400	U
218-01-9	Chrysene	400	U
117-81-7	bis(2-Ethylhexyl)Phthalate	85	J
117-84-0	Di-n-Octyl Phthalate	400	U
205-99-2	Benzo(b)Fluoranthene	400	U
207-08-9	Benzo(k)Fluoranthene	400	U
50-32-8	Benzo(a)Pyrene	400	U
193-39-5	Indeno(1,2,3-cd)Pyrene	400	U
53-70-3	Dibenz(a,h)Anthracene	400	U
191-24-2	Benzo(g,h,i)Perylene	400	U

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-12

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184006

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013517

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 17 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Number TICs found: 9

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	7.02	340	J
2.	NOT IDENTIFIED	7.40	260	J
3. 3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	7.93	310	BJ
4. 18641-71-9	3-HEPTANONE, 2,4-DIMETHYL-	8.92	140	BJ
5.	NOT IDENTIFIED	10.00	250	J
6. 17851-53-5	1,2-BENZENEDICARBOXYLIC ACID	22.52	200	BJ
7. 57-10-3	HEXADECANOIC ACID	23.55	110	J
8.	NOT IDENTIFIED	4.22	630	J
9.	NOT IDENTIFIED	5.18	12000	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-13

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184009

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013518

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 14 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	380	U
111-44-4	bis(2-Chloroethyl)Ether	380	U
95-57-8	2-Chlorophenol	380	U
541-73-1	1,3-Dichlorobenzene	380	U
106-46-7	1,4-Dichlorobenzene	380	U
95-50-1	1,2-Dichlorobenzene	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	2,2'-oxybis(1-Chloropropane)	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-Di-n-Propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
111-91-1	bis(2-Chloroethoxy)Methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
120-82-1	1,2,4-Trichlorobenzene	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
59-50-7	4-Chloro-3-Methylphenol	380	U
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	930	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	930	U
131-11-3	Dimethylphthalate	380	U
208-96-8	Acenaphthylene	380	U
606-20-2	2,6-Dinitrotoluene	380	U
99-09-2	3-Nitroaniline	930	U
83-32-9	Acenaphthene	380	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-13

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184009

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013518

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 14 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	930	U
100-02-7	4-Nitrophenol	930	U
132-64-9	Dibenzofuran	380	U
121-14-2	2,4-Dinitrotoluene	380	U
84-66-2	Diethylphthalate	380	U
7005-72-3	4-Chlorophenyl-phenylether	380	U
86-73-7	Fluorene	380	U
100-10-6	4-Nitroaniline	930	U
534-52-1	4,6-Dinitro-2-methylphenol	930	U
86-30-6	N-Nitrosodiphenylamine (1)	380	U
101-55-3	4-Bromophenyl-phenylether	380	U
118-74-1	Hexachlorobenzene	380	U
87-86-5	Pentachlorophenol	930	U
85-01-8	Phenanthrene	100	J
120-12-7	Anthracene	380	U
86-74-8	Carbazole	380	U
84-74-2	Di-n-Butylphthalate	41	BJ
206-44-0	Fluoranthene	160	J
129-00-0	Pyrene	130	J
85-68-7	Butylbenzylphthalate	380	U
91-94-1	3,3'-Dichlorobenzidine	380	U
56-55-3	Benzo(a)Anthracene	60	J
218-01-9	Chrysene	94	J
117-81-7	bis(2-Ethylhexyl)Phthalate	300	J
117-84-0	Di-n-Octyl Phthalate	380	U
205-99-2	Benzo(b)Fluoranthene	68	J
207-08-9	Benzo(k)Fluoranthene	67	J
50-32-8	Benzo(a)Pyrene	51	J
193-39-5	Indeno(1,2,3-cd)Pyrene	42	J
53-70-3	Dibenz(a,h)Anthracene	380	U
191-24-2	Benzo(g,h,i)Perylene	380	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-13

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184009

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013518

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 14 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Number TICs found: 9

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	7.00	430	J
2.	NOT IDENTIFIED	7.40	530	J
3. 3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	7.93	340	BJ
4. 18641-71-9	3-HEPTANONE, 2,4-DIMETHYL-	8.92	400	BJ
5. 628-68-2	ETHANOL, 2,2'-OXYBIS-, DIACE	9.22	130	J
6.	NOT IDENTIFIED	10.02	450	J
7. 6938-94-9	HEXANEDIOIC ACID, BIS(1-METH	16.89	130	J
8.	NOT IDENTIFIED	5.17	14000	J
9.	NOT IDENTIFIED	4.15	830	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-14

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184010

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013520

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 28 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 20.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	1200	J
111-44-4	bis(2-Chloroethyl)Ether	9200	U
95-57-8	2-Chlorophenol	9200	U
541-73-1	1,3-Dichlorobenzene	9200	U
106-46-7	1,4-Dichlorobenzene	9200	U
95-50-1	1,2-Dichlorobenzene	9200	U
95-48-7	2-Methylphenol	9200	U
108-60-1	2,2'-oxybis(1-Chloropropane)	9200	U
106-44-5	4-Methylphenol	1200	J
621-64-7	N-Nitroso-Di-n-Propylamine	9200	U
67-72-1	Hexachloroethane	9200	U
98-95-3	Nitrobenzene	9200	U
78-59-1	Isophorone	9200	U
88-75-5	2-Nitrophenol	9200	U
105-67-9	2,4-Dimethylphenol	9200	U
111-91-1	bis(2-Chloroethoxy)Methane	9200	U
120-83-2	2,4-Dichlorophenol	9200	U
120-82-1	1,2,4-Trichlorobenzene	9200	U
91-20-3	Naphthalene	43000	
106-47-8	4-Chloroaniline	9200	U
87-68-3	Hexachlorobutadiene	9200	U
59-50-7	4-Chloro-3-Methylphenol	9200	U
91-57-6	2-Methylnaphthalene	15000	
77-47-4	Hexachlorocyclopentadiene	9200	U
88-06-2	2,4,6-Trichlorophenol	9200	U
95-95-4	2,4,5-Trichlorophenol	22000	U
91-58-7	2-Chloronaphthalene	9200	U
88-74-4	2-Nitroaniline	22000	U
131-11-3	Dimethylphthalate	9200	U
208-96-8	Acenaphthylene	24000	
606-20-2	2,6-Dinitrotoluene	9200	U
99-09-2	3-Nitroaniline	22000	U
83-32-9	Acenaphthene	3000	J

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-14

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184010

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013520

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 28 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 20.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	22000	U
100-02-7	4-Nitrophenol	22000	U
132-64-9	Dibenzofuran	20000	
121-14-2	2,4-Dinitrotoluene	9200	U
84-66-2	Diethylphthalate	9200	U
7005-72-3	4-Chlorophenyl-phenylether	9200	U
86-73-7	Fluorene	37000	
100-10-6	4-Nitroaniline	22000	U
534-52-1	4,6-Dinitro-2-methylphenol	22000	U
86-30-6	N-Nitrosodiphenylamine (1)	9200	U
101-55-3	4-Bromophenyl-phenylether	9200	U
118-74-1	Hexachlorobenzene	9200	U
87-86-5	Pentachlorophenol	22000	U
85-01-8	Phenanthrene	89000	E
120-12-7	Anthracene	31000	
86-74-8	Carbazole	18000	
84-74-2	Di-n-Butylphthalate	9200	U
206-44-0	Fluoranthene	64000	
129-00-0	Pyrene	50000	
85-68-7	Butylbenzylphthalate	9200	U
91-94-1	3,3'-Dichlorobenzidine	9200	U
56-55-3	Benzo(a)Anthracene	30000	
218-01-9	Chrysene	26000	
117-81-7	bis(2-Ethylhexyl)Phthalate	9200	U
117-84-0	Di-n-Octyl Phthalate	9200	U
205-99-2	Benzo(b)Fluoranthene	21000	
207-08-9	Benzo(k)Fluoranthene	22000	
50-32-8	Benzo(a)Pyrene	21000	
193-39-5	Indeno(1,2,3-cd)Pyrene	12000	
53-70-3	Dibenz(a,h)Anthracene	4300	J
191-24-2	Benzo(g,h,i)Perylene	7500	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-14

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184010

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013520

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 28 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 20.0

GPC Cleanup: (Y/N) Y pH: ____

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	4.55	18000	J
2. 90-12-0	NAPHTHALENE, 1-METHYL-	14.65	11000	J
3. 132-65-0	DIBENZOTHIOPHENE	21.14	9200	J
4.	ANTHRACENE, METHYL- ISOMER	22.92	11000	J
5.	ANTHRACENE, METHYL- ISOMER	23.00	13000	J
6.	NOT IDENTIFIED	23.22	23000	J
7.	ANTHRACENE, METHYL- ISOMER	23.30	12000	J
8. 612-94-2	NAPHTHALENE, 2-PHENYL-	23.84	13000	J
9.	UNKNOWN HYDROCARBON	25.19	31000	J
10. 2381-21-7	PYRENE, 1-METHYL-	26.26	13000	J
11.	11H-BENZOFLUORENE ISOMER	26.61	46000	J
12.	11H-BENZOFLUORENE ISOMER	26.79	43000	J
13. 64401-21-4	PYRENE, 1,3-DIMETHYL-	27.81	11000	J
14. 205-43-6	BENZO[B]NAPHTHO[1,2-D]THIOPH	28.32	10000	J
15. 195-19-7	BENZO[C]PHENANTHRENE	28.44	14000	J
16.	NOT IDENTIFIED	28.56	11000	J
17. 2693-46-1	3-FLUORANTHENAMINE	29.86	13000	J
18. 1705-84-6	TRIPHENYLENE, 2-METHYL-	30.24	17000	J
19.	NOT IDENTIFIED	30.57	9700	J
20. 205-82-3	BENZO[J]FLUORANTHENE	32.67	13000	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-14_DL

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184010DL

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A3BA013539

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 28 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/06/92

Injection Volume: 2.0(uL) Dilution Factor: 100.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	46000	U
111-44-4	bis(2-Chloroethyl)Ether	46000	U
95-57-8	2-Chlorophenol	46000	U
541-73-1	1,3-Dichlorobenzene	46000	U
106-46-7	1,4-Dichlorobenzene	46000	U
95-50-1	1,2-Dichlorobenzene	46000	U
95-48-7	2-Methylphenol	46000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	46000	U
106-44-5	4-Methylphenol	46000	U
621-64-7	N-Nitroso-Di-n-Propylamine	46000	U
67-72-1	Hexachloroethane	46000	U
98-95-3	Nitrobenzene	46000	U
78-59-1	Isophorone	46000	U
88-75-5	2-Nitrophenol	46000	U
105-67-9	2,4-Dimethylphenol	46000	U
111-91-1	bis(2-Chloroethoxy)Methane	46000	U
120-83-2	2,4-Dichlorophenol	46000	U
120-82-1	1,2,4-Trichlorobenzene	46000	U
91-20-3	Naphthalene	110000	D
106-47-8	4-Chloroaniline	46000	U
87-68-3	Hexachlorobutadiene	46000	U
59-50-7	4-Chloro-3-Methylphenol	46000	U
91-57-6	2-Methylnaphthalene	52000	D
77-47-4	Hexachlorocyclopentadiene	46000	U
88-06-2	2,4,6-Trichlorophenol	46000	U
95-95-4	2,4,5-Trichlorophenol	110000	U
91-58-7	2-Chloronaphthalene	46000	U
88-74-4	2-Nitroaniline	110000	U
131-11-3	Dimethylphthalate	46000	U
208-96-8	Acenaphthylene	67000	D
606-20-2	2,6-Dinitrotoluene	46000	U
99-09-2	3-Nitroaniline	110000	U
83-32-9	Acenaphthene	8600	DJ

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-14_DL

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184010DL

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A3BA013539

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 28 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/06/92

Injection Volume: 2.0(uL) Dilution Factor: 100.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	110000	U
100-02-7	4-Nitrophenol	110000	U
132-64-9	Dibenzofuran	55000	D
121-14-2	2,4-Dinitrotoluene	46000	U
84-66-2	Diethylphthalate	46000	U
7005-72-3	4-Chlorophenyl-phenylether	46000	U
86-73-7	Fluorene	110000	D
100-10-6	4-Nitroaniline	110000	U
534-52-1	4,6-Dinitro-2-methylphenol	110000	U
86-30-6	N-Nitrosodiphenylamine (1)	46000	U
101-55-3	4-Bromophenyl-phenylether	46000	U
118-74-1	Hexachlorobenzene	46000	U
87-86-5	Pentachlorophenol	110000	U
85-01-8	Phenanthrene	220000	D
120-12-7	Anthracene	76000	D
86-74-8	Carbazole	49000	D
84-74-2	Di-n-Butylphthalate	46000	U
206-44-0	Fluoranthene	170000	D
129-00-0	Pyrene	130000	D
85-68-7	Butylbenzylphthalate	46000	U
91-94-1	3,3'-Dichlorobenzidine	46000	U
56-55-3	Benzo(a)Anthracene	91000	D
218-01-9	Chrysene	77000	D
117-81-7	bis(2-Ethylhexyl)Phthalate	46000	U
117-84-0	Di-n-Octyl Phthalate	46000	U
205-99-2	Benzo(b)Fluoranthene	72000	D
207-08-9	Benzo(k)Fluoranthene	49000	D
50-32-8	Benzo(a)Pyrene	55000	D
193-39-5	Indeno(1,2,3-cd)Pyrene	33000	DJ
53-70-3	Dibenz(a,h)Anthracene	16000	DJ
191-24-2	Benzo(g,h,i)Perylene	23000	DJ

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SS-14_DL

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184010DL

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A3BA013539

Level: (low/med) LOW Date Received: 03/13/92

% Moisture: 28 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/06/92

Injection Volume: 2.0(uL) Dilution Factor: 100.0

GPC Cleanup: (Y/N) Y pH: ____

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	90-12-0	NAPHTHALENE, 1-METHYL-	13.97	29000	J
2.		NAPHTHALENE, DIMETHYL- ISOME	15.45	16000	J
3.	3218-36-8	[1,1'-BIPHENYL]-4-CARBOXALDE	18.80	18000	J
4.		9H-FLUORENE, METHYL- ISOMER	19.65	18000	J
5.	132-65-0	DIBENZOTHIOPHENE	20.37	25000	J
6.		ANTHRACENE, METHYL- ISOMER	22.14	31000	J
7.		ANTHRACENE, METHYL- ISOMER	22.20	32000	J
8.		NOT IDENTIFIED	22.42	31000	J
9.	612-94-2	NAPHTHALENE, 2-PHENYL-	23.07	13000	J
10.		NOT IDENTIFIED	24.34	21000	J
11.		NOT IDENTIFIED	25.11	12000	J
12.		11H-BENZOFLUORENE ISOMER	25.74	34000	J
13.		11H-BENZOFLUORENE ISOMER	25.92	30000	J
14.	1705-84-6	TRIPHENYLENE, 2-METHYL-	29.36	12000	J
15.		BENZOPYRENE ISOMER	31.31	19000	J
16.		BENZOPYRENE ISOMER	31.71	34000	J
17.		NOT IDENTIFIED	3.42	42000	J
18.		NOT IDENTIFIED	33.01	12000	J
19.		NOT IDENTIFIED	34.72	13000	J
20.		NOT IDENTIFIED	35.12	23000	J

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/18/92
Lab Sample ID:	21184007	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	TT-03-03	Percent Moisture:	15.0	Dilution Factor:	1.0

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	390	U	260-94-6	Acridine	390	U
496-11-7	2,3-Dihydro-1h-Indene	390	U	229-87-8	Phenanthridine	390	U
95-13-6	1H-Indene	45	J	86-74-8	Carbazole	44	J
91-20-3	Naphthalene	390	U	206-44-0	Fluoranthene	390	U
95-15-8	Benzo(b)thiophene	390	U	129-00-0	Pyrene	390	U
91-22-5	Quinoline	390	U	56-55-3	Benzo(a)anthracene	390	U
119-65-3	Isoquinoline	390	U	218-01-9	Chrysene/Triphenylene	390	U
91-57-6	2-Methylnaphthalene	390	U	NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	390	U	57-97-6	7,12-Dimethylbenz(a)anthrac	390	U
90-12-0	1-Methylnaphthalene	52	J	192-97-2	Benzo(e)pyrene	390	U
92-52-4	Biphenyl	390	U	50-32-8	Benzo(a)pyrene	390	U
208-96-8	Acenaphthylene	43	J	198-55-0	Perylene	390	U
83-32-9	Acenaphthene	390	U	56-49-5	3-Methylcholanthrene	390	U
132-64-9	Dibenzofuran	390	U	193-39-5	Indeno(1,2,3-cd)pyrene	390	U
86-73-7	Fluorene	390	U	53-70-3	Dibenz(a,h)anthracene	390	U
132-65-0	Dibenzothiophene	69	J	191-24-2	Benzo(g,h,i,)perylene	390	U
85-01-8	Phenanthrene	390	U	205-99-2	Benzo(b)fluoranthene	390	U
120-12-7	Anthracene	390	U	207-08-9	Benzo(k)fluoranthene	390	U

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/18/92
Lab Sample ID:	21184008	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	TT-09-02	Percent Moisture:	15.0	Dilution Factor:	1.0

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	390	U	260-94-6	Acridine	390	U
496-11-7	2,3-Dihydro-1h-Indene	390	U	229-87-8	Phenanthridine	390	U
95-13-6	1H-Indene	390	U	86-74-8	Carbazole	390	U
91-20-3	Naphthalene	390	U	206-44-0	Fluoranthene	120	J
95-15-8	Benzo(b)thiophene	390	U	129-00-0	Pyrene	87	J
91-22-5	Quinoline	390	U	56-55-3	Benzo(a)anthracene	390	U
119-65-3	Isoquinoline	390	U	218-01-9	Chrysene/Triphenylene	47	J
91-57-6	2-Methylnaphthalene	390	U	NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	390	U	57-97-6	7,12-Dimethylbenz(a)anthrac	390	U
[illegible]-12-0	1-Methylnaphthalene	390	U	192-97-2	Benzo(e)pyrene	390	U
[illegible]-52-4	Biphenyl	390	U	50-32-8	Benzo(a)pyrene	390	U
208-96-8	Acenaphthylene	390	U	198-55-0	Perylene	390	U
83-32-9	Acenaphthene	390	U	56-49-5	3-Methylcholanthrene	390	U
132-64-9	Dibenzofuran	390	U	193-39-5	Indeno(1,2,3-cd)pyrene	390	U
86-73-7	Fluorene	390	U	53-70-3	Dibenz(a,h)anthracene	390	U
132-65-0	Dibenzothiophene	390	U	191-24-2	Benzo(g,h,i,)perylene	390	U
85-01-8	Phenanthrene	42	J	205-99-2	Benzo(b)fluoranthene	42	J
1[illegible]-12-7	Anthracene	390	U	207-08-9	Benzo(k)fluoranthene	390	U

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/18/92
Lab Sample ID:	21184011	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	TT-16-02	Percent Moisture:	12.0	Dilution Factor:	1.0

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	370	U	260-94-6	Acridine	370	U
496-11-7	2,3-Dihydro-1h-Indene	370	U	229-87-8	Phenanthridine	370	U
95-13-6	1H-Indene	370	U	86-74-8	Carbazole	370	U
91-20-3	Naphthalene	44	J	206-44-0	Fluoranthene	580	
95-15-8	Benzo(b)thiophene	370	U	129-00-0	Pyrene	460	
91-22-5	Quinoline	370	U	56-55-3	Benzo(a)anthracene	160	J
119-65-3	Isoquinoline	370	U	218-01-9	Chrysene/Triphenylene	190	J
91-57-6	2-Methylnaphthalene	370	U	NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	370	U	57-97-6	7,12-Dimethylbenz(a)anthrac	370	U
90-12-0	1-Methylnaphthalene	370	U	192-97-2	Benzo(e)pyrene	84	J
92-52-4	Biphenyl	370	U	50-32-8	Benzo(a)pyrene	110	J
208-96-8	Acenaphthylene	51	J	198-55-0	Perylene	370	U
83-32-9	Acenaphthene	370	U	56-49-5	3-Methylcholanthrene	370	U
132-64-9	Dibenzofuran	370	U	193-39-5	Indeno(1,2,3-cd)pyrene	79	J
86-73-7	Fluorene	370	U	53-70-3	Dibenz(a,h)anthracene	370	U
132-65-0	Dibenzothiophene	370	U	191-24-2	Benzo(g,h,i,)perylene	47	J
85-01-8	Phenanthrene	42	J	205-99-2	Benzo(b)fluoranthene	140	J
120-12-7	Anthracene	88	J	207-08-9	Benzo(k)fluoranthene	100	J

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/18/92
Lab Sample ID:	21184012	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	TT-17-01	Percent Moisture:	18.0	Dilution Factor:	1.0

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	400	U	260-94-6	Acridine	400	U
496-11-7	2,3-Dihydro-1h-Indene	400	U	229-87-8	Phenanthridine	400	U
95-13-6	1H-Indene	400	U	86-74-8	Carbazole	400	U
91-20-3	Naphthalene	400	U	206-44-0	Fluoranthene	42	J
95-15-8	Benzo(b)thiophene	400	U	129-00-0	Pyrene	400	U
91-22-5	Quinoline	400	U	56-55-3	Benzo(a)anthracene	400	U
119-65-3	Isoquinoline	400	U	218-01-9	Chrysene/Triphenylene	400	U
91-57-6	2-Methylnaphthalene	400	U	NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	400	U	57-97-6	7,12-Dimethylbenz(a)anthrac	400	U
[illegible]-12-0	1-Methylnaphthalene	400	U	192-97-2	Benzo(e)pyrene	400	U
[illegible]-52-4	Biphenyl	400	U	50-32-8	Benzo(a)pyrene	400	U
208-96-8	Acenaphthylene	400	U	198-55-0	Perylene	400	U
83-32-9	Acenaphthene	400	U	56-49-5	3-Methylcholanthrene	400	U
132-64-9	Dibenzofuran	400	U	193-39-5	Indeno(1,2,3-cd)pyrene	400	U
86-73-7	Fluorene	400	U	53-70-3	Dibenz(a,h)anthracene	400	U
132-65-0	Dibenzothiophene	400	U	191-24-2	Benzo(g,h,i,)perylene	400	U
85-01-8	Phenanthrene	400	U	205-99-2	Benzo(b)fluoranthene	400	U
1[illegible]-12-7	Anthracene	400	U	207-08-9	Benzo(k)fluoranthene	400	U

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/18/92
Lab Sample ID:	21184012	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	TT-17-01	Percent Moisture:	18.0	Dilution Factor:	1.0

PHENOL COMPOUNDS

CAS Number		ug/Kg		CAS Number	ug/Kg
108-95-2	Phenol	400	U		
95-57-8	2-Chlorophenol	400	U		
95-48-7	2-Methylphenol	400	U		
106-44-5	4-Methylphenol	400	U		
88-75-5	2-Nitrophenol	400	U		
105-67-9	2,4-Dimethylphenol	400	U		
120-83-2	2,4-Dichlorophenol	400	U		
65-85-0	Benzoic acid	980	U		
59-50-7	4-Chloro-3-Methylphenol .	400	U		
88-06-2	2,4,6-Trichlorophenol . .	400	U		
95-95-4	2,4,5-Trichlorophenol . .	980	U		
51-28-5	2,4-Dinitrophenol	980	U		
100-02-7	4-Nitrophenol	980	U		
534-52-1	4,6-Dinitro-2-Methylphenol	980	U		
87-86-5	Pentachlorophenol	980	U		

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-06

Lab Name: CH2M HILL/MGM Contract: _____

Code: CH2M Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 17 decanted: (Y/N) N Date Received: 03/13/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/17/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/08/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.9 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	4.0	U
72-55-9	4,4'-DDE	4.0	U
72-20-8	Endrin	4.0	U
33213-65-9	Endosulfan II	4.0	U
72-54-8	4,4'-DDD	4.0	U
1031-07-8	Endosulfan sulfate	4.0	U
50-29-3	4,4'-DDT	4.0	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	4.0	U
7421-36-3	Endrin aldehyde	4.0	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	1000	U
12674-11-2	Aroclor-1016	200	U
11104-28-2	Aroclor-1221	400	U
11141-16-5	Aroclor-1232	200	U
53469-21-9	Aroclor-1242	200	U
12672-29-6	Aroclor-1248	200	U
11097-69-1	Aroclor-1254	200	U
11096-82-5	Aroclor-1260	200	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-06DL

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184001DL

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 17 decanted: (Y/N) N Date Received: 03/13/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/17/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/08/92

Injection Volume: 2.00 (uL) Dilution Factor: 4.00

GPC Cleanup: (Y/N) Y pH: 7.9 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	8.2	U
319-85-7	beta-BHC	8.2	U
319-86-8	delta-BHC	8.2	U
58-89-9	gamma-BHC (Lindane)	8.2	U
76-44-8	Heptachlor	8.2	U
309-00-2	Aldrin	8.2	U
1024-57-3	Heptachlor epoxide	8.2	U
959-98-8	Endosulfan I	8.2	U
60-57-1	Dieldrin	16	U
72-55-9	4,4'-DDE	16	U
72-20-8	Endrin	16	U
33213-65-9	Endosulfan II	16	U
72-54-8	4,4'-DDD	16	U
1031-07-8	Endosulfan sulfate	16	U
50-29-3	4,4'-DDT	16	U
72-43-5	Methoxychlor	82	U
53494-70-5	Endrin ketone	16	U
7421-36-3	Endrin aldehyde	16	U
5103-71-9	alpha-Chlordane	8.2	U
5103-74-2	gamma-Chlordane	8.2	U
8001-35-2	Toxaphene	820	U
12674-11-2	Aroclor-1016	160	U
11104-28-2	Aroclor-1221	320	U
11141-16-5	Aroclor-1232	160	U
53469-21-9	Aroclor-1242	160	U
12672-29-6	Aroclor-1248	160	U
11097-69-1	Aroclor-1254	160	U
11096-82-5	Aroclor-1260	160	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-08

Lab Name: CH2M HILL/MGM Contract: _____

Code: CH2M Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 30 decanted: (Y/N) N Date Received: 03/13/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/17/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/08/92

Injection Volume: 2.00 (uL) Dilution Factor: 5.00

GPC Cleanup: (Y/N) Y pH: 7.9 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	12	U
319-85-7	beta-BHC	12	U
319-86-8	delta-BHC	12	U
58-89-9	gamma-BHC (Lindane)	12	U
76-44-8	Heptachlor	12	U
309-00-2	Aldrin	12	U
1024-57-3	Heptachlor epoxide	12	U
959-98-8	Endosulfan I	12	U
60-57-1	Dieldrin	24	U
72-55-9	4,4'-DDE	24	U
72-20-8	Endrin	24	U
33213-65-9	Endosulfan II	24	U
72-54-8	4,4'-DDD	24	U
1031-07-8	Endosulfan sulfate	24	U
50-29-3	4,4'-DDT	24	U
72-43-5	Methoxychlor	120	U
53494-70-5	Endrin ketone	24	U
7421-36-3	Endrin aldehyde	24	U
5103-71-9	alpha-Chlordane	12	U
5103-74-2	gamma-Chlordane	12	U
8001-35-2	Toxaphene	6000	U
12674-11-2	Aroclor-1016	1200	U
11104-28-2	Aroclor-1221	2400	U
11141-16-5	Aroclor-1232	1200	U
53469-21-9	Aroclor-1242	1200	U
12672-29-6	Aroclor-1248	1200	U
11097-69-1	Aroclor-1254	1200	U
11096-82-5	Aroclor-1260	1200	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-09

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 19 decanted: (Y/N) N Date Received: 03/13/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/17/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/08/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.9 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	4.1	U
33213-65-9	Endosulfan II	4.1	U
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.1	U
7421-36-3	Endrin aldehyde	4.1	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	83	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	41	U
11096-82-5	Aroclor-1260	41	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-10

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 15 decanted: (Y/N) N Date Received: 03/13/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/17/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/08/92

Injection Volume: 2.00 (uL) Dilution Factor: 3.00

GPC Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	6.0	U
319-85-7	beta-BHC	6.0	U
319-86-8	delta-BHC	6.0	U
58-89-9	gamma-BHC (Lindane)	6.0	U
76-44-8	Heptachlor	6.0	U
309-00-2	Aldrin	6.0	U
1024-57-3	Heptachlor epoxide	6.0	U
959-98-8	Endosulfan I	6.0	U
60-57-1	Dieldrin	12	U
72-55-9	4,4'-DDE	12	U
72-20-8	Endrin	12	U
33213-65-9	Endosulfan II	12	U
72-54-8	4,4'-DDD	12	U
1031-07-8	Endosulfan sulfate	12	U
50-29-3	4,4'-DDT	12	U
72-43-5	Methoxychlor	60	U
53494-70-5	Endrin ketone	12	U
7421-36-3	Endrin aldehyde	12	U
5103-71-9	alpha-Chlordane	6.0	U
5103-74-2	gamma-Chlordane	6.0	U
8001-35-2	Toxaphene	600	U
12674-11-2	Aroclor-1016	120	U
11104-28-2	Aroclor-1221	240	U
11141-16-5	Aroclor-1232	120	U
53469-21-9	Aroclor-1242	120	U
12672-29-6	Aroclor-1248	120	U
11097-69-1	Aroclor-1254	120	U
11096-82-5	Aroclor-1260	120	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-11

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 11 decanted: (Y/N) N Date Received: 03/13/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/17/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/08/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.7 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.7	U
72-55-9	4,4'-DDE	3.7	U
72-20-8	Endrin	3.7	U
33213-65-9	Endosulfan II	3.7	U
72-54-8	4,4'-DDD	3.7	U
1031-07-8	Endosulfan sulfate	3.7	U
50-29-3	4,4'-DDT	3.7	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.7	U
7421-36-3	Endrin aldehyde	3.7	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	75	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	37	U
11096-82-5	Aroclor-1260	37	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-12

Lab Name: CH2M HILL/MGM Contract: _____

Code: CH2M Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184006

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 17 decanted: (Y/N) N Date Received: 03/13/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/17/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/09/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.1 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	4.0	U
72-55-9	4,4'-DDE	4.0	U
72-20-8	Endrin	4.0	U
33213-65-9	Endosulfan II	4.0	U
72-54-8	4,4'-DDD	4.0	U
1031-07-8	Endosulfan sulfate	4.0	U
50-29-3	4,4'-DDT	4.0	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	4.0	U
7421-36-3	Endrin aldehyde	4.0	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	40	U
11104-28-2	Aroclor-1221	81	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	40	U
11096-82-5	Aroclor-1260	40	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-13

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184009

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 14 decanted: (Y/N) N Date Received: 03/13/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/17/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/09/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.7 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	3.8	U
72-55-9	4,4'-DDE	3.8	U
72-20-8	Endrin	3.8	U
33213-65-9	Endosulfan II	3.8	U
72-54-8	4,4'-DDD	3.8	U
1031-07-8	Endosulfan sulfate	3.8	U
50-29-3	4,4'-DDT	3.8	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	3.8	U
7421-36-3	Endrin aldehyde	3.8	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	78	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	38	U
11096-82-5	Aroclor-1260	38	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SS-14

Lab Name: CH2M HILL/MGM Contract: _____

Code: CH2M Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21184010

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 28 decanted: (Y/N) N Date Received: 03/13/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/17/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/09/92

Injection Volume: 2.00 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 8.4 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	24	U
319-85-7	beta-BHC	24	U
319-86-8	delta-BHC	24	U
58-89-9	gamma-BHC (Lindane)	24	U
76-44-8	Heptachlor	24	U
309-00-2	Aldrin	24	U
1024-57-3	Heptachlor epoxide	24	U
959-98-8	Endosulfan I	24	U
60-57-1	Dieldrin	46	U
72-55-9	4,4'-DDE	46	U
72-20-8	Endrin	46	U
33213-65-9	Endosulfan II	46	U
72-54-8	4,4'-DDD	46	U
1031-07-8	Endosulfan sulfate	46	U
50-29-3	4,4'-DDT	46	U
72-43-5	Methoxychlor	240	U
53494-70-5	Endrin ketone	46	U
7421-36-3	Endrin aldehyde	46	U
5103-71-9	alpha-Chlordane	24	U
5103-74-2	gamma-Chlordane	24	U
8001-35-2	Toxaphene	12000	U
12674-11-2	Aroclor-1016	2300	U
11104-28-2	Aroclor-1221	4600	U
11141-16-5	Aroclor-1232	2300	U
53469-21-9	Aroclor-1242	2300	U
12672-29-6	Aroclor-1248	2300	U
11097-69-1	Aroclor-1254	2300	U
11096-82-5	Aroclor-1260	2300	U

JWS

2B
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Level:(low/med) LOW

	EPA SAMPLE NO.	SMC1 (TOL)#	SMC2 (BFB)#	SMC3 (DCE)#	OTHER	TOT OUT
01	M-04	115	70	99	0	0
02	M-04_R	134	84	106	0	0
03	SS-06	98	94	95	0	0
04	SS-08	110	84	93	0	0
05	SS-09	101	98	100	0	0
06	SS-10	94	90	94	0	0
07	SS-11	98	96	95	0	0
08	SS-12	98	98	98	0	0
09	SS-13	96	92	92	0	0
10	SS-14	101	83	94	0	0
11	TT-03-03	99	97	95	0	0
12	TT-09-02	98	97	95	0	0
13	TT-16-02	100	97	98	0	0
14	TT-17-01	101	96	94	0	0
15	TT-22-01	114	82	96	0	0
16	SS-10MS	104	88	96	0	0
17	SS-10MSD	101	95	97	0	0
18	VBLKS	110	88	101	0	0
19	VBLKS_2	92	92	89	0	0
20	VBLKS_3	107	102	102	0	0

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(84-138)
SMC2 (BFB)	= Bromofluorobenzene	(59-113)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

2D
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Level:(low/med) LOW

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	S7 (2CP)#	S8 (DCB)#	TOT OUT
01	SS-06	61	56	58	74	70	72	69	61	0
02	SS-08	61	64	68	78	74	67	78	66	0
03	SS-09	72	67	69	89	85	79	83	73	0
04	SS-10	65	59	58	77	73	70	71	64	0
05	SS-11	68	62	63	82	78	76	77	68	0
06	SS-12	58	53	55	69	67	66	66	58	0
07	SS-13	67	63	64	80	77	73	75	66	0
08	SS-14	0 D	0 D	0 D	0 D	0 D	0 D	0 D	0 D	0
09	SS-14_DL	0 D	0 D	0 D	0 D	0 D	0 D	0 D	0 D	0
10	SBLKS	60	54	53	70	66	66	68	59	0

		QC LIMITS	
S1 (NBZ)	= Nitrobenzene-d5	(23-120)	
S2 (FBP)	= 2-Fluorobiphenyl	(30-115)	
S3 (TPH)	= Terphenyl-d14	(18-137)	
S4 (PHL)	= Phenol-d5	(24-113)	
S5 (2FP)	= 2-Fluorophenol	(25-121)	
S6 (TBP)	= 2,4,6-Tribromophenol	(19-122)	
S7 (2CP)	= 2-Chlorophenol-d4	(20-130)	(advisory)
S8 (DCB)	= 1,2-Dichlorobenzene-d4	(20-130)	(advisory)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

SOIL SURROGATE PERCENT RECOVERY SUMMARY
(Page 1)

Case No. S21184 Contract Laboratory CH2M HILL/MGM

Low XXX Medium _____

SMO TRAFFIC NO.	SEMI-VOLATILE 1-Fluoronaphthalene - SS 0-81	2-Fluorophenol - SS 25-121	Phenol-d5 - SS 24-113	2,4,6-Tribromophenol - SS 19-122	Nitrobenzene-d5 - SS 9-197	2-Fluorobiphenyl - SS 9-109	Terphenyl-d14 - SS 0-143	1,2-Dichlorobenzene-d4 - SS 20-130	2-Chlorophenol-d4 - SS 20-130
TT-03-03	47	77	86	63	60	64	49	64	88
TT-09-02	40	71	80	56	55	56	48	58	75
TT-16-02	46	78	86	64	62	61	51	63	85
TT-17-01	37	66	73	55	53	53	45	55	72
SBLKS	49	65	74	55	59	58	48	58	72

Semi-Volatiles: 0 out of 45; outside of QC limits

FORM II

2F
SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

T Code: CH2M Case No.: 21184 SAS No.: _____ SDG No.: _____

GC Column(1): SPB-5 ID: 0.53(mm) GC Column(2): SPB-608 ID: 0.53(mm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	PBLK17	73	78	81	84			0
02	SS-06	74	84	97	103			0
03	SS-06DL	84	88	104	123			0
04	SS-08	89	115	137	112			0
05	SS-09	76	79	94	97			0
06	SS-10	64	70	80	79			0
07	SS-11	78	84	96	99			0
08	SS-12	84	83	90	97			0
09	SS-13	87	88	92	97			0
10	SS-14	0D	0D	0D	0D			0

	ADVISORY QC LIMITS
TCX = Tetrachloro-m-xylene	(60-150)
DCB = Decachlorobiphenyl	(60-150)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

3B

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: SS-10 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	58.10	0	65.35	112	59-172
Trichloroethene	58.10	0	58.84	101	62-137
Benzene	58.10	0	66.05	114	66-142
Toluene	58.10	0	58.37	100	59-139
Chlorobenzene	58.10	0	59.65	103	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	58.10	65.23	112	0	22	59-172
Trichloroethene	58.10	61.63	106	5	24	62-137
Benzene	58.10	67.91	117	3	21	66-142
Toluene	58.10	58.49	101	1	21	59-139
Chlorobenzene	58.10	61.86	106	3	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: CLP,21184,,SS-10,L,S,21184004,V,EPA,
10DG TO 200DG @8DG/MIN IH=3MIN

MS

4A
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Lab File ID: CBVO021063 Lab Sample ID: Y03192B1

Date Analyzed: 03/19/92 Time Analyzed: 1236

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) Y

Instrument ID: 4500

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	SS-06	21184001	C1VO021076	2042
02	SS-08	21184002	C1VO021078	2149
03	SS-09	21184003	C1VO021079	2229

COMMENTS: CLP,21128,,VBLKS,L,S,Y03192B1,V,BLANK,
10DG TO 200DG @8DG/MIN IH=3MIN

FORM IV VOA 3/90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y03192B1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBV0021063

Level: (low/med) LOW Date Received: 03/19/92

% Moisture: not dec. 0 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	9	J
67-64-1	Acetone	5	J
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y03192B1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBVO021063

Level: (low/med) LOW Date Received: 03/19/92

% Moisture: not dec. 0 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

4A

VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKS_2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Lab File ID: CBVO021122 Lab Sample ID: Y03242B2

Date Analyzed: 03/24/92 Time Analyzed: 2327

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) Y

Instrument ID: 4500

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	M-04	21184014	C1VO021133	0605
02	SS-10	21184004	C1VO021123	0007
03	SS-11	21184005	C1VO021124	0041
04	SS-12	21184006	C1VO021125	0115
05	SS-13	21184009	C1VO021128	0259
06	SS-14	21184010	C1VO021129	0334
07	TT-03-03	21184007	C1VO021126	0149
08	TT-09-02	21184008	C1VO021127	0224
09	TT-16-02	21184011	C2VO021138	0853
10	TT-17-01	21184012	C2VO021139	0927
11	TT-22-01	21184013	C1VO021132	0520
12	SS-10MS	21184M04	CMVO021140	1002
13	SS-10MSD	21184D04	CMVO021137	0820

COMMENTS: CLP,21184,,VBLKS,L,S,Y03242B2,V,BLANK,
10DG TO 200DG @8DG/MIN IH=3MIN

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKS_2

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y03242B2

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBVO021122

Level: (low/med) LOW Date Received: 03/24/92

% Moisture: not dec. 0 Date Analyzed: 03/24/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	4	J
67-64-1	Acetone	10	
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	2	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKS_2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y03242B2

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBVO021122

Level: (low/med) LOW Date Received: 03/24/92

% Moisture: not dec. 0 Date Analyzed: 03/24/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

4A
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKS_3

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Lab File ID: CBVO021165 Lab Sample ID: Y03262B2

Date Analyzed: 03/26/92 Time Analyzed: 1246

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) Y

Instrument ID: 4500

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	M-04_R	21184014R	C2VO021166	1319

COMMENTS: CLP,21184,,VBLKS,L,S,Y03262B2,V,B,
10DG TO 200DG @8DG/MIN IH=3MIN

FORM IV VOA

3/90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKS_3

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y03262B2

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBVO021165

Level: (low/med) LOW Date Received: 03/26/92

% Moisture: not dec. 0 Date Analyzed: 03/26/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	12	
67-64-1	Acetone	10	
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	2	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKS_3

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y03262B2

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBVO021165

Level: (low/med) LOW Date Received: 03/26/92

% Moisture: not dec. 0 Date Analyzed: 03/26/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

4B
SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Lab File ID: ABBA013512 Lab Sample ID: S03182B1

Instrument ID: 4000 Date Extracted: 03/18/92

Matrix: (soil/water) SOIL Date Analyzed: 03/31/92

Level:(low/med) LOW Time Analyzed: 1438

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SS-06	21184001	A1BA013513	03/31/92
02	SS-08	21184002	A1BA013519	03/31/92
03	SS-09	21184003	A1BA013514	03/31/92
04	SS-10	21184004	A1BA013515	03/31/92
05	SS-11	21184005	A1BA013516	03/31/92
06	SS-12	21184006	A1BA013517	03/31/92
07	SS-13	21184009	A1BA013518	03/31/92
08	SS-14	21184010	A1BA013520	03/31/92
09	SS-14_DL	21184010DL	A3BA013539	04/06/92

COMMENTS: CLP,21184,,SBLKS,L,S,S03182B1,B,BLANK,
20DG TO 310DG @4DG/MIN IH=10MIN

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: S03182B1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: ABBA013512

Level: (low/med) LOW Date Received: 03/18/92

% Moisture: 0 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	800	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	330	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: S03182B1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: ABBA013512

Level: (low/med) LOW Date Received: 03/18/92

% Moisture: 0 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	800	U
100-02-7	4-Nitrophenol	800	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-10-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	50	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: S03182B1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: ABBA013512

Level: (low/med) LOW Date Received: 03/18/92

% Moisture: 0 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	6.83	260	J
2. 3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	7.83	230	J
3. 18641-71-9	3-HEPTANONE, 2,4-DIMETHYL-	8.85	90	J
4.	NOT IDENTIFIED	9.97	120	J
5. 17851-53-5	1,2-BENZENEDICARBOXYLIC ACID	22.55	130	J
6.	NOT IDENTIFIED	3.75	590	J
7.	NOT IDENTIFIED	4.80	9600	J

4B

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S21184 SAS No.: _____ SDG No.: _____

Lab File ID: DBPA010363 Lab Sample ID: S03182B1

Instrument ID: 5100D Date Extracted: 03/18/92

Matrix: (soil/water) SOIL Date Analyzed: 04/02/92

Level:(low/med) LOW Time Analyzed: 0857

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TT-03-03	21184007	D1PA010365	04/02/92
02	TT-09-02	21184008	D1PA010366	04/02/92
03	TT-16-02	21184011	D1PA010367	04/02/92
04	TT-17-01	21184012	D1PA010368	04/02/92

COMMENTS: CLP,21184,,SBLKS,L,S,S03182B1,B,BLANK,
30DG TO 310DG @10DG/MIN IH=4MINS

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/18/92
Lab Sample ID:	S03182B1	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	SBLKS	Percent Moisture:	0.0	Dilution Factor:	1.0

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	330	U	260-94-6	Acridine	330	U
496-11-7	2,3-Dihydro-1h-Indene	330	U	229-87-8	Phenanthridine	330	U
95-13-6	1H-Indene	330	U	86-74-8	Carbazole	330	U
91-20-3	Naphthalene	330	U	206-44-0	Fluoranthene	330	U
95-15-8	Benzo(b)thiophene	330	U	129-00-0	Pyrene	330	U
91-22-5	Quinoline	330	U	56-55-3	Benzo(a)anthracene	330	U
119-65-3	Isoquinoline	330	U	218-01-9	Chrysene/Triphenylene	330	U
91-57-6	2-Methylnaphthalene	330	U	NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	330	U	57-97-6	7,12-Dimethylbenz(a)anthrac	330	U
[illegible]-12-0	1-Methylnaphthalene	330	U	192-97-2	Benzo(e)pyrene	330	U
[illegible]2-52-4	Biphenyl	330	U	50-32-8	Benzo(a)pyrene	330	U
208-96-8	Acenaphthylene	330	U	198-55-0	Perylene	330	U
83-32-9	Acenaphthene	330	U	56-49-5	3-Methylcholanthrene	330	U
132-64-9	Dibenzofuran	330	U	193-39-5	Indeno(1,2,3-cd)pyrene	330	U
86-73-7	Fluorene	330	U	53-70-3	Dibenz(a,h)anthracene	330	U
132-65-0	Dibenzothiophene	330	U	191-24-2	Benzo(g,h,i,)perylene	330	U
85-01-8	Phenanthrene	330	U	205-99-2	Benzo(b)fluoranthene	330	U
[illegible]-12-7	Anthracene	330	U	207-08-9	Benzo(k)fluoranthene	330	U

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/18/92
Lab Sample ID:	S03182B1	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	SBLKS	Percent Moisture:	0.0	Dilution Factor:	1.0

PHENOL COMPOUNDS

CAS Number		ug/Kg		CAS Number	ug/Kg
108-95-2	Phenol	330	U		
95-57-8	2-Chlorophenol	330	U		
95-48-7	2-Methylphenol	330	U		
106-44-5	4-Methylphenol	330	U		
88-75-5	2-Nitrophenol	330	U		
105-67-9	2,4-Dimethylphenol	330	U		
120-83-2	2,4-Dichlorophenol	330	U		
65-85-0	Benzoic acid	800	U		
59-50-7	4-Chloro-3-Methylphenol .	330	U		
88-06-2	2,4,6-Trichlorophenol . .	330	U		
95-95-4	2,4,5-Trichlorophenol . .	800	U		
51-28-5	2,4-Dinitrophenol	800	U		
100-02-7	4-Nitrophenol	800	U		
534-52-1	4,6-Dinitro-2-Methylphenol	800	U		
87-86-5	Pentachlorophenol	800	U		

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

4C
PESTICIDE METHOD BLANK SUMMARY

EPA SAMPLE NO.

PBLK17

Lab Name: CH2M HILL/MGM Contract: _____

Code: CH2M Case No.: 21184 SAS No.: _____ SDG No.: _____

Lab Sample ID: S03172B1 Lab File ID: _____

Matrix:(soil/water) SOIL Extraction:(SepF/Cont/Sonc) SONC

Sulfur Cleanup: (Y/N) Y Date Extracted: 03/17/92

Date Analyzed (1): 04/08/92 Date Analyzed (2): 04/08/92

Time Analyzed (1): 0938 Time Analyzed (2): 0938

Instrument ID (1): V6000A Instrument ID (2): V6000B

GC Column (1): SPB-5 ID: 0.53 (mm) GC Column (2): SPB-608 ID: 0.53 (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	SS-06	21184001	04/08/92	04/08/92
02	SS-06DL	21184001DL	04/08/92	04/08/92
03	SS-08	21184002	04/08/92	04/08/92
04	SS-09	21184003	04/08/92	04/08/92
05	SS-10	21184004	04/08/92	04/08/92
06	SS-11	21184005	04/08/92	04/08/92
07	SS-12	21184006	04/09/92	04/09/92
08	SS-13	21184009	04/09/92	04/09/92
09	SS-14	21184010	04/09/92	04/09/92

COMMENTS:

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK17

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: 21184 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: S03172B1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/17/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/08/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.0 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.3	U
72-55-9	4,4'-DDE	3.3	U
72-20-8	Endrin	3.3	U
33213-65-9	Endosulfan II	3.3	U
72-54-8	4,4'-DDD	3.3	U
1031-07-8	Endosulfan sulfate	3.3	U
50-29-3	4,4'-DDT	3.3	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.3	U
7421-36-3	Endrin aldehyde	3.3	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	67	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): CSV0021062 Date Analyzed: 03/19/92

Instrument ID: 4500 Time Analyzed: 1142

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) Y

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	67178	11.00	293103	12.52	238151	17.42
	UPPER LIMIT	134356	11.50	586206	13.02	476302	17.92
	LOWER LIMIT	33589	10.50	146552	12.02	119076	16.92
	EPA SAMPLE NO.						
01	SS-06	67444	11.00	265373	12.54	228827	17.44
02	SS-08	55516	10.92	214295	12.47	147161	17.40
03	SS-09	60903	10.97	235653	12.52	194554	17.44
04	VBLKS	64952	11.00	255421	12.52	191565	17.44

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): CSVO021121 Date Analyzed: 03/24/92

Instrument ID: 4500 Time Analyzed: 2245

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) Y

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	65805	10.99	285334	12.52	236045	17.44
	UPPER LIMIT	131610	11.49	570668	13.02	472090	17.94
	LOWER LIMIT	32902	10.49	142667	12.02	118022	16.94
	EPA SAMPLE NO.						
01	M-04	33156	11.00	106244 *	12.54	65000 *	17.45
02	SS-10	51876	10.97	203615	12.50	177869	17.42
03	SS-11	60453	10.97	233970	12.50	194222	17.42
04	SS-12	59188	10.97	241587	12.50	201621	17.44
05	SS-13	58943	10.92	224067	12.47	193737	17.40
06	SS-14	54959	10.94	203488	12.47	157137	17.40
07	TT-03-03	61151	10.97	245005	12.50	201014	17.40
08	TT-09-02	58957	10.90	234690	12.45	196666	17.37
09	TT-16-02	58449	10.89	249311	12.45	204319	17.40
10	TT-17-01	54842	10.99	257740	12.52	209039	17.44
11	TT-22-01	49002	10.97	177848	12.50	127759	17.44
12	SS-10MS	67585	10.99	275411	12.52	219957	17.40
13	SS-10MSD	61941	10.97	240212	12.49	198610	17.40
14	VBLKS_2	47672	10.95	182521	12.49	161822	17.40

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): CSVO021163 Date Analyzed: 03/26/92

Instrument ID: 4500 Time Analyzed: 1104

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) Y

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	71435	11.02	288453	12.54	257886	17.44
	UPPER LIMIT	142870	11.52	576906	13.04	515772	17.94
	LOWER LIMIT	35718	10.52	144226	12.04	128943	16.94
	EPA SAMPLE NO.						
01	M-04_R	48034	11.02	178851	12.54	110490 *	17.44
02	VBLKS_3	54456	11.04	225611	12.57	180545	17.47

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): ASBA013507 Date Analyzed: 03/31/92

Instrument ID: 4000 Time Analyzed: 1117

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	12 HOUR STD	16327	9.04	64508	12.40	30937	17.30
	UPPER LIMIT	32654	9.54	129016	12.90	61874	17.80
	LOWER LIMIT	8164	8.54	32254	11.90	15468	16.80
	EPA SAMPLE NO.						
01	SS-06	15063	9.00	69379	12.37	38391	17.27
02	SS-08	18439	8.99	82078	12.42	43039	17.35
03	SS-09	13774	9.04	64496	12.39	35607	17.29
04	SS-10	14761	8.99	67556	12.35	37159	17.27
05	SS-11	14592	9.02	68681	12.37	37434	17.27
06	SS-12	14119	9.04	64202	12.39	36289	17.29
07	SS-13	14969	9.04	68366	12.39	36963	17.29
08	SS-14	17570	8.95	80153	12.39	43261	17.30
09	SBLKS	14477	8.97	66716	12.37	37833	17.30

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

J Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): ASBA013507 Date Analyzed: 03/31/92

Instrument ID: 4000 Time Analyzed: 1117

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	45685	21.42	41870	29.06	40938	32.91
	UPPER LIMIT	91370	21.92	83740	29.56	81876	33.41
	LOWER LIMIT	22842	20.92	20935	28.56	20469	32.41
	EPA SAMPLE NO.						
01	SS-06	55671	21.40	50979	29.04	50513	32.89
02	SS-08	58799	21.50	56792	29.17	59308	32.99
03	SS-09	52867	21.40	48446	29.02	46294	32.89
04	SS-10	53926	21.39	50158	29.04	49094	32.89
05	SS-11	54159	21.39	50444	29.04	48501	32.89
06	SS-12	53296	21.40	50072	29.02	47212	32.87
07	SS-13	54627	21.40	49898	29.04	47292	32.89
08	SS-14	62638	21.47	55024	29.12	52523	32.96
09	SBLKS	55937	21.40	53421	29.07	51224	32.92

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): ASBA013534 Date Analyzed: 04/06/92

Instrument ID: 4000 Time Analyzed: 0631

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	12 HOUR STD	10986	8.37	48503	11.74	31416	16.57
	UPPER LIMIT	21972	8.87	97006	12.24	62832	17.07
	LOWER LIMIT	5493	7.87	24252	11.24	15708	16.07
	EPA SAMPLE NO.						
01	SS-14_DL	14343	8.25	70436	11.72	40928	16.60

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21184 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): ASBA013534 Date Analyzed: 04/06/92

Instrument ID: 4000 Time Analyzed: 0631

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	46395	20.64	37894	28.17	36362	31.94
	UPPER LIMIT	92790	21.14	75788	28.67	72724	32.44
	LOWER LIMIT	23198	20.14	18947	27.67	18181	31.44
	EPA SAMPLE NO.						
01	SS-14_DL	66518	20.69	51713	28.21	54214	32.01

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S21184 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): DSPA010362 Date Analyzed: 04/02/92

Instrument ID: 5100D Time Analyzed: 0813

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	12 HOUR STD	9234	9.82	35837	12.74	25187	17.05
	UPPER LIMIT	18468	10.32	71674	13.24	50374	17.55
	LOWER LIMIT	4617	9.32	17918	12.24	12594	16.55
	EPA SAMPLE NO.						
01	TT-03-03	9265	9.77	45760	12.65	32556	16.94
02	TT-09-02	12422	9.82	54965	12.67	39527	16.92
03	TT-16-02	11881	9.80	52681	12.65	38531	16.90
04	TT-17-01	12250	9.79	54710	12.64	39079	16.89
05	SBLKS	10209	9.80	43639	12.74	31780	17.04

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Job Code: _____ Case No.: S21184 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): DSPA010362 Date Analyzed: 04/02/92

Instrument ID: 5100D Time Analyzed: 0813

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	41092	20.70	41286	27.42	47700	30.81
	UPPER LIMIT	82184	21.20	82572	27.92	95400	31.31
	LOWER LIMIT	20546	20.20	20643	26.92	23850	30.31
	EPA SAMPLE NO.						
01	TT-03-03	56717	20.57	64205	27.31	74376	30.71
02	TT-09-02	68188	20.54	72503	27.27	80617	30.69
03	TT-16-02	65966	20.54	69436	27.27	79146	30.69
04	TT-17-01	68440	20.52	74446	27.26	81896	30.66
05	SBLKS	57487	20.69	66829	27.41	69719	30.81

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

SAMPLE DATA PACKAGE

SAMPLE DATA PACKAGE

CASE NARRATIVE

Engineers
Planners
CH2M HILL
Economists
Scientists

CASE NARRATIVE FOR VOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21184 SDG NO.: N/A

I. RECEIPT

A. DATE: March 13, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21184001	SS-06	SOIL	03/11/92	NA	03/19/92
21184002	SS-08	SOIL	03/11/92	NA	03/19/92
21184003	SS-09	SOIL	03/11/92	NA	03/19/92
21184004	SS-10	SOIL	03/11/92	NA	03/25/92
21184005	SS-11	SOIL	03/11/92	NA	03/25/92
21184006	SS-12	SOIL	03/11/92	NA	03/25/92
21184007	TT-03-03	SOIL	03/11/92	NA	03/25/92
21184008	TT-09-02	SOIL	03/11/92	NA	03/25/92
21184009	SS-13	SOIL	03/12/92	NA	03/25/92
21184010	SS-14	SOIL	03/12/92	NA	03/25/92
21184011	TT-16-02	SOIL	03/12/92	NA	03/25/92
21184012	TT-17-01	SOIL	03/12/92	NA	03/25/92
21184013	TT-22-01	SOIL	03/12/92	NA	03/25/92
21184014	M-04	SOIL	03/12/92	NA	03/25/92
21184014R	M-04_R	SOIL	03/12/92	NA	03/26/92
21184M04	SS-10MS	SOIL	03/11/92	NA	03/25/92
21184D04	SS-10MSD	SOIL	03/11/92	NA	03/25/92
Y03192B1	VBLKS	SOIL	NA	NA	03/19/92
Y03242B2	VBLKS_2	SOIL	NA	NA	03/24/92
Y03262B2	VBLKS_3	SOIL	NA	NA	03/26/92

C. Documentation
Exceptions : No exceptions were encountered.

II. EXTRACTION

A. Holding Times: Medium level protocol was not performed; therefore, extraction time is not applicable.

B. Extraction
Exceptions : Not applicable.

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271.1444

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : The original analysis of sample 21184014 (M-04) showed the absolute response of two internal standards below QC limits. The sample was reanalyzed with similar results. Therefore, the low responses may possibly be due to a matrix effect. The results of both analyses have been reported.

No other exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC limits.

C. Matrix Spike Results : All spike recoveries for 21184M04 and 21184D04 were within CLP advisory limits. These results represent samples 21184004 through 21184014R.

The native sample, matrix spike, and matrix spike duplicate results for samples 21184001 through 21184003 are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21136.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for Jewell W. Smiley 5/01/92
Herb Kelly Date
Manager, Organic Division

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 1444

Engineers
Planners
Economists
Scientists

CASE NARRATIVE FOR SEMIVOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21184 SDG NO.: N/A

I. RECEIPT

A. DATE: March 13, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21184001	SS-06	SOIL	03/11/92	03/18/92	03/31/92
21184002	SS-08	SOIL	03/11/92	03/18/92	03/31/92
21184003	SS-09	SOIL	03/11/92	03/18/92	03/31/92
21184004	SS-10	SOIL	03/11/92	03/18/92	03/31/92
21184005	SS-11	SOIL	03/11/92	03/18/92	03/31/92
21184006	SS-12	SOIL	03/11/92	03/18/92	03/31/92
21184009	SS-13	SOIL	03/12/92	03/18/92	03/31/92
21184010	SS-14	SOIL	03/12/92	03/18/92	03/31/92
21184010DL	SS-14_DL	SOIL	03/12/92	03/18/92	04/06/92
S03182B1	SBLKS	SOIL	NA	03/18/92	03/31/92

C. Documentation Exceptions : Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271 1444

II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : These samples were processed through GPC cleanup eight days after GPC calibration, instead of within the normal seven days. The GPC calibration associated with this sample was performed on 03/11/92.

An additional GPC calibration plot (03/24/92) is included to demonstrate that the GPC remained within criteria.

No other exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : The original analysis of sample 21184010 (SS-14) showed target compounds above the calibration range. The sample was diluted and reanalyzed. The results of both analyses have been reported.

No other exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Samples 21184010 (SS-14) and 21184010DL (SS-14DL) required large dilutions for analysis. Therefore, surrogate recoveries could not be determined for these samples.

All other samples met acceptable QC limits.

C. Matrix Spike
Results : The native sample, matrix spike, and matrix spike duplicate results are contained within other batches of samples. The results for samples 21184001 through 21184006 will be reported with the results of our laboratory contract number 21107. The results for samples 21184009 through 21184010DL will be reported with the results of our laboratory contract number 21232.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

For Jewell W. Smiley 5/01/92
Herb Kelly Date
Manager, Organic Division

Engineers
Planners
CH2M HILL Economists
Scientists

CASE NARRATIVE FOR PNA/PHENOL MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21184 SDG NO.: N/A

I. RECEIPT

A. DATE: March 13, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21184007	TT-03-03	SOIL	03/11/92	03/18/92	04/02/92
21184008	TT-09-02	SOIL	03/11/92	03/18/92	04/02/92
21184011	TT-16-02	SOIL	03/12/92	03/18/92	04/02/92
21184012	TT-17-01	SOIL	03/12/92	03/18/92	04/02/92
S03182B1	SBLKS	SOIL	NA	03/18/92	04/02/92

C. Documentation Exceptions : Tentatively Identified Compounds (TIC) were not requested as part of this analysis. Therefore, the TIC forms and raw data will not be included in this package.

As you have requested, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported separately. Due to the low concentrations analyzed for, there may be instances where the native matrix offers chromatographic interferences in this region of the chromatogram, making it difficult to correctly quantitate these isomers as separate compounds. In that case, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported as total Benzo(b&k)fluoranthene. An "NR" (not reported) qualifier will then be used for the compounds which are not reported.

Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 1444

II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21128.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for Jewell W. Smiley 5/01/92
Herb Kelly Date
Manager, Organic Division

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271 1444

Engineers
Planners
Economists
Scientists

CASE NARRATIVE FOR PESTICIDE/PCB GAS CHROMATOGRAPHY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21184 SDG NO.: N/A

I. RECEIPT

A. DATE: March 13, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21184001	SS-06	SOIL	03/11/92	03/17/92	04/08/92
21184001DL	SS-06DL	SOIL	03/11/92	03/17/92	04/08/92
21184002	SS-08	SOIL	03/11/92	03/17/92	04/08/92
21184003	SS-09	SOIL	03/11/92	03/17/92	04/08/92
21184004	SS-10	SOIL	03/11/92	03/17/92	04/08/92
21184005	SS-11	SOIL	03/11/92	03/17/92	04/08/92
21184006	SS-12	SOIL	03/11/92	03/17/92	04/09/92
21184009	SS-13	SOIL	03/12/92	03/17/92	04/09/92
21184010	SS-14	SOIL	03/12/92	03/17/92	04/09/92
S03172B1	PBLK17	SOIL	NA	03/17/92	04/08/92

C. Documentation
Exceptions : No exceptions were encountered.

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 1444

II. EXTRACTION

A. Holding times: All holding times were met.

B. Extraction Exceptions : These samples were processed through GPC cleanup eight days after GPC calibration, instead of within the normal seven days. The GPC calibration associated with these samples was performed on 03/11/92.

An additional GPC calibration plot (03/24/92) has been included to demonstrate that the GPC remained in calibration.

No other exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : Internal standards were added to the pesticide/PCB samples before injection for internal QC purposes only. According to CLP protocol, only external standard calculations were performed for this report.

All extracts were processed through GPC, Florisil, and sulfur cleanups. Best reporting limits were still not achieved for three samples due to chemical interferences not removed from the extracts. Samples 21184001 (SS-06), 21184002 (SS-08), and 21184010 (SS-14) were diluted for analysis. Report limits for the PCBs and Toxaphene for these samples were raised beyond values predicted from the dilution factor alone.

No additional exceptions were encountered.

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205.271 1444

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Surrogate recoveries could not be determined for sample 21184010 due to chemical interferences, combined with the ten-fold dilution factor.

All other samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within other batches of samples. The results for samples 21184001 through 21184006 will be reported with the results of our laboratory contract number 21107. The results for samples 21184001 through 21184006 will be reported with the results of our laboratory contract number 21232.

D. Special Conditions : Primary and confirmation data was acquired by a single injection into a dual column/ECD system.

Please note that Forms IV, VI PEST-4, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for Jewell W. Smiley 5/01/92

Herb Kelly Date
Manager, Organic Division

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 1444

SAMPLE DATA PACKAGE

SHIPPING RECEIPTS

BARR ENGINEERING CO.
7800 LENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER: 11267
13/149-003NSLW1

PROJECT NO: WAUKEGAN COKE PLANT RI

PROJECT CONTACT: JIM LAFSETH / MARY MACKEY

LABORATORY: CH2M HILL

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC - CLP TCL	SEMIVOLATILE ORGANIC	METALS - CLP TAL (FILTERED)	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	EXTRACTABLES CLP TCL	PESTICIDES/PCB - CLP TCL	PAHs	PAH/PHENOLS							TOTAL NO. OF CONTAINERS	REMARKS/ ANALYSIS REQUIRED:
SS-06	3/11/92	a.m	X	X		X		X									X	X							001		4	
SS-08	3/11/92	a.m		X		X		X									X	X							002		5	FOR LAB USE ONLY 21184 LMG 3486.XY
SS-09	3/11/92	a.m.	X	X		X		X									X	X							003		4	
SS-10	3/11/92	p.m		X		X		X									X	X							004		5	3/16 VERIFIED KLG 3/21
SS-11	3/11/92	p.m	X	X		X		X									X	X							005		4	
SS-12	3/11/92	p.m	X	X		X		X									X	X							006		4	
TT-03-03	3/11/92	a.m.		X		X													X						007		3	Custody Seal Y; Analysis Y; Cooler Y; Temp; Simple Cont. Seal
TT-09-02	3/11/92	p.m		X		X													X						008		3	

On SS-02 there was a Cracked lid, I replaced it with a new one. BS 3/14 (Post/PCB)

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
(JMF) (SEM)	(SEM)	3/11/92	PM			
RECEIVED BY: (JMF)	RELINQUISHED BY: (JMF)	3/11/92	PM	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME

REMARKS:

SAMPLES SHIPPED VIA ☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER ☐ OTHER

AIR BILL NUMBER: 3586501623

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS; YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY

000128

303 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER: 01266
13/14 9-003NSL31

NO: WAUKEGAN COKE PLANT RI

JIM LANGSETH
PROJECT CONTACT: MARY MACKEY
LABORATORY: CH2M HILL
REMARKS/ ANALYSIS REQUIRED: 2 of 2

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC - CLP	SEMIVOLATILE ORGANIC	METALS - CLP	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	EXTRACTABLES - CLP TCL	PESTICIDES / PCB CLP TCL	PAHs	PAH / PHENOLS							TOTAL NO. OF CONTAINERS
SS-13	3/12/92	A.M	X	X		X		X									X	X					009	0	1	1	4
SS-14	3/12/92	A.M	X	X		X		X									X	X					010	0	1	1	4
TT-16-02	3/12/92	AM	X			X													X				011	0	1	1	2
TT-17-01	3/12/92	AM	X			X														X			012	0	1	1	2
TT-22-01	3/12/92	PM	X			X														X			013	0	1	1	2
~~TT-22-02~~	~~3/12/92~~	~~PM~~	~~X~~			~~X~~													~~X~~								
M-04	3/12/92	AM	X			X														X			014	0	1	1	2
Method Blank																							251				

FOR LAB USE ONLY
LAB: 21184
CHAIN: LM632486 X Y 1-PG
ACK: VERIFIED
HAZWRAP/NEESA Y (N)
QC LEVEL 1 2 (3)
COC Y
ICE Y
ANA REQ Y
TEMP 10C
CUST SEAL Y
PH
SAMPLE COND Sat

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
(JMF) (SEM)	(SEM)	3/12/92	PM			
RECEIVED BY: (JMF)	RELINQUISHED BY: (JMF)	3/12/92	PM	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY: 3/13/92 0930	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME

REMARKS:

SAMPLES SHIPPED VIA ☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER ☐ OTHER

AIR BILL NUMBER: 3586501612

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS: YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY

JMS 3/13/92

000129

Laboratory No. 21200

-- Volatiles

-- Semivolatiles (including PAH/Phenolic Compounds)

-- Pesticides/PCBS

-- Metals

Two investigative soil samples (T03W01 and T03W02) were collected March 13, 1992. Two samples were analyzed for volatiles and metals; and one sample was analyzed for semivolatiles, and pesticides/PCBS. The results of these analyses were reported in this case and qualified as described in the following sections.

Holding Times

Holding times were met on both samples and all analyses using the EPA holding time criteria for water samples.

Instrument Tuning

Volatiles

GC/MS Tuning met the established method performance criteria for compounds, concentrations, frequencies and relative ion abundances for the volatiles analyses.

Semivolatiles

GC/MS Tuning met the established method performance criteria for compounds, concentrations, frequencies and relative ion abundances for the semivolatiles analyses.

Pesticides

Sample T03W02 was processed through GPC cleanup eight days after GPC calibration, instead of within the normal seven days. The GPC calibration associated with this sample was performed 3/11/92. The GPC did remain in

calibration. Instrument performance was acceptable for retention times, retention time windows, and DDT and Endrin degradation for all samples.

Metals

Instrument tuning does not apply to the metals analyses.

Instrument Calibration

Volatiles

Initial calibration percent relative standard deviation (%RSD) and continuing calibration percent difference (%D) values for two volatile parameters were outside the appropriate control limits. Control limits for %RSD and %D were ≤30 percent and ≤25 percent, respectively.

The volatile analyses initial calibration parameters and associated %RSD values beyond control limits were acetone (31.2 percent) and 2-butanone (57.0 percent). Continuing calibration parameter 2-butanone (-91.7 percent) was beyond the %D control limits. These compounds were not detected in either associated sample, so no data were qualified.

Semivolatiles

The semivolatiles analyses initial calibration compound and associated %RSD value beyond control limits was the surrogate standard 1,2-dichlorobenzene-d4 (36.4 percent). Continuing calibrations %D values for the target compound 1,2-dichlorobenzene (-32.5 percent and -30.0 percent) were also beyond control limits. Since the outlier compound was not detected in the associated sample, no data were qualified.

Pesticides

Pesticide/PCB analyses instrument calibration %RSD for methoxychlor (17.5 percent) exceeded the ≤15 percent control limits. Methoxychlor results

in sample T03W02 and the method blank were qualified as estimated and flagged "J."

The remaining calibration %RSD and %D values for all compounds were within the appropriate quality control limits. The resolution check mixture and performance evaluation mixture samples were analyzed at the proper frequency. All retention time and RPD values were within control limits.

Metals

Instrument calibrations were completed the proper number of times using the appropriate number and type of standards and blanks. Initial and continuing calibration percent recovery values were acceptable for all metals analyses.

Blanks

Volatiles

Methylene chloride (170 J µg/kg) and chloroform (350 J µg/kg) were detected in the volatiles blank. Sample results less than five times the blank concentration of chloroform or less than ten times the blank concentration of methylene chloride were qualified as nondetects and flagged "U."

Semivolatiles

Di-n-butylphthalate (50 J µg/kg) was detected in the semivolatiles method blank. Sample results less than ten times the blank concentration of this compound were qualified as nondetects and flagged "U."

Pesticides

No compounds were detected in the pesticide/PCB method blank.

Metals

Total metals analyses calibration and preparation blanks had concentrations of aluminum, arsenic, beryllium, calcium, chromium, copper, iron, lead, manganese, nickel, selenium, silver, sodium, thallium, and zinc. These concentrations were greater than the instrument detection limit (IDL) but less than the contract required detection limit (CRDL). Sample results for these compounds less than five times the blank concentration were qualified as nondetects and flagged "U."

Surrogate Recovery

Volatiles

Volatiles system monitoring compounds were not recovered for samples T03W02, matrix spike and matrix spike duplicate due to the large dilution required for analysis. Recoveries for sample T03W01 were acceptable. No data were qualified.

Semivolatiles

No surrogates were recovered in samples T03W02 and T03W02DL due to the large dilutions required for analysis. Surrogate recoveries were acceptable for the method blank. No data were qualified.

Pesticides

Surrogate recovery could not be determined for sample T03W02 due to the large dilution required for analysis. No data were qualified.

Metals

Total metals analyses ICP interference check sample recoveries and laboratory control sample results were within the appropriate control limits.

Matrix Spike/Matrix Spike Duplicate

Volatiles

Volatiles analyses matrix spike/matrix spike duplicate samples recoveries for benzene (32 percent and -245 percent) and toluene (-14 percent and -522 percent) were beyond control limits. The RPD values for benzene (260 percent) and toluene (190 percent) were also beyond control limits. Recoveries were low on both the matrix spike and matrix spike duplicate samples and both compounds were detected in these and other test trench samples. Results for these two compounds in the associated samples were qualified as estimated and flagged "J."

Semivolatiles

Semivolatile analyses matrix spike/matrix spike duplicate samples RPD values for phenol (77 percent), acenaphthene (32 percent) and pyrene (52 percent) were outside the quality control limits. Since recoveries for these compounds were within acceptance criteria, no data were qualified.

Pesticides

Pesticide/PCB matrix spike/matrix spike duplicate samples had outlier recovery and RPD values for Aldrin (29%R, 64%RPD). Since all other recoveries and RPD values met performance criteria, and Aldrin recoveries on the matrix spike sample were acceptable, no action was taken.

Metals

Metals analyses quality control samples included post digestion spike samples and ICP serial dilution sample. Quality control (duplicate and spike samples) results for sample T03W01 were in report number 21171 (not received) which contained sample data for another CH_2M Hill client. The data were accepted without qualification.

Sample T03W02 duplicate sample results for cadmium (124.4 percent), lead (103.1 percent), manganese (42.5 percent), selenium (27.0 percent), and thallium (144.8 percent) were beyond quality control limits. Associated sample results for these compounds were qualified as estimated and flagged "J."

The spike sample had recoveries beyond control limits (75-125 percent) for antimony (21.0 percent), cadmium (73.8 percent), manganese (144.2 percent), selenium (71.2 percent) and cyanide (-3.1 percent). Results for antimony in sample T03W02 were less than the IDL, were qualified as unusable, and were flagged "R." Sample results for the remaining outlier compounds were qualified as estimated and flagged "J."

Post digestion spike recoveries for the investigative samples were within the 85-115 percent control limits. Selenium (70.7 percent) and thallium (118.5 percent) recoveries for the laboratory control sample were outside the control limits. No sample data were qualified.

Required ICP serial dilution results for all ICP analyzed compounds were within the 10 percent difference control limit.

Field Duplicates

Field duplicate samples were not collected.

Overall Assessment

All data are considered acceptable with the recommended qualifiers except the "R" qualified antimony results in sample T03W02. These data are not usable.

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Scientists

May 1, 1992

LMG33486.XY

Ms. Marti Harding-Smith
Barr Engineering Company
8300 Norman Center Drive
Suite 300
Minneapolis, Minnesota 55437-1026

RE: Analytical Data for LMG Laboratory No. 21200

Dear Ms. Harding-Smith:

On March 14, 1992, the CH2M HILL Montgomery Laboratory received two samples with a request for analysis of selected inorganic parameters.

The analytical results and associated quality control data are enclosed. Any unusual difficulties encountered during the analyses of these samples are discussed in the case narratives.

If you should have any questions concerning the data, please inquire.

The CH2M HILL policy is to store samples for up to 30 days after reporting. If you desire, our laboratory will maintain your samples for a longer period at a cost of $5.00 per sample per month. Samples determined to be hazardous can either be returned to you or disposed of at a cost of $25.00 per sample.

Sincerely,

Wanda L. Hall

Wanda L. Hall
Data Package Supervisor

Enclosures

cc: Mr. Jim Langseth

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EPA QUALIFIERS

INORGANIC ANALYSES

- C (Concentration) Qualifier -- Enter "B" if the reported value obtained was less than the CRDL but greater than or equal to the IDL. Enter "U" if the value was less than the IDL or was not detected.

- Q Qualifier -- Entries and their meanings are:

  E - The reported value is estimated because of interference. An explanatory comment must be included under "Comments" on the Cover Page if the problem applies to all samples in this data package or on the individual FORM I if it is an isolated problem.

  M - Duplicate injection precision was not met (two analyses of the same sample did not agree).

  N - Spiked sample recovery not within control limits.

  S - The reported value was determined by the Method of Standard Additions (MSA).

  W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

  * - Duplicate analysis not within control limits.

  + - Correlation coefficient for the MSA is less than 0.995.

  Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field.

- M (Method) Qualifier -- Enter one of the following:

  P - ICP
  A - Flame AA
  F - Furnace AA
  CV - Manual Cold Vapor AA
  AV - Automated Cold Vapor AA
  AS - Semi-Automated Spectrophotometric
  C - Manual Spectrophotometric
  T - Titrimetric
  NR - Analyte was not required by your lab

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TABLE 1

SAMPLE CROSS-REFERENCE SUMMARY

CH2M HILL Laboratory No. 21200

CH2M HILL Sample No.	Sample Description				
21200001	TT-03W-01	03/13/92	GRAB	13/49-003JSL31	PO#01912
21200002	TT-03W-02	03/13/92	GRAB	13/49-003JSL31	PO#01912

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CATIONS DATA PACKAGE

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CASE NARRATIVE
Cations

Batch Number: 21200

Client/Project: BARR ENGINEERING COMPANY

I. **Holding Time:**
All holding times were met.

II. **Analysis:**

A. **Blanks:**
All acceptance criteria were met.

B. **Calibration:**
All acceptance criteria were met.

C. **ICP Interference Check Sample:**
All acceptance criteria were met.

D. **Spike Sample Analysis:**
Prespike recoveries outside criteria are flagged accordingly.

E. **Duplicate Sample Analysis:**
Duplicate precision outside criteria are flagged accordingly.

F. **Laboratory Control Sample Analysis:**
All acceptance criteria were met.

G. **ICP Serial Dilution:**
ICP serial dilutions outside criteria are flagged accordingly.

H. **Other:**
The QC for mercury and cyanide is included in the 21171 data package. The ICP and GFAA QC is included in the 21232 data package. The serial dilution QC is included in the 21184 data package.

III. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, for other than the conditions detailed above.

SIGNED: Kay Walker for **DATE:** 5/1/92
Kevin A. Sanders
Inorganic Division Manager

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 1444

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CASE NARRATIVE
General Chemistry

Batch Number: 21200

Client/Project: BARR ENGINEERING COMPANY

I. **Holding Time:** All criteria were met.

II. **Analysis:**

A.	Calibration:	Acceptance criteria met.
B.	Blanks:	Acceptance criteria met.
C.	Matrix Spike:	Acceptance criteria met.
D.	Duplicate Analysis:	Acceptance criteria met.
E.	Lab Control Sample:	Acceptance criteria met.
F.	Other:	None.

III. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, for other than the conditions detailed above.

SIGNED: Kaye Wickler for **DATE:** 5/1/92
Kevin A. Sanders
Inorganic Division Manager

000002A

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: CH2M_HILL_MGM_____ Contract: 21200_____

Lab Code: NA____ Case No.: 21200 SAS No.: 21200_ SDG No.:21200_

SOW No.: 3/90_

EPA Sample No.	Lab Sample ID
_-03W-01_____	__S21200001___
_-03W-02_____	__S21200002___

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES

If yes - were raw data generated before application of background corrections ? Yes/No NO_

Comments:

____QC_FOR_MERCURY_AND_CYANIDE_IS_INCLUDED_IN_DATA_PACKAGE_21171._____

____ICP_AND_GFAA_QC_IS_INCLUDED_IN_DATA_PACKAGE_21232.__QC_FOR_____

____SERIAL_DILUTION_IS_INCLUDED_IN_DATA_PACKAGE_21184._____

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Kevin A. Sanders_____

Date: 22APR92 Title: Inorganic Division Mgr__

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TT-03W-01

Lab Name: CH2M_HILL_MGM_____ Contract: 21200_____

Lab Code: NA____ Case No.: 21200 SAS No.: 21200_ SDG No.: 21200_

Matrix (soil/water): SOIL_ Lab Sample ID: S21200001_

Level (low/med): LOW__ Date Received: 03/14/92

% Solids: _49.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_				NR
7440-36-0	Antimony_				NR
7440-38-2	Arsenic__	236		*	F_
7440-39-3	Barium___				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium__				NR
7440-70-2	Calcium__				NR
7440-47-3	Chromium_				NR
7440-48-4	Cobalt___				NR
7440-50-8	Copper___				NR
7439-89-6	Iron_____				NR
7439-92-1	Lead_____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury__				NR
7440-02-0	Nickel___				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-22-4	Silver___				NR
7440-23-5	Sodium___				NR
7440-28-0	Thallium_				NR
7440-62-2	Vanadium_				NR
7440-66-6	Zinc_____				NR
	Cyanide__	956			CA

Color Before: GRAY_____ Clarity Before: N/A___ Texture: MUD___

Color After: CLEAR____ Clarity After: CLEAR_ Artifacts: _____

Comments:
THE_"*"_REFLECT_POOR_DUPLICATE_PRECISION.

FORM I - IN

3/90

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TT-03W-02

Lab Name: CH2M_HILL_MGM_____ Contract: 21200_____

Lab Code: NA____ Case No.: 21200 SAS No.: 21200_ SDG No.: 21200_

Matrix (soil/water): SOIL_ Lab Sample ID: S21200002_

Level (low/med): LOW__ Date Received: 03/14/92

% Solids: _85.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	1270		*	P
7440-36-0	Antimony_	2.5	U	N	P
7440-38-2	Arsenic__	20.6		*	F
7440-39-3	Barium___	8.9	B	E	P
7440-41-7	Beryllium	0.15	B		P
7440-43-9	Cadmium__	0.68	U	N*	P
7440-70-2	Calcium__	29600			P
7440-47-3	Chromium_	6.1			P
7440-48-4	Cobalt___	2.2	B		P
7440-50-8	Copper___	8.7		*	P
7439-89-6	Iron_____	4420			P
7439-92-1	Lead_____	40.7		*	F
7439-95-4	Magnesium	15300			P
7439-96-5	Manganese	138		N*	P
7439-97-6	Mercury__	0.08	U		CV
7440-02-0	Nickel___	3.7	B		P
7440-09-7	Potassium	166	U		P
7782-49-2	Selenium_	3.8		N	F
7440-22-4	Silver___	0.40	U		P
7440-23-5	Sodium___	3200			P
7440-28-0	Thallium_	0.25	U		F
7440-62-2	Vanadium_	6.7	B		P
7440-66-6	Zinc_____	41.0			P
	Cyanide__				NR

Color Before: BLACK____ Clarity Before: N/A___ Texture: LOAM__

Color After: CLEAR____ Clarity After: CLEAR_ Artifacts: _____

Comments:
THE_"N"_QUALIFIER_INDICATES_POOR_PRESPIKE_RECOVERY.

BARR ENGINEERING CO.
78(GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER No 01912
1131/1491-1013JS1L31
NO: Waukegan Coke Plant RI

Jim Lay(eth
PROJECT CONTACT: Mary Mackey
LABORATORY: CH2M Hill
REMARKS/ ANALYSIS REQUIRED:

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC - CLP	SEMIVOLATILE ORGANIC	METALS CLP	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	EXTRACTABLES CLP TCL	PESTICIDES/PCBs CLP TCL	PAHs	PAH / Phenol	ARSENIC						TOTAL NO. OF CONTAINERS
TT-03W-01	03/13/92	AM	X			X					X									X	X			00			4
~~TT-03W-02~~	↓	PM	X			X			Lyn: missed on orders										X								
TT-03W-02	03/13/92	PM	X			X		X									X	X						002			4
Method Blank								✓			✓													251			

FOR LAB USE ONLY
LAB # 21200
PHCM # 811 ME 33486 XY
ACK 8/18 VERIFIED
HAZWRAP/NEESA Y (N)
QC LEVEL 1 2 (3)
COC Yes ICE Yes
ANA REQ Yes TEMP 2°C
CUST SEAL No PH N/A
SAMPLE COND Soil

Sample TT-03W-02
did not give RPD 3/14/92

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
(JMF)	(JMF)	3/13/92	PM			
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB: Kenneth P. Gunderson	DATE 3/14/92	TIME 093

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER: 3586501601

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS: YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COP

000373

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May 1, 1992

LMG33486.XY

Ms. Marti Harding-Smith
Barr Engineering Company
8300 Norman Center Drive
Suite 300
Minneapolis, Minnesota 55437-1026

RE: Analytical Data for LMG Laboratory No. 21200

Dear Ms. Harding-Smith:

On March 14, 1992, the CH2M HILL Montgomery Laboratory received two samples with a request for analysis of selected organic parameters.

The analytical results and associated quality control data are enclosed. Any unusual difficulties encountered during the analyses of these samples are discussed in the case narratives.

If you should have any questions concerning the data, please inquire.

The CH2M HILL policy is to store samples for up to 30 days after reporting. If you desire, our laboratory will maintain your samples for a longer period at a cost of $5.00 per sample per month. Samples determined to be hazardous can either be returned to you or disposed of at a cost of $25.00 per sample.

Sincerely,

Wanda L. Hall

Wanda L. Hall
Data Package Supervisor

Enclosures

cc: Mr. Jim Langseth

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EPA - DEFINED QUALIFIERS

ORGANICS

Definitions for the EPA-defined qualifiers:

U -- Indicates the compound was analyzed for but not detected. The number adjacent to the "U" qualifier indicates the quantitation limit for that compound. The detection limit can vary from sample to sample depending on dilution factors or percent moisture adjustment when indicated.

J -- Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound below the stated quantitation limit. The "J" qualifier is not used with pesticide results.

C -- This flag applies to pesticide results only. The "C" flag indicates the presence of this compound has been confirmed by GC/MS analysis.

B -- This flag is used when the analyte is found in the associated blank as well as the sample. This notation indicates possible blank contamination and suggests the data user evaluate these compounds and their amounts carefully.

E -- This flag applies to GC/MS only. The "E" qualifier indicates a compound may be above or below the linear range of the instrument. If the particular compound level is deemed above the linear calibration range, then the sample should be reanalyzed at an appropriate dilution. Therefore, the "E" qualified amount is an estimated concentration. The results for the dilution will be reported on a separate Form I and will be flagged with a "D" if the dilution brings the concentration within proper calibration.

D -- This flag identifies compounds which have been run at a dilution to bring the concentration of that compound within the linear range of the instrument. "D" qualifiers are only used for samples that have been run initially with results above acceptable ranges. For secondary dilutions the "DL" suffix is appended to the sample number on the Form I.

A -- Indicates the Tentatively Identified Compound (TIC) is a suspected aldol-condensation product.

X -- Indicates the compound concentration has been manually modified or the EPA qualifier has been manually modified or added.

JX -- The compound was detected and quantitated below the Contract Required Quantitation Limit.

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CLIENT SAMPLE ID QUALIFIERS

LEVEL 3

The qualifiers that GC/MS and GC use with the client sample ID are defined below:

DL -- Dilution Run

R -- Rerun (may be followed by a digit to indicate multiple reruns)

RD -- Diluted Rerun

RX -- Re-extraction Analysis

MS -- Matrix Spike (may be followed by a digit to indicate multiple matrix spikes within a sample set)

MSD -- Matrix Spike Duplicate (may be followed by a digit to indicate multiple matrix spike duplicates within a sample set)

VBLK -- Volatile Blank (will be followed by a "W" for waters, "S" for soils run at a low level, or "SM" for soils run at a medium level -- these letters may be followed by a digit to indicate multiple blanks of that type).

SBLK -- Semivolatile Blank (will be followed by a "W" for waters, "S" for soils run at a low level, or "SM" for soils run at a medium level -- these letters may be followed by a digit to indicate multiple blanks of that type).

PBLK -- Pesticide/PCB Blank (may be followed by digits to indicate multiple blanks)

These qualifiers allow GC/MS and GC to have unique client sample ID's so that the client can get more accurate information from the data reported.

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TABLE 1

SAMPLE CROSS-REFERENCE SUMMARY

CH2M HILL Laboratory No. 21200

CH2M HILL Sample No.	Sample Description				
21200001	TT-03W-01	03/13/92	GRAB	13/49-003JSL31	PO#01912
21200002	TT-03W-02	03/13/92	GRAB	13/49-003JSL31	PO#01912

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205.271.1444

INTERNAL STANDARD AND SURROGATE COMPOUNDS

VOLATILE ANALYSIS

The internal standards on the GC/MS volatile chromatograms are designated as IS1, IS2, and IS3. The surrogate standards are labelled as SS1, SS2, and SS3. The compounds corresponding to these labels are listed below.

LABEL	INTERNAL STANDARD COMPOUND
IS1	BROMOCHLOROMETHANE
IS2	1,4-DIFLUOROBENZENE
IS3	D5-CHLOROBENZENE

LABEL	SURROGATE STANDARD COMPOUND
SS1	D4-1,2-DICHLOROETHANE
SS2	D8-TOLUENE
SS3	1,4-BROMOFLUOROBENZENE

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INTERNAL STANDARD AND SURROGATE COMPOUNDS

SEMIVOLATILE ANALYSIS

The internal standards on the GC/MS semivolatile chromatograms are designated as IS1, IS2, IS3, IS4, IS5, and IS6. The surrogate standards are labelled as SS1, SS2, SS3, SS4, SS5, and SS6. The compounds corresponding to these labels are listed below.

LABEL	INTERNAL STANDARD COMPOUND
IS1	D4-1,4-DICHLOROBENZENE
IS2	D8-NAPHTHALENE
IS3	D10-ACENAPHTHENE
IS4	D10-PHENANTHRENE
IS5	D12-CHRYSENE
IS6	D12-PERYLENE

LABEL	SURROGATE STANDARD COMPOUND
SS1	2-FLUOROPHENOL
SS2	D5-PHENOL
SS3	D5-NITROBENZENE
SS4	2-FLUOROBIPHENYL
SS5	2,4,6-TRIBROMOPHENOL
SS6	D14-TERPHENYL

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SAMPLE DATA SUMMARY PACKAGE

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CASE NARRATIVE FOR VOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21200 SDG NO.: N/A

I. RECEIPT

A. DATE: March 14, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21200001	TT-03W-01	SOIL	03/13/92	03/19/92	03/19/92
21200002	TT-03W-02	SOIL	03/13/92	03/19/92	03/19/92
21200M02	TT-03W-02MS	SOIL	03/13/92	03/19/92	03/19/92
21200D02	TT-03W-02MSD	SOIL	03/13/92	03/19/92	03/20/92
L03192B1	VBLKSM	SOIL	NA	03/19/92	03/19/92

C. Documentation
Exceptions : No exceptions were encountered.

II. EXTRACTION

A. Holding Times: All holding times were met. Samples 21200001 (TT-03W-01), 21200002 (TT-03W-02), 21200M02 (TT-03W-02MS), and 21200D02 (TT-03W-02MSD) were analyzed using medium level soil protocols.

B. Extraction
Exceptions : No exceptions were encountered.

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III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : Please see attached table for information concerning methylene chloride and acetone.

No other exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Samples 21200002, 21200M02, and 21200D02 required large dilutions for analysis. Therefore, surrogate recoveries could not be determined for these samples.

All other samples met acceptable QC limits.

C. Matrix Spike Results : Please note that the percent recoveries and relative percent differences for Benzene and Toluene in samples 21200M02 and 21200D02 were outside advisory QC limits. This may possibly be due to the high levels of Benzene and Toluene present in the native sample. Since these are advisory limits only, the laboratory took no further action.

All other spike recoveries were within CLP advisory limits.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for Herb Kelly — Jewell W. Smiley — 5/01/92
Manager, Organic Division — Date

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METHYLENE CHLORIDE/ACETONE SUMMARY

Due to the level of target compounds, the following samples required large dilutions for analysis. As required by the Statement of Work, these dilution factors have been applied, without background subtraction, to all detected compounds, particularly methylene chloride and acetone. As methylene chloride and acetone are common laboratory contaminants, the following table is being provided to present a more accurate perspective of these compounds. Included in the table is 1) the amount of methylene chloride and acetone, detected at the instrument, prior to multiplication by the dilution factor; and 2) the amount of methylene chloride and acetone for that particular sample's laboratory method blank.

SAMPLE	METHYLENE CHLORIDE	ACETONE	METHOD BLANK	METHYLENE CHLORIDE	ACETONE
21200001	5 ug/Kg	10 U	L03192B1	1 ug/Kg	10 U
21200002	5 ug/Kg	10 U	L03192B1	1 ug/Kg	10 U
21200M02	5 ug/Kg	10 U	L03192B1	1 ug/Kg	10 U
21200D02	5 ug/Kg	9 ug/Kg	L03192B1	1 ug/Kg	10 U

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CASE NARRATIVE FOR SEMIVOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21200 SDG NO.: N/A

I. RECEIPT

A. DATE: March 14, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21200002	TT-03W-02	SOIL	03/13/92	03/18/92	03/31/92
21200002DL	TT-03W-02_DL	SOIL	03/13/92	03/18/92	04/02/92
S03182B1	SBLKS	SOIL	NA	03/18/92	03/31/92

C. Documentation Exceptions : Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : Sample 21200002 (TT-03W-02) was processed through GPC cleanup eight days after GPC calibration, instead of within the normal seven days. The GPC calibration associated with this sample was performed on 03/11/92.

An additional GPC calibration plot (03/24/92) is included to demonstrate that the GPC remained within criteria.

No other exceptions were encountered.

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III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Samples 21200002 (TT-03W-02) and 21200002DL (TT-03W-02DL) required a large dilution for analysis. Therefore, surrogate recoveries could not be determined for these samples.

All other samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21232.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

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for Jewell W. Smiley 5/01/92

Herb Kelly Date
Manager, Organic Division

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CASE NARRATIVE FOR PNA/PHENOL MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21200 SDG NO.: N/A

I. RECEIPT

A. DATE: March 14, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21200001	TT-03W-01	SOIL	03/13/91	03/18/92	04/02/92
S03182B1	SBLKS	SOIL	NA	03/18/92	04/02/92

C. Documentation Exceptions : Tentatively Identified Compounds (TIC) were not requested as part of this analysis. Therefore, the TIC forms and raw data will not be included in this package.

As you have requested, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported separately. Due to the low concentrations analyzed for, there may be instances where the native matrix offers chromatographic interferences in this region of the chromatogram, making it difficult to correctly quantitate these isomers as separate compounds. In that case, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported as total Benzo(b&k)fluoranthene. An "NR" (not reported) qualifier will then be used for the compounds which are not reported.

Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

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II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Sample 21200001 (TT-03W-01) required a large dilution for analysis. Therefore, surrogate recoveries could not be determined for this sample.

All other samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21228.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

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for Jewell W. Smiley 5/01/92

Herb Kelly Date
Manager, Organic Division

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CASE NARRATIVE FOR PESTICIDE/PCB GAS CHROMATOGRAPHY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21200 SDG NO.: N/A

I. RECEIPT

A. DATE: March 14, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21200002	TT-03W-02	SOIL	03/13/92	03/17/92	04/09/92
S03172B1	PBLK17	SOIL	NA	03/17/92	04/08/92

C. Documentation
Exceptions : No exceptions were encountered.

II. EXTRACTION

A. Holding times: All holding times were met.

B. Extraction
Exceptions : Sample 21200002 (TT-03W-02) was processed through GPC cleanup eight days after GPC calibration, instead of within the normal seven days. The GPC calibration associated with this sample was performed on 03/11/92.

An additional GPC calibration plot (03/24/92) is included to demonstrate that the GPC remained within criteria.

No other exceptions were encountered.

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III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : Sample 21200002 (TT-03W-02) was diluted by a factor of one hundred for analysis because of the severe chemical interferences which were not removed by our cleanup procedures. Report limits for this sample have been adjusted to reflect both the dilution factor and the residual chemical interferences still observed in the chromatogram.

No additional exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Surrogate recovery could not be determined for sample 21200002 due to the large dilution required for analysis.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21232.

D. Special Conditions : Primary and confirmation data was acquired by a single injection into a dual column/ECD system.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

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Jewell W. Smiley 5/01/92

for Herb Kelly Date
Manager, Organic Division

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-03W-01

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21200 SAS No.: _____ SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 21200001

Sample wt/vol: 4.0 (g/mL) G Lab File ID: B1VM014620

Level: (low/med) MED Date Received: 03/14/92

% Moisture: not dec. 59 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 100 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	2900	U
74-83-9	Bromomethane	2900	U
75-01-4	Vinyl Chloride	2900	U
75-00-3	Chloroethane	2900	U
75-09-2	Methylene Chloride	1500	BJ
67-64-1	Acetone	2900	U
75-15-0	Carbon Disulfide	640	J
75-35-4	1,1-Dichloroethene	2900	U
75-34-3	1,1-Dichloroethane	2900	U
540-59-0	1,2-Dichloroethene (total)	2900	U
67-66-3	Chloroform	2900	U
107-06-2	1,2-Dichloroethane	2900	U
78-93-3	2-Butanone	2900	U
71-55-6	1,1,1-Trichloroethane	2900	U
56-23-5	Carbon Tetrachloride	2900	U
75-27-4	Bromodichloromethane	2900	U
78-87-5	1,2-Dichloropropane	2900	U
10061-01-5	cis-1,3-Dichloropropene	2900	U
79-01-6	Trichloroethene	2900	U
124-48-1	Dibromochloromethane	2900	U
79-00-5	1,1,2-Trichloroethane	2900	U
71-43-2	Benzene	18000	
10061-02-6	trans-1,3-Dichloropropene	2900	U
75-25-2	Bromoform	2900	U
591-78-6	2-Hexanone	2900	U
108-10-1	4-Methyl-2-Pentanone	2900	U
127-18-4	Tetrachloroethene	2900	U
79-34-5	1,1,2,2-Tetrachloroethane	2900	U
108-88-3	Toluene	8800	
108-90-7	Chlorobenzene	2900	U
100-41-4	Ethylbenzene	2700	J
100-42-5	Styrene	2900	U
1330-20-7	Xylene (total)	79000	

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-03W-01

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21200001

Sample wt/vol: 4.0 (g/mL) G Lab File ID: B1VM014620

Level: (low/med) MED Date Received: 03/14/92

% Moisture: not dec. 59 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 100 (uL)

Number TICs found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	BENZENE, TRIMETHYL- ISOMER	19.07	41000	J
2.	BENZENE, TRIMETHYL- ISOMER	19.77	48000	J
3. 89-51-0	BENZENEACETIC ACID, 2-CARBOX	20.42	5800	J
4.	BENZENE, TRIMETHYL- ISOMER	20.62	12000	J
5.	BENZENE, ETHENYL-, METHYL- I	21.19	14000	J
6.	BENZENE, ETHYNYL-, METHYL- I	21.55	52000	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-03W-02

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21200 SAS No.: _____ SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 21200002

Sample wt/vol: 4.0 (g/mL) G Lab File ID: B3VM014622

Level: (low/med) MED Date Received: 03/14/92

% Moisture: not dec. 15 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 15.0(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	9400	U
74-83-9	Bromomethane	9400	U
75-01-4	Vinyl Chloride	9400	U
75-00-3	Chloroethane	9400	U
75-09-2	Methylene Chloride	4500	BJ
67-64-1	Acetone	9400	U
75-15-0	Carbon Disulfide	9400	U
75-35-4	1,1-Dichloroethene	9400	U
75-34-3	1,1-Dichloroethane	9400	U
540-59-0	1,2-Dichloroethene (total)	9400	U
67-66-3	Chloroform	9400	U
107-06-2	1,2-Dichloroethane	9400	U
78-93-3	2-Butanone	9400	U
71-55-6	1,1,1-Trichloroethane	9400	U
56-23-5	Carbon Tetrachloride	9400	U
75-27-4	Bromodichloromethane	9400	U
78-87-5	1,2-Dichloropropane	9400	U
10061-01-5	cis-1,3-Dichloropropene	9400	U
79-01-6	Trichloroethene	9400	U
124-48-1	Dibromochloromethane	9400	U
79-00-5	1,1,2-Trichloroethane	9400	U
71-43-2	Benzene	62000	
10061-02-6	trans-1,3-Dichloropropene	9400	U
75-25-2	Bromoform	9400	U
591-78-6	2-Hexanone	9400	U
108-10-1	4-Methyl-2-Pentanone	9400	U
127-18-4	Tetrachloroethene	9400	U
79-34-5	1,1,2,2-Tetrachloroethane	9400	U
108-88-3	Toluene	120000	
108-90-7	Chlorobenzene	9400	U
100-41-4	Ethylbenzene	15000	
100-42-5	Styrene	62000	
1330-20-7	Xylene (total)	280000	

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-03W-02

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21200 SAS No.: _____ SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 21200002

Sample wt/vol: 4.0 (g/mL) G Lab File ID: B3VM014622

Level: (low/med) MED Date Received: 03/14/92

% Moisture: not dec. 15 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 15.0(uL)

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	BENZENE, ETHYL-, METHYL- ISO	18.97	74000	J
2.	BENZENE, TRIMETHYL- ISOMER	19.07	92000	J
3.	BENZENE, ETHYL-, METHYL- ISO	19.54	16000	J
4.	BENZENE, TRIMETHYL- ISOMER	19.79	180000	J
5. 25013-15-4	BENZENE, ETHENYLMETHYL-	19.92	110000	J
6. 89-51-0	BENZENEACETIC ACID, 2-CARBOX	20.44	27000	J
7.	BENZENE, ETHYL-, METHYL- ISO	20.62	52000	J
8.	BENZENE, ETHENYL-, METHYL- I	21.19	57000	J
9.	BENZENE, ETHYNYL-, METHYL- I	21.55	280000	J
10. 99-87-6	BENZENE, 1-METHYL-4-(1-METHY	21.82	8600	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-03W-02

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21200002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013521

Level: (low/med) LOW Date Received: 03/14/92

% Moisture: 15 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 250.0

GPC Cleanup: (Y/N) Y pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	41000	J
111-44-4	bis(2-Chloroethyl)Ether	97000	U
95-57-8	2-Chlorophenol	97000	U
541-73-1	1,3-Dichlorobenzene	97000	U
106-46-7	1,4-Dichlorobenzene	97000	U
95-50-1	1,2-Dichlorobenzene	97000	U
95-48-7	2-Methylphenol	29000	J
108-60-1	2,2'-oxybis(1-Chloropropane)	97000	U
106-44-5	4-Methylphenol	71000	J
621-64-7	N-Nitroso-Di-n-Propylamine	97000	U
67-72-1	Hexachloroethane	97000	U
98-95-3	Nitrobenzene	97000	U
78-59-1	Isophorone	97000	U
88-75-5	2-Nitrophenol	97000	U
105-67-9	2,4-Dimethylphenol	32000	J
111-91-1	bis(2-Chloroethoxy)Methane	97000	U
120-83-2	2,4-Dichlorophenol	97000	U
120-82-1	1,2,4-Trichlorobenzene	97000	U
91-20-3	Naphthalene	970000	E
106-47-8	4-Chloroaniline	97000	U
87-68-3	Hexachlorobutadiene	97000	U
59-50-7	4-Chloro-3-Methylphenol	97000	U
91-57-6	2-Methylnaphthalene	330000	
77-47-4	Hexachlorocyclopentadiene	97000	U
88-06-2	2,4,6-Trichlorophenol	97000	U
95-95-4	2,4,5-Trichlorophenol	240000	U
91-58-7	2-Chloronaphthalene	97000	U
88-74-4	2-Nitroaniline	240000	U
131-11-3	Dimethylphthalate	97000	U
208-96-8	Acenaphthylene	300000	
606-20-2	2,6-Dinitrotoluene	97000	U
99-09-2	3-Nitroaniline	240000	U
83-32-9	Acenaphthene	40000	J

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-03W-02

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21200002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013521

Level: (low/med) LOW Date Received: 03/14/92

% Moisture: 15 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 250.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	240000	U
100-02-7	4-Nitrophenol	240000	U
132-64-9	Dibenzofuran	170000	
121-14-2	2,4-Dinitrotoluene	97000	U
84-66-2	Diethylphthalate	97000	U
7005-72-3	4-Chlorophenyl-phenylether	97000	U
86-73-7	Fluorene	280000	
100-10-6	4-Nitroaniline	240000	U
534-52-1	4,6-Dinitro-2-methylphenol	240000	U
86-30-6	N-Nitrosodiphenylamine (1)	97000	U
101-55-3	4-Bromophenyl-phenylether	97000	U
118-74-1	Hexachlorobenzene	97000	U
87-86-5	Pentachlorophenol	240000	U
85-01-8	Phenanthrene	460000	
120-12-7	Anthracene	200000	
86-74-8	Carbazole	99000	
84-74-2	Di-n-Butylphthalate	97000	U
206-44-0	Fluoranthene	300000	
129-00-0	Pyrene	240000	
85-68-7	Butylbenzylphthalate	97000	U
91-94-1	3,3'-Dichlorobenzidine	97000	U
56-55-3	Benzo(a)Anthracene	150000	
218-01-9	Chrysene	120000	
117-81-7	bis(2-Ethylhexyl)Phthalate	97000	U
117-84-0	Di-n-Octyl Phthalate	97000	U
205-99-2	Benzo(b)Fluoranthene	73000	J
207-08-9	Benzo(k)Fluoranthene	90000	J
50-32-8	Benzo(a)Pyrene	90000	J
193-39-5	Indeno(1,2,3-cd)Pyrene	35000	J
53-70-3	Dibenz(a,h)Anthracene	12000	J
191-24-2	Benzo(g,h,i)Perylene	24000	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-03W-02

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21200002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA013521

Level: (low/med) LOW Date Received: 03/14/92

% Moisture: 15 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 250.0

GPC Cleanup: (Y/N) Y pH: ____

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	95-63-6	BENZENE, 1,2,4-TRIMETHYL-	8.60	60000	J
2.	766-97-2	BENZENE, 1-ETHYNYL-4-METHYL-	9.74	360000	J
3.	65051-83-4	BENZENE, (1-METHYL-2-CYCLOPR	11.80	110000	J
4.	90-12-0	NAPHTHALENE, 1-METHYL-	14.69	250000	J
5.	92-52-4	1,1'-BIPHENYL	15.79	68000	J
6.	1120-21-4	UNDECANE	16.02	64000	J
7.		NAPHTHALENE, DIMETHYL- ISOME	16.17	110000	J
8.		NAPHTHALENE, DIMETHYL- ISOME	16.40	120000	J
9.		NAPHTHALENE, DIMETHYL- ISOME	16.45	75000	J
10.		NOT IDENTIFIED	18.57	68000	J
11.	7320-53-8	DIBENZOFURAN, 4-METHYL-	19.39	91000	J
12.	86-73-7	9H-FLUORENE	19.44	60000	J
13.	3218-36-8	[1,1'-BIPHENYL]-4-CARBOXALDE	19.57	98000	J
14.		NOT IDENTIFIED	21.15	61000	J
15.		PHENANTHRENE, METHYL- ISOMER	22.94	85000	J
16.		ANTHRACENE, METHYL- ISOMER	23.02	93000	J
17.		ANTHRACENE, METHYL- ISOMER	23.12	67000	J
18.		NOT IDENTIFIED	23.24	170000	J
19.	2381-21-7	PYRENE, 1-METHYL-	26.61	76000	J
20.	238-84-6	11H-BENZO[A]FLUORENE	26.79	63000	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-03W-02_DL

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21200002DL

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A3BA013530

Level: (low/med) LOW Date Received: 03/14/92

% Moisture: 15 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/02/92

Injection Volume: 2.0(uL) Dilution Factor: 1200.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	490000	U
111-44-4	bis(2-Chloroethyl)Ether	490000	U
95-57-8	2-Chlorophenol	490000	U
541-73-1	1,3-Dichlorobenzene	490000	U
106-46-7	1,4-Dichlorobenzene	490000	U
95-50-1	1,2-Dichlorobenzene	490000	U
95-48-7	2-Methylphenol	490000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	490000	U
106-44-5	4-Methylphenol	93000	DJ
621-64-7	N-Nitroso-Di-n-Propylamine	490000	U
67-72-1	Hexachloroethane	490000	U
98-95-3	Nitrobenzene	490000	U
78-59-1	Isophorone	490000	U
88-75-5	2-Nitrophenol	490000	U
105-67-9	2,4-Dimethylphenol	52000	DJ
111-91-1	bis(2-Chloroethoxy)Methane	490000	U
120-83-2	2,4-Dichlorophenol	490000	U
120-82-1	1,2,4-Trichlorobenzene	490000	U
91-20-3	Naphthalene	2000000	D
106-47-8	4-Chloroaniline	490000	U
87-68-3	Hexachlorobutadiene	490000	U
59-50-7	4-Chloro-3-Methylphenol	490000	U
91-57-6	2-Methylnaphthalene	550000	D
77-47-4	Hexachlorocyclopentadiene	490000	U
88-06-2	2,4,6-Trichlorophenol	490000	U
95-95-4	2,4,5-Trichlorophenol	1200000	U
91-58-7	2-Chloronaphthalene	490000	U
88-74-4	2-Nitroaniline	1200000	U
131-11-3	Dimethylphthalate	490000	U
208-96-8	Acenaphthylene	550000	D
606-20-2	2,6-Dinitrotoluene	490000	U
99-09-2	3-Nitroaniline	1200000	U
83-32-9	Acenaphthene	60000	DJ

MSC

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-03W-02_DL

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21200002DL

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A3BA013530

Level: (low/med) LOW Date Received: 03/14/92

% Moisture: 15 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/02/92

Injection Volume: 2.0(uL) Dilution Factor: 1200.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1200000	U
100-02-7	4-Nitrophenol	1200000	U
132-64-9	Dibenzofuran	310000	DJ
121-14-2	2,4-Dinitrotoluene	490000	U
84-66-2	Diethylphthalate	490000	U
7005-72-3	4-Chlorophenyl-phenylether	490000	U
86-73-7	Fluorene	490000	D
100-10-6	4-Nitroaniline	1200000	U
534-52-1	4,6-Dinitro-2-methylphenol	1200000	U
86-30-6	N-Nitrosodiphenylamine (1)	490000	U
101-55-3	4-Bromophenyl-phenylether	490000	U
118-74-1	Hexachlorobenzene	490000	U
87-86-5	Pentachlorophenol	1200000	U
85-01-8	Phenanthrene	910000	D
120-12-7	Anthracene	310000	DJ
86-74-8	Carbazole	200000	DJ
84-74-2	Di-n-Butylphthalate	490000	U
206-44-0	Fluoranthene	520000	D
129-00-0	Pyrene	390000	DJ
85-68-7	Butylbenzylphthalate	490000	U
91-94-1	3,3'-Dichlorobenzidine	490000	U
56-55-3	Benzo(a)Anthracene	230000	DJ
218-01-9	Chrysene	200000	DJ
117-81-7	bis(2-Ethylhexyl)Phthalate	490000	U
117-84-0	Di-n-Octyl Phthalate	490000	U
205-99-2	Benzo(b)Fluoranthene	100000	DJ
207-08-9	Benzo(k)Fluoranthene	150000	DJ
50-32-8	Benzo(a)Pyrene	160000	DJ
193-39-5	Indeno(1,2,3-cd)Pyrene	57000	DJ
53-70-3	Dibenz(a,h)Anthracene	490000	U
191-24-2	Benzo(g,h,i)Perylene	490000	U

MSL

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-03W-02_DL

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21200002DL

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A3BA013530

Level: (low/med) LOW Date Received: 03/14/92

% Moisture: 15 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/02/92

Injection Volume: 2.0(uL) Dilution Factor: 1200.0

GPC Cleanup: (Y/N) Y pH: ____

Number TICs found: 11

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 766-97-2	BENZENE, 1-ETHYNYL-4-METHYL-	9.49	560000	J
2. 65051-83-4	BENZENE, (1-METHYL-2-CYCLOPR	11.55	150000	J
3. 2471-83-2	1H-INDENE, 1-ETHYLIDENE-	14.37	410000	J
4.	NAPHTHALENE, DIMETHYL- ISOME	15.85	170000	J
5.	NAPHTHALENE, DIMETHYL- ISOME	16.10	200000	J
6.	NAPHTHALENE, DIMETHYL- ISOME	16.14	110000	J
7. 613-12-7	ANTHRACENE, 2-METHYL-	22.67	110000	J
8.	NOT IDENTIFIED	22.87	210000	J
9.	NOT IDENTIFIED	24.82	180000	J
10. 2381-21-7	PYRENE, 1-METHYL-	26.22	150000	J
11.	NOT IDENTIFIED	32.36	130000	J

Msc

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/18/92
Lab Sample ID:	21200001	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	TT-03W-01	Percent Moisture:	15.0	Dilution Factor:	1200

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg	CAS Number		ug/Kg
271-89-6	2,3-Benzofuran	490000 U	260-94-6	Acridine	490000 U
496-11-7	2,3-Dihydro-1h-Indene	490000 U	229-87-8	Phenanthridine	490000 U
95-13-6	1H-Indene	79000 J	86-74-8	Carbazole	67000 J
91-20-3	Naphthalene	3500000	206-44-0	Fluoranthene	490000 U
95-15-8	Benzo(b)thiophene	490000 U	129-00-0	Pyrene	490000 U
91-22-5	Quinoline	490000 U	56-55-3	Benzo(a)anthracene	490000 U
119-65-3	Isoquinoline	490000 U	218-01-9	Chrysene/Triphenylene	490000 U
91-57-6	2-Methylnaphthalene	340000 J	NA	Benzo(b&k)fluoranthene	NR
120-72-9	Indole	490000 U	57-97-6	7,12-Dimethylbenz(a)anthrac	490000 U
[illegible]-12-0	1-Methylnaphthalene	160000 J	192-97-2	Benzo(e)pyrene	490000 U
92-52-4	Biphenyl	49000 J	50-32-8	Benzo(a)pyrene	490000 U
208-96-8	Acenaphthylene	63000 J	198-55-0	Perylene	490000 U
83-32-9	Acenaphthene	490000 U	56-49-5	3-Methylcholanthrene	490000 U
132-64-9	Dibenzofuran	76000 J	193-39-5	Indeno(1,2,3-cd)pyrene	490000 U
86-73-7	Fluorene	120000 J	53-70-3	Dibenz(a,h)anthracene	490000 U
132-65-0	Dibenzothiophene	490000 U	191-24-2	Benzo(g,h,i,)perylene	490000 U
85-01-8	Phenanthrene	160000 J	205-99-2	Benzo(b)fluoranthene	490000 U
[illegible]12-7	Anthracene	490000 U	207-08-9	Benzo(k)fluoranthene	490000 U

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/18/92
Lab Sample ID:	21200001	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	TT-03W-01	Percent Moisture:	15.0	Dilution Factor:	1200

PHENOL COMPOUNDS

CAS Number		ug/Kg	CAS Number	ug/Kg
108-95-2	Phenol	490000 U		
95-57-8	2-Chlorophenol	490000 U		
95-48-7	2-Methylphenol	490000 U		
106-44-5	4-Methylphenol	490000 U		
88-75-5	2-Nitrophenol	490000 U		
105-67-9	2,4-Dimethylphenol	490000 U		
120-83-2	2,4-Dichlorophenol	490000 U		
65-85-0	Benzoic acid	1200000U		
59-50-7	4-Chloro-3-Methylphenol	490000 U		
88-06-2	2,4,6-Trichlorophenol	490000 U		
95-95-4	2,4,5-Trichlorophenol	1200000U		
51-28-5	2,4-Dinitrophenol	1200000U		
100-02-7	4-Nitrophenol	1200000U		
534-52-1	4,6-Dinitro-2-Methylphenol	1200000U		
87-86-5	Pentachlorophenol	1200000U		

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-03W-02

Lab Name: CH2M HILL/MGM Contract: _____

Code: CH2M Case No.: 21200 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21200002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 15 decanted: (Y/N) N Date Received: 03/14/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/17/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/09/92

Injection Volume: 2.00 (uL) Dilution Factor: 100

GPC Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	200	U
319-85-7	beta-BHC	200	U
319-86-8	delta-BHC	200	U
58-89-9	gamma-BHC (Lindane)	200	U
76-44-8	Heptachlor	200	U
309-00-2	Aldrin	200	U
1024-57-3	Heptachlor epoxide	200	U
959-98-8	Endosulfan I	200	U
60-57-1	Dieldrin	390	U
72-55-9	4,4'-DDE	390	U
72-20-8	Endrin	390	U
33213-65-9	Endosulfan II	390	U
72-54-8	4,4'-DDD	390	U
1031-07-8	Endosulfan sulfate	390	U
50-29-3	4,4'-DDT	390	U
72-43-5	Methoxychlor	2000	U
53494-70-5	Endrin ketone	390	U
7421-36-3	Endrin aldehyde	390	U
5103-71-9	alpha-Chlordane	200	U
5103-74-2	gamma-Chlordane	200	U
8001-35-2	Toxaphene	100000	U
12674-11-2	Aroclor-1016	20000	U
11104-28-2	Aroclor-1221	40000	U
11141-16-5	Aroclor-1232	20000	U
53469-21-9	Aroclor-1242	20000	U
12672-29-6	Aroclor-1248	20000	U
11097-69-1	Aroclor-1254	20000	U
11096-82-5	Aroclor-1260	20000	U

2B

SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Level:(low/med) MED

	EPA SAMPLE NO.	SMC1 (TOL)#	SMC2 (BFB)#	SMC3 (DCE)#	OTHER	TOT OUT
01	TT-03W-01	87	103	73	0	0
02	TT-03W-02	0 D	0 D	0 D	0	0
03	TT-03W-02MS	0 D	0 D	0 D	0	0
04	TT-03W-02MSD	0 D	0 D	0 D	0	0
05	VBLKSM	105	108	84	0	0

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(84-138)
SMC2 (BFB)	= Bromofluorobenzene	(59-113)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

2D
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Level:(low/med) LOW

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	S7 (2CP)#	S8 (DCB)#	TOT OUT
01	TT-03W-02	0 D	0 D	0 D	0 D	0 D	0 D	0 D	0 D	0
02	TT-03W-02_DL	0 D	0 D	0 D	0 D	0 D	0 D	0 D	0 D	0
03	SBLKS	60	54	53	70	66	66	68	59	0

		QC LIMITS	
S1 (NBZ)	= Nitrobenzene-d5	(23-120)	
S2 (FBP)	= 2-Fluorobiphenyl	(30-115)	
S3 (TPH)	= Terphenyl-d14	(18-137)	
S4 (PHL)	= Phenol-d5	(24-113)	
S5 (2FP)	= 2-Fluorophenol	(25-121)	
S6 (TBP)	= 2,4,6-Tribromophenol	(19-122)	
S7 (2CP)	= 2-Chlorophenol-d4	(20-130)	(advisory)
S8 (DCB)	= 1,2-Dichlorobenzene-d4	(20-130)	(advisory)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

SOIL SURROGATE PERCENT RECOVERY SUMMARY
(Page 1)

Case No. S21200 Contract Laboratory CH2M HILL/MGM
Low XXX Medium

	SEMI-VOLATILE								
SMO TRAFFIC NO.	1-Fluoronaphthalene - SS 0-81	2-Fluorophenol - SS 25-121	Phenol-d5 - SS 24-113	2,4,6-Tribromophenol - SS 19-122	Nitrobenzene-d5 - SS 9-197	2-Fluorobiphenyl - SS 9-109	Terphenyl-d14 - SS 0-143	2-Chlorophenol-d4 - SS 20-130	1,2-Dichlorobenzene - d4 SS 20-130
TT-03W-01	**	**	**	**	**	**	**	**	**
SBLKS	49	65	74	55	59	58	48	72	58

Semi-Volatiles: 0 out of 18; outside of QC limits

Comments:

** - Surrogate Standard not determined due to required dilution.

FORM II

2F

SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: 21200 SAS No.: _____ SDG No.: _____

GC Column(1): SPB-5 ID: 0.53(mm) GC Column(2): SPB-608 ID: 0.53(mm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	PBLK17	73	78	81	84			0
02	TT-03W-02	0D	0D	0D	0D			0

	ADVISORY QC LIMITS
TCX = Tetrachloro-m-xylene	(60-150)
DCB = Decachlorobiphenyl	(60-150)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

3B

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: TT-03W-02 Level:(low/med) MED

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	7350	0	8301	113	59-172
Trichloroethene	7350	0	6782	92	62-137
Benzene	7350	61540	63900	32 *	66-142
Toluene	7350	116600	115600	-14 *	59-139
Chlorobenzene	7350	0	5958	81	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	7350	8428	115	2	22	59-172
Trichloroethene	7350	5586	76	19	24	62-137
Benzene	7350	43510	-245 *	260 *	21	66-142
Toluene	7350	78200	-522 *	190 *	21	59-139
Chlorobenzene	7350	5214	71	13	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 2 out of 5 outside limits
Spike Recovery: 4 out of 10 outside limits

COMMENTS: CLP,21200,,TT-03W-02_DL,M,S,21200002DL,V,EPA,
10DG TO 200DG @8DG/MIN IH=3MIN

4A
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKSM

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Lab File ID: BBVM014617 Lab Sample ID: L03192B1

Date Analyzed: 03/19/92 Time Analyzed: 2004

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) N

Instrument ID: 5100B

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	TT-03W-01	21200001	B1VM014620	2147
02	TT-03W-02	21200002	B3VM014622	2301
03	TT-03W-02MS	21200M02	BMVM014623	2336
04	TT-03W-02MSD	21200D02	BMVM014624	0009

COMMENTS: CLP,21200,,VBLKS,M,S,L03192B1,V,BLANK,
10DG TO 200DG @8DG/MIN IH=3MIN

FORM IV VOA 3/90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKSM

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: L03192B1

Sample wt/vol: 4.0 (g/mL) G Lab File ID: BBVM014617

Level: (low/med) MED Date Received: 03/19/92

% Moisture: not dec. 0 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 100 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200	U
74-83-9	Bromomethane	1200	U
75-01-4	Vinyl Chloride	1200	U
75-00-3	Chloroethane	1200	U
75-09-2	Methylene Chloride	170	J
67-64-1	Acetone	1200	U
75-15-0	Carbon Disulfide	1200	U
75-35-4	1,1-Dichloroethene	1200	U
75-34-3	1,1-Dichloroethane	1200	U
540-59-0	1,2-Dichloroethene (total)	1200	U
67-66-3	Chloroform	350	J
107-06-2	1,2-Dichloroethane	1200	U
78-93-3	2-Butanone	1200	U
71-55-6	1,1,1-Trichloroethane	1200	U
56-23-5	Carbon Tetrachloride	1200	U
75-27-4	Bromodichloromethane	1200	U
78-87-5	1,2-Dichloropropane	1200	U
10061-01-5	cis-1,3-Dichloropropene	1200	U
79-01-6	Trichloroethene	1200	U
124-48-1	Dibromochloromethane	1200	U
79-00-5	1,1,2-Trichloroethane	1200	U
71-43-2	Benzene	1200	U
10061-02-6	trans-1,3-Dichloropropene	1200	U
75-25-2	Bromoform	1200	U
591-78-6	2-Hexanone	1200	U
108-10-1	4-Methyl-2-Pentanone	1200	U
127-18-4	Tetrachloroethene	1200	U
79-34-5	1,1,2,2-Tetrachloroethane	1200	U
108-88-3	Toluene	1200	U
108-90-7	Chlorobenzene	1200	U
100-41-4	Ethylbenzene	1200	U
100-42-5	Styrene	1200	U
1330-20-7	Xylene (total)	1200	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKSM

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: L03192B1

Sample wt/vol: 4.0 (g/mL) G Lab File ID: BBVM014617

Level: (low/med) MED Date Received: 03/19/92

% Moisture: not dec. 0 Date Analyzed: 03/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 100 (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

4B

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Lab File ID: ABBA013512 Lab Sample ID: S03182B1

Instrument ID: 4000 Date Extracted: 03/18/92

Matrix: (soil/water) SOIL Date Analyzed: 03/31/92

Level:(low/med) LOW Time Analyzed: 1438

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE	DATE ANALYZED
01	TT-03W-02	21200002	A1BA013521	03/31/92
02	TT-03W-02_DL	21200002DL	A3BA013530	04/02/92

COMMENTS: CLP,21184,,SBLKS,L,S,S03182B1,B,BLANK,
20DG TO 310DG @4DG/MIN IH=10MIN

FORM IV SV

3/90 MTP

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: S03182B1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: ABBA013512

Level: (low/med) LOW Date Received: 03/18/92

% Moisture: 0 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	800	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	330	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: S03182B1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: ABBA013512

Level: (low/med) LOW Date Received: 03/18/92

% Moisture: 0 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	800	U
100-02-7	4-Nitrophenol	800	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-10-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	50	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: S03182B1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: ABBA013512

Level: (low/med) LOW Date Received: 03/18/92

% Moisture: 0 decanted: (Y/N) N Date Extracted: 03/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/31/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NOT IDENTIFIED	6.83	260	J
2. 3240-09-3	5-HEXEN-2-ONE, 5-METHYL-	7.83	230	J
3. 18641-71-9	3-HEPTANONE, 2,4-DIMETHYL-	8.85	90	J
.	NOT IDENTIFIED	9.97	120	J
5. 17851-53-5	1,2-BENZENEDICARBOXYLIC ACID	22.55	130	J
6.	NOT IDENTIFIED	3.75	590	J
7.	NOT IDENTIFIED	4.80	9600	J

MSC

4B

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S21200 SAS No.: _____ SDG No.: _____

Lab File ID: DBPA010363 Lab Sample ID: S03182B1

Instrument ID: 5100D Date Extracted: 03/18/92

Matrix: (soil/water) SOIL Date Analyzed: 04/02/92

Level:(low/med) LOW Time Analyzed: 0857

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TT-03W-01	21200001	D2PA010374	04/02/92

COMMENTS: CLP,21184,,SBLKS,L,S,S03182B1,B,BLANK
30DG TO 310DG @10DG/MIN IH=4MINS

FORM IV SV

3/90 MTP

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/18/92
Lab Sample ID:	S03182B1	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	SBLKS	Percent Moisture:	0.0	Dilution Factor:	1.0

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	330	U	260-94-6	Acridine	330	U
496-11-7	2,3-Dihydro-1h-Indene	330	U	229-87-8	Phenanthridine	330	U
95-13-6	1H-Indene	330	U	86-74-8	Carbazole	330	U
91-20-3	Naphthalene	330	U	206-44-0	Fluoranthene	330	U
95-15-8	Benzo(b)thiophene	330	U	129-00-0	Pyrene	330	U
91-22-5	Quinoline	330	U	56-55-3	Benzo(a)anthracene	330	U
119-65-3	Isoquinoline	330	U	218-01-9	Chrysene/Triphenylene	330	U
91-57-6	2-Methylnaphthalene	330	U	NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	330	U	57-97-6	7,12-Dimethylbenz(a)anthrac	330	U
[illegible]-12-0	1-Methylnaphthalene	330	U	192-97-2	Benzo(e)pyrene	330	U
[illegible]-52-4	Biphenyl	330	U	50-32-8	Benzo(a)pyrene	330	U
208-96-8	Acenaphthylene	330	U	198-55-0	Perylene	330	U
83-32-9	Acenaphthene	330	U	56-49-5	3-Methylcholanthrene	330	U
132-64-9	Dibenzofuran	330	U	193-39-5	Indeno(1,2,3-cd)pyrene	330	U
86-73-7	Fluorene	330	U	53-70-3	Dibenz(a,h)anthracene	330	U
132-65-0	Dibenzothiophene	330	U	191-24-2	Benzo(g,h,i,)perylene	330	U
85-01-8	Phenanthrene	330	U	205-99-2	Benzo(b)fluoranthene	330	U
1[illegible] 12-7	Anthracene	330	U	207-08-9	Benzo(k)fluoranthene	330	U

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/18/92
Lab Sample ID:	S03182B1	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	SBLKS	Percent Moisture:	0.0	Dilution Factor:	1.0

PHENOL COMPOUNDS

CAS Number		ug/Kg		CAS Number	ug/Kg
108-95-2	Phenol	330	U		
95-57-8	2-Chlorophenol	330	U		
95-48-7	2-Methylphenol	330	U		
106-44-5	4-Methylphenol	330	U		
88-75-5	2-Nitrophenol	330	U		
105-67-9	2,4-Dimethylphenol	330	U		
65-85-0	Benzoic Acid	1600	U		
120-83-2	2,4-Dichlorophenol	330	U		
59-50-7	4-Chloro-3-Methylphenol .	330	U		
88-06-2	2,4,6-Trichlorophenol . .	330	U		
95-95-4	2,4,5-Trichlorophenol . .	800	U		
51-28-5	2,4-Dinitrophenol	800	U		
100-02-7	4-Nitrophenol	800	U		
534-52-1	4,6-Dinitro-2-methylphenol	800	U		
87-86-5	Pentachlorophenol	800	U		

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

4C

PESTICIDE METHOD BLANK SUMMARY

EPA SAMPLE NO.

PBLK17

Lab Name: CH2M HILL/MGM Contract: _____

Code: CH2M Case No.: 21200 SAS No.: _____ SDG No.: _____

Lab Sample ID: S03172B1 Lab File ID: _____

Matrix:(soil/water) SOIL Extraction:(SepF/Cont/Sonc) SONC

Sulfur Cleanup: (Y/N) Y Date Extracted: 03/17/92

Date Analyzed (1): 04/08/92 Date Analyzed (2): 04/08/92

Time Analyzed (1): 0938 Time Analyzed (2): 0938

Instrument ID (1): V6000A Instrument ID (2): V6000B

GC Column (1): SPB-5 ID: 0.53 (mm) GC Column (2): SPB-608 ID: 0.53 (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	TT-03W-02	21200002	04/09/92	04/09/92

COMMENTS:

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK17

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: CH2M Case No.: 21200 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: S03172B1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 03/17/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/08/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.0 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.3	U
72-55-9	4,4'-DDE	3.3	U
72-20-8	Endrin	3.3	U
33213-65-9	Endosulfan II	3.3	U
72-54-8	4,4'-DDD	3.3	U
1031-07-8	Endosulfan sulfate	3.3	U
50-29-3	4,4'-DDT	3.3	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.3	U
7421-36-3	Endrin aldehyde	3.3	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	67	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): BSVM014609 Date Analyzed: 03/19/92

Instrument ID: 5100B Time Analyzed: 1521

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) N

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	32169	10.00	141800	11.52	121331	16.39
	UPPER LIMIT	64338	10.50	283600	12.02	242662	16.89
	LOWER LIMIT	16084	9.50	70900	11.02	60666	15.89
	EPA SAMPLE NO.						
01	TT-03W-01	26960	10.00	117846	11.52	94891	16.39
02	TT-03W-02	22202	10.05	96981	11.54	88050	16.39
03	TT-03W-02MS	23398	10.02	100075	11.54	85378	16.40
04	TT-03W-02MSD	23162	10.00	97997	11.50	83820	16.39
05	VBLKSM	32209	10.02	135685	11.54	115126	16.39

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): ASBA013507 Date Analyzed: 03/31/92

Instrument ID: 4000 Time Analyzed: 1117

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	12 HOUR STD	16327	9.04	64508	12.40	30937	17.30
	UPPER LIMIT	32654	9.54	129016	12.90	61874	17.80
	LOWER LIMIT	8164	8.54	32254	11.90	15468	16.80
	EPA SAMPLE NO.						
01	TT-03W-02	19720	8.99	85309	12.44	49773	17.35
02	SBLKS	14477	8.97	66716	[illegible]	37833	17.30

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM VIII SV-1 3/90 MM

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): ASBA013507 Date Analyzed: 03/31/92

Instrument ID: 4000 Time Analyzed: 1117

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	45685	21.42	41870	29.06	40938	32.91
	UPPER LIMIT	91370	21.92	83740	29.56	81876	33.41
	LOWER LIMIT	22842	20.92	20935	28.56	20469	32.41
	EPA SAMPLE NO.						
01	TT-03W-02	74283	21.49	65610	29.12	62412	32.96
02	SBLKS	55937	21.40	53421	29.07	51224	32.92

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): ASBA013523 Date Analyzed: 04/02/92

Instrument ID: 4000 Time Analyzed: 1410

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	12 HOUR STD	16391	8.72	64426	12.15	30275	17.05
	UPPER LIMIT	32782	9.22	128852	12.65	60550	17.55
	LOWER LIMIT	8196	8.22	32213	11.65	15138	16.55
	EPA SAMPLE NO.						
01	TT-03W-02_DL	16654	8.77	75173	12.15	37622	17.02

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21200 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): ASBA013523 Date Analyzed: 04/02/92

Instrument ID: 4000 Time Analyzed: 1410

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	40409	21.17	35554	28.77	38449	32.59
	UPPER LIMIT	80818	21.67	71108	29.27	76898	33.09
	LOWER LIMIT	20204	20.67	17777	28.27	19224	32.09
	EPA SAMPLE NO.						
01	TT-03W-02_DL	53506	21.12	46207	28.71	48305	32.54

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S21200 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): DSPA010362 Date Analyzed: 04/02/92

Instrument ID: 5100D Time Analyzed: 0813

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT #
	12 HOUR STD	9234	9.82	35837	12	25187	17.05
	UPPER LIMIT	18468	10.32	71674	[illegible]	50374	17.55
	LOWER LIMIT	4617	9.32	17918	[illegible]	12594	16.55
	EPA SAMPLE NO.						
01	TT-03W-01	8069	9.79	34951	12.64	27535	16.89
02	SBLKS	10209	9.80	43639	12.74	31780	17.04

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: S21200 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): DSPA010362 Date Analyzed: 04/02/92

Instrument ID: 5100D Time Analyzed: 0813

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	41092	20.70	41286	27.42	47700	30.81
	UPPER LIMIT	82184	21.20	82572	27.92	95400	31.31
	LOWER LIMIT	20546	20.20	20643	26.92	23850	30.31
	EPA SAMPLE NO.						
01	TT-03W-01	49393	20.52	59904	27.24	68954	30.64
02	SBLKS	57487	20.69	66829	27.41	69719	30.81

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

SAMPLE DATA PACKAGE

SAMPLE DATA PACKAGE

CASE NARRATIVE

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CASE NARRATIVE FOR VOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21200 SDG NO.: N/A

I. RECEIPT

A. DATE: March 14, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21200001	TT-03W-01	SOIL	03/13/92	03/19/92	03/19/92
21200002	TT-03W-02	SOIL	03/13/92	03/19/92	03/19/92
21200M02	TT-03W-02MS	SOIL	03/13/92	03/19/92	03/19/92
21200D02	TT-03W-02MSD	SOIL	03/13/92	03/19/92	03/20/92
L03192B1	VBLKSM	SOIL	NA	03/19/92	03/19/92

C. Documentation
Exceptions : No exceptions were encountered.

II. EXTRACTION

A. Holding Times: All holding times were met. Samples 21200001 (TT-03W-01), 21200002 (TT-03W-02), 21200M02 (TT-03W-02MS), and 21200D02 (TT-03W-02MSD) were analyzed using medium level soil protocols.

B. Extraction
Exceptions : No exceptions were encountered.

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III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : Please see attached table for information concerning methylene chloride and acetone.

No other exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Samples 21200002, 21200M02, and 21200D02 required large dilutions for analysis. Therefore, surrogate recoveries could not be determined for these samples.

All other samples met acceptable QC limits.

C. Matrix Spike Results : Please note that the percent recoveries and relative percent differences for Benzene and Toluene in samples 21200M02 and 21200D02 were outside advisory QC limits. This may possibly be due to the high levels of Benzene and Toluene present in the native sample. Since these are advisory limits only, the laboratory took no further action.

All other spike recoveries were within CLP advisory limits.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for Herb Kelly — Jewell W. Smiley — 5/01/92
Manager, Organic Division — Date

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METHYLENE CHLORIDE/ACETONE SUMMARY

Due to the level of target compounds, the following samples required large dilutions for analysis. As required by the Statement of Work, these dilution factors have been applied, without background subtraction, to all detected compounds, particularly methylene chloride and acetone. As methylene chloride and acetone are common laboratory contaminants, the following table is being provided to present a more accurate perspective of these compounds. Included in the table is 1) the amount of methylene chloride and acetone, detected at the instrument, prior to multiplication by the dilution factor; and 2) the amount of methylene chloride and acetone for that particular sample's laboratory method blank.

SAMPLE	METHYLENE CHLORIDE	ACETONE	METHOD BLANK	METHYLENE CHLORIDE	ACETONE
21200001	5 ug/Kg	10 U	L03192B1	1 ug/Kg	10 U
21200002	5 ug/Kg	10 U	L03192B1	1 ug/Kg	10 U
21200M02	5 ug/Kg	10 U	L03192B1	1 ug/Kg	10 U
21200D02	5 ug/Kg	9 ug/Kg	L03192B1	1 ug/Kg	10 U

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CASE NARRATIVE FOR SEMIVOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21200 SDG NO.: N/A

I. RECEIPT

A. DATE: March 14, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21200002	TT-03W-02	SOIL	03/13/92	03/18/92	03/31/92
21200002DL	TT-03W-02_DL	SOIL	03/13/92	03/18/92	04/02/92
S03182B1	SBLKS	SOIL	NA	03/18/92	03/31/92

C. Documentation Exceptions : Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : Sample 21200002 (TT-03W-02) was processed through GPC cleanup eight days after GPC calibration, instead of within the normal seven days. The GPC calibration associated with this sample was performed on 03/11/92.

An additional GPC calibration plot (03/24/92) is included to demonstrate that the GPC remained within criteria.

No other exceptions were encountered.

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III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Samples 21200002 (TT-03W-02) and 21200002DL (TT-03W-02DL) required a large dilution for analysis. Therefore, surrogate recoveries could not be determined for these samples.

All other samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21232.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for Jewell W. Smiley 5/01/92
Herb Kelly Date
Manager, Organic Division

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CASE NARRATIVE FOR PNA/PHENOL MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21200 SDG NO.: N/A

I. RECEIPT

A. DATE: March 14, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21200001	TT-03W-01	SOIL	03/13/91	03/18/92	04/02/92
S03182B1	SBLKS	SOIL	NA	03/18/92	04/02/92

C. Documentation Exceptions : Tentatively Identified Compounds (TIC) were not requested as part of this analysis. Therefore, the TIC forms and raw data will not be included in this package.

As you have requested, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported separately. Due to the low concentrations analyzed for, there may be instances where the native matrix offers chromatographic interferences in this region of the chromatogram, making it difficult to correctly quantitate these isomers as separate compounds. In that case, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported as total Benzo(b&k)fluoranthene. An "NR" (not reported) qualifier will then be used for the compounds which are not reported.

Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

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II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Sample 21200001 (TT-03W-01) required a large dilution for analysis. Therefore, surrogate recoveries could not be [illegible]ined for this sample.

All other samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21228.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for Jewell W. Finley 5/01/92

Herb Kelly Date
Manager, Organic Division

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CASE NARRATIVE FOR PESTICIDE/PCB GAS CHROMATOGRAPHY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21200 SDG NO.: N/A

I. RECEIPT

A. DATE: March 14, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21200002	TT-03W-02	SOIL	03/13/92	03/17/92	04/09/92
S03172B1	PBLK17	SOIL	NA	03/17/92	04/08/92

C. Documentation
Exceptions : No exceptions were encountered.

II. EXTRACTION

A. Holding times: All holding times were met.

B. Extraction
Exceptions : Sample 21200002 (TT-03W-02) was processed through GPC cleanup eight days after GPC calibration, instead of within the normal seven days. The GPC calibration associated with this sample was performed on 03/11/92.

An additional GPC calibration plot (03/24/92) is included to demonstrate that the GPC remained within criteria.

No other exceptions were encountered.

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III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : Sample 21200002 (TT-03W-02) was diluted by a factor of one hundred for analysis because of the severe chemical interferences which were not removed by our cleanup procedures. Report limits for this sample have been adjusted to reflect both the dilution factor and the residual chemical interferences still observed in the chromatogram.

No additional exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Surrogate recovery could not be determined for sample 21200002 due to the large dilution required for analysis.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21232.

D. Special Conditions : Primary and confirmation data was acquired by a single injection into a dual column/ECD system.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jewell W. Smiley 5/01/92

for Herb Kelly Date
Manager, Organic Division

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SAMPLE DATA PACKAGE

SHIPPING RECEIPTS

BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER No. 01912
113/1491-1013JS1L311

NO: Waukegan Coke Plant RI

Jim Langseth
PROJECT CONTACT:
Mary Mackey
LABORATORY:
CH2M Hill
REMARKS/
ANALYSIS REQUIRED:

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC - CLP T	SEMIVOLATILE ORGANIC	METALS CLPTAL	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	EXTRACTABLES CLP TCL	PESTICIDES/PCBs CLP TCL	PAHs	PAH / Phenol	ARSENIC					TOTAL NO. OF CONTAINERS
TT-03W-01	03/13/92	AM	X			X					X									X	X			008		4
~~TT-03W-02~~	↓	PM	X			X			Line crossed out once used										X							
TT-03W-02	03/13/92	PM	X			X		X									X	X						002		4
Method Blank								✓			✓													251		

FOR LAB USE ONLY
LAB # 21200
PIKM# ME 33486 XY
ACK - 8/N - 1/8 VERIFIED
HAZWRAP/NEESA Y (N)
QC LEVEL 1 2 (3)
COC Yes | ICE Yes
ANA REQ Yes | TEMP 2°C
CUST SEAL No | pH n/a
SAMPLE COND Soil

Sample TT-03W-02 did contain KPO 3/14/92

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
(JMF)	(JMF)	3/13/92	PM			
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB: Kenneth P.	DATE 3/14/92	TIME 09

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER: 3586501601

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS; YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COP

090000

Laboratory No. 21211

-- Volatiles

-- PAH/Phenolic Compounds

Two investigative soil samples (TT1301 and TT2101) were collected March 16, 1992 and analyzed for Volatiles and PAH/phenols. The results of these analyses were reported in this case and qualified as described in the following sections.

Holding Times

Holding times were met on both samples and analyses using the EPA holding time criteria for water samples.

Instrument Tuning

Volatiles

GC/MS Tuning met the established method performance criteria for compounds, concentrations, frequencies and relative ion abundances for the volatiles analyses.

Semivolatiles

GC/MS Tuning met the established method performance criteria for compounds, concentrations, frequencies and relative ion abundances for the volatiles analyses.

Instrument Calibration

Volatiles

Initial calibration percent relative standard deviation (%RSD) and continuing calibration percent difference (%D) values for several volatile parameters were outside the appropriate control limits. Control limits for %RSD and %D were $\leq$30 percent and $\leq$25 percent, respectively.

The volatiles analyses initial calibration parameter and %RSD value beyond control limits was chloroethane (32.4 percent). The continuing calibration parameters that exceeded the %D control limits were chloromethane (43.6 percent), carbon disulfide (27.0 percent), and 2-hexanone (30.9 percent). Carbon disulfide was detected, qualified as estimated and flagged "J" in sample TT1301. None of the other outlier compounds were detected in the associated samples, so no further action was taken.

Semivolatiles

Initial calibration percent relative standard deviation (%RSD) and continuing calibration percent difference (%D) values for all semivolatile parameters were within control limits.

Blanks

Volatiles

Methylene chloride (4 J µg/kg), acetone (10 µg/kg) and chloroform (2 J µg/kg) were detected in the volatiles method blank. [illegible]le results less than five times the blank concentration of chloroform or less [illegible]n ten times the blank concentration of either remaining compound were qualified as nondetects and flagged "U."

PAH/Phenols

No compounds were detected in this blank.

Surrogate Recovery

Volatiles

Volatiles system monitoring compounds recoveries were within the established quality control limits.

PAH/Phenols

Semivolatiles surrogate compound recoveries were within the established quality control limits.

Matrix Spike/Matrix Spike Duplicate

Volatiles

Volatiles analyses matrix spike/matrix spike duplicate samples percent recovery and RPD values were within the appropriate quality control limits for all spike compounds.

PAH/Phenols

Matrix sike/matrix spike duplicate samples had several compounds with recoveries and RPD values outside control limits. These results may be due to the high level of spike compounds in the native sample, so no data were qualified.

Field Duplicates

No field duplicates were collected.

Overall Assessment

The data are considered acceptable with the recommended qualifiers.

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APR 16 92

April 15, 1992

LMG33486.XY

Ms. Marti Harding-Smith
Barr Engineering Company
8300 Norman Center Drive
Suite 300
Minneapolis, Minnesota 55437-1026

RE: Analytical Data for LMG Laboratory No. 21211

Dear Ms. Harding-Smith:

On March 17, 1992, the CH2M HILL Montgomery Laboratory received two samples with a request for analysis of selected organic parameters.

The analytical results and associated quality control data are enclosed. Any unusual difficulties encountered during the analyses of these samples are discussed in the case narratives.

If you should have any questions concerning the data, please inquire.

The CH2M HILL policy is to store samples for up to 30 days after reporting. If you desire, our laboratory will maintain your samples for a longer period at a cost of $5.00 per sample per month. Samples determined to be hazardous can either be returned to you or disposed of at a cost of $25.00 per sample.

Sincerely,

Wanda L. Hall

Wanda L. Hall
Data Package Supervisor

Enclosures

cc: Mr. Jim Langseth

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EPA - DEFINED QUALIFIERS

ORGANICS

Definitions for the EPA-defined qualifiers:

U -- Indicates the compound was analyzed for but not detected. The number adjacent to the "U" qualifier indicates the quantitation limit for that compound. The detection limit can vary from sample to sample depending on dilution factors or percent moisture adjustment when indicated.

J -- Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound below the stated quantitation limit. The "J" qualifier is not used with pesticide results.

C -- This flag applies to pesticide results only. The "C" flag indicates the presence of this compound has been confirmed by GC/MS analysis.

B -- This flag is used when the analyte is found in the associated blank as well as the sample. This notation indicates possible blank contamination and suggests the data user evaluate these compounds and their amounts carefully.

E -- This flag applies to GC/MS only. The "E" qualifier indicates a compound may be above or below the linear range of the instrument. If the particular compound level is deemed above the linear calibration range, then the sample should be reanalyzed at an appropriate dilution. Therefore, the "E" qualified amount is an estimated concentration. The results for the dilution will be reported on a separate Form I and will be flagged with a "D" if the dilution brings the concentration within proper calibration.

D -- This flag identifies compounds which have been run at a dilution to bring the concentration of that compound within the linear range of the instrument. "D" qualifiers are only used for samples that have been run initially with results above acceptable ranges. For secondary dilutions the "DL" suffix is appended to the sample number on the Form I.

A -- Indicates the Tentatively Identified Compound (TIC) is a suspected aldol-condensation product.

X -- Indicates the compound concentration has been manually modified or the EPA qualifier has been manually modified or added.

JX -- The compound was detected and quantitated below the Contract Required Quantitation Limit.

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CLIENT SAMPLE ID QUALIFIERS

LEVEL 3

The qualifiers that GC/MS and GC use with the client sample ID are defined below:

DL -- Dilution Run

R -- Rerun (may be followed by a digit to indicate multiple reruns)

RD -- Diluted Rerun

RX -- Re-extraction Analysis

MS -- Matrix Spike (may be followed by a digit to indicate multiple matrix spikes within a sample set)

MSD -- Matrix Spike Duplicate (may be followed by a digit to indicate multiple matrix spike duplicates within a sample set)

VBLK -- Volatile Blank (will be followed by a "W" for waters, "S" for soils run at a low level, or "SM" for soils run at a medium level -- these letters may be followed by a digit to indicate multiple blanks of that type).

SBLK -- Semivolatile Blank (will be followed by a "W" for waters, "S" for soils run at a low level, or "SM" for soils run at a medium level -- these letters may be followed by a digit to indicate multiple blanks of that type).

PBLK -- Pesticide/PCB Blank (may be followed by digits to indicate multiple blanks)

These qualifiers allow GC/MS and GC to have unique client sample ID's so that the client can get more accurate information from the data reported.

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TABLE 1

SAMPLE CROSS-REFERENCE SUMMARY

CH2M HILL Laboratory No. 21211

CH2M HILL Sample No.	Sample Description				
21211001	TT-13-01	03/16/92	GRAB	13/49-003JSL31	PO#01264
21211002	TT-21-01	03/16/92	GRAB	13/49-003JSL31	PO#01264

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INTERNAL STANDARD AND SURROGATE COMPOUNDS

VOLATILE ANALYSIS

The internal standards on the GC/MS volatile chromatograms are designated as IS1, IS2, and IS3. The surrogate standards are labelled as SS1, SS2, and SS3. The compounds corresponding to these labels are listed below.

LABEL	INTERNAL STANDARD COMPOUND
IS1	BROMOCHLOROMETHANE
IS2	1,4-DIFLUOROBENZENE
IS3	D5-CHLOROBENZENE

LABEL	SURROGATE STANDARD COMPOUND
SS1	D4-1,2-DICHLOROETHANE
SS2	D8-TOLUENE
SS3	1,4-BROMOFLUOROBENZENE

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INTERNAL STANDARD AND SURROGATE COMPOUNDS

SEMIVOLATILE ANALYSIS

The internal standards on the GC/MS semivolatile chromatograms are designated as IS1, IS2, IS3, IS4, IS5, and IS6. The surrogate standards are labelled as SS1, SS2, SS3, SS4, SS5, and SS6. The compounds corresponding to these labels are listed below.

LABEL	INTERNAL STANDARD COMPOUND
IS1	D4-1,4-DICHLOROBENZENE
IS2	D8-NAPHTHALENE
IS3	D10-ACENAPHTHENE
IS4	D10-PHENANTHRENE
IS5	D12-CHRYSENE
IS6	D12-PERYLENE

LABEL	SURROGATE STANDARD COMPOUND
SS1	2-FLUOROPHENOL
SS2	D5-PHENOL
SS3	D5-NITROBENZENE
SS4	2-FLUOROBIPHENYL
SS5	2,4,6-TRIBROMOPHENOL
SS6	D14-TERPHENYL

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 1444

SAMPLE DATA SUMMARY PACKAGE

Engineers
Planners
Economists
Scientists

CASE NARRATIVE FOR VOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21211 SDG NO.: N/A

I. RECEIPT

A. DATE: March 17, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21211001	TT-13-01	SOIL	03/16/92	NA	03/25/92
21211002	TT-21-01	SOIL	03/16/92	NA	03/25/92
Y03242B2	VBLKS	SOIL	NA	NA	03/24/92

C. Documentation
Exceptions : No exceptions were encountered.

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive. P O. Box 230548. Montgomery, Alabama 36116 205 271 1444

II. EXTRACTION

A. Holding Times: Medium level protocol was not performed; therefore, extraction time is not applicable.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21184.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Herb Kelly 4/15/92

Herb Kelly Date
Manager, Organic Division

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 [illegible]

Engineers
Planners
CH2M HILL Economists
Scientists

CASE NARRATIVE FOR PNA
MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21211 SDG NO.: N/A

I. RECEIPT

A. DATE: March 17, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21211001	TT-13-01	SOIL	03/16/92	03/18/92	04/02/92
21211002	TT-21-01	SOIL	03/16/92	03/18/92	04/02/92
S03182B1	SBLKS	SOIL	NA	03/18/92	04/02/92

C. Documentation Exceptions : Tentatively Identified Compounds (TIC) were not requested as part of this analysis. Therefore, the TIC forms and raw data will not be included in this package.

As you have requested, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported separately. Due to the low concentrations analyzed for, there may be instances w[illegible] [illegible]ative matrix offers chromatographic int[illegible]rences in this region of the chromatogram, making it difficult to correctly quantitate these isomers as separate compounds. In that case, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported as total Benzo(b&k)fluoranthene. An "NR" (not reported) qualifier will then be used for the compounds for which are not reported.

Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

CH2M HILL Quality Analytical Laboratories [illegible]airlane Drive, P.O. Box 230548, [illegible]mery, Alabama 36116 205 271 1444

II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21128.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Herb Kelly 4/15/92
Herb Kelly Date
Manager, Organic Division

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 1333

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-13-01

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21211 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21211001

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021134

Level: (low/med) LOW Date Received: 03/17/92

% Moisture: not dec. 6 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	16	B
67-64-1	Acetone	19	B
75-15-0	Carbon Disulfide	2	J
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	1	BJ
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	9	J
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
591-78-6	2-Hexanone	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	1	J
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	2	J
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	9	J

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-13-01

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21211 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21211001

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021134

Level: (low/med) LOW Date Received: 03/17/92

% Moisture: not dec. 6 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

FORM I VOA-TIC

3/90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-21-01

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21211 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21211002

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021135

Level: (low/med) LOW Date Received: 03/17/92

% Moisture: not dec. 20 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	9	BJ
67-64-1	Acetone	10	BJ
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	2	BJ
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
591-78-6	2-Hexanone	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	12	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-21-01

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21211 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21211002

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021135

Level: (low/med) LOW Date Received: 03/17/92

% Moisture: not dec. 20 Date Analyzed: 03/25/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/18/92
Lab Sample ID:	21211001	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	TT-13-01	Percent Moisture:	7.0	Dilution Factor:	1.0

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	350	U	260-94-6	Acridine	350	U
496-11-7	2,3-Dihydro-1h-Indene	350	U	229-87-8	Phenanthridine	350	U
95-13-6	1H-Indene	350	U	86-74-8	Carbazole	350	U
91-20-3	Naphthalene	350	U	206-44-0	Fluoranthene	350	U
95-15-8	Benzo(b)thiophene	350	U	129-00-0	Pyrene	350	U
91-22-5	Quinoline	350	U	56-55-3	Benzo(a)anthracene	350	U
119-65-3	Isoquinoline	350	U	218-01-9	Chrysene/Triphenylene	350	U
91-57-6	2-Methylnaphthalene	350	U	NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	350	U	57-97-6	7,12-Dimethylbenz(a)anthrac	350	U
90-12-0	1-Methylnaphthalene	350	U	192-97-2	Benzo(e)pyrene	350	U
92-52-4	Biphenyl	350	U	50-32-8	Benzo(a)pyrene	350	U
208-96-8	Acenaphthylene	350	U	198-55-0	Perylene	350	U
83-32-9	Acenaphthene	350	U	56-49-5	3-Methylcholanthrene	350	U
132-64-9	Dibenzofuran	350	U	193-39-5	Indeno(1,2,3-cd)pyrene	350	U
86-73-7	Fluorene	350	U	53-70-3	Dibenz(a,h)anthracene	350	U
132-65-0	Dibenzothiophene	350	U	191-24-2	Benzo(g,h,i,)perylene	350	U
85-01-8	Phenanthrene	350	U	205-99-2	Benzo(b)fluoranthene	350	U
120-12-7	Anthracene	350	U	207-08-9	Benzo(k)fluoranthene	350	U

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

ORGANICS ANALYSIS DATA SHEET

oratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/18/92
Lab Sample ID:	21211002	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	TT-21-01	Percent Moisture:	21.0	Dilution Factor:	1.0

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	420	U	260-94-6	Acridine	420	U
496-11-7	2,3-Dihydro-1h-Indene	420	U	229-87-8	Phenanthridine	420	U
95-13-6	1H-Indene	420	U	86-74-8	Carbazole	450	
91-20-3	Naphthalene	420	U	206-44-0	Fluoranthene	1900	
95-15-8	Benzo(b)thiophene	420	U	129-00-0	Pyrene	1300	
91-22-5	Quinoline	420	U	56-55-3	Benzo(a)anthracene	1200	
119-65-3	Isoquinoline	420	U	218-01-9	Chrysene/Triphenylene	1700	
91-57-6	2-Methylnaphthalene	55	J	NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	420	U	57-97-6	7,12-Dimethylbenz(a)anthrac	420	U
90-12-0	1-Methylnaphthalene	420	U	192-97-2	Benzo(e)pyrene	490	
2-52-4	Biphenyl	420	U	50-32-8	Benzo(a)pyrene	660	
208-96-8	Acenaphthylene	180	J	198-55-0	Perylene	120	J
83-32-9	Acenaphthene	420	U	56-49-5	3-Methylcholanthrene	420	U
132-64-9	Dibenzofuran	100	J	193-39-5	Indeno(1,2,3-cd)pyrene	440	
86-73-7	Fluorene	330	J	53-70-3	Dibenz(a,h)anthracene	420	U
132-65-0	Dibenzothiophene	74	J	191-24-2	Benzo(g,h,i,)perylene	230	J
85-01-8	Phenanthrene	1300		205-99-2	Benzo(b)fluoranthene	970	
120-12-7	Anthracene	1000		207-08-9	Benzo(k)fluoranthene	530	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

μg

2B

SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21211 SAS No.: _____ SDG No.: _____

Level:(low/med) LOW

	EPA SAMPLE NO.	SMC1 (TOL)#	SMC2 (BFB)#	SMC3 (DCE)#	OTHER	TOT OUT
01	TT-13-01	100	88	94	0	0
02	TT-21-01	99	96	97	0	0
03	VBLKS	92	92	89	0	0

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(84-138)
SMC2 (BFB)	= Bromofluorobenzene	(59-113)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

SOIL SURROGATE PERCENT RECOVERY SUMMARY
(Page 1)

Case No. 21211 Contract Laboratory CH2M HILL/MGM
w XXX Medium

SMO TRAFFIC NO.	- - - SEMI-VOLATILE - - - 1-Fluoronaphthalene - SS 0-81	Nitrobenzene-d5 - SS 9-197	2-Fluorobiphenyl - SS 9-109	Terphenyl-d14 - SS 0-143
TT-13-01	42	58	55	46
TT-21-01	42	54	54	49
SBLKS	49	59	58	48

Semi-Volatiles: 0 out of 12; outside of QC limits

FORM II

4A

VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21211 SAS No.: _____ SDG No.: _____

Lab File ID: CBVO021122 Lab Sample ID: Y03242B2

Date Analyzed: 03/24/92 Time Analyzed: 2327

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) Y

Instrument ID: 4500

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	TT-13-01	21211001	C1VO021134	0639
02	TT-21-01	21211002	C1VO021135	0713

COMMENTS: CLP,21184,,VBLKS,L,S,Y03242B2,V,BLANK,
10DG TO 200DG @8DG/MIN IH=3MIN

FORM IV VOA 3/90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21211 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y03242B2

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBVO021122

Level: (low/med) LOW Date Received: 03/24/92

% Moisture: not dec. 0 Date Analyzed: 03/24/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	4	J
67-64-1	Acetone	10	
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	2	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21211 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y03242B2

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBVO021122

Level: (low/med) LOW Date Received: 03/24/92

% Moisture: not dec. 0 Date Analyzed: 03/24/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

4B

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21211 SAS No.: _____ SDG No.: _____

Lab File ID: DBPA010363 Lab Sample ID: S03182B1

Instrument ID: 5100D Date Extracted: 03/18/92

Matrix: (soil/water) SOIL Date Analyzed: 04/02/92

Level:(low/med) LOW Time Analyzed: 0857

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TT-13-01	21211001	D1PA010369	04/02/92
02	TT-21-01	21211002	D1PA010370	04/02/92

COMMENTS: CLP,21184,,SBLKS,L,S,S03182B1,B,BLANK,
30DG TO 310DG @10DG/MIN IH=4MINS

FORM IV SV

3/90

000017

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/18/92
Lab Sample ID:	S03182B1	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	SBLKS	Percent Moisture:	0.0	Dilution Factor:	1.0

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	330	U	260-94-6	Acridine	330	U
496-11-7	2,3-Dihydro-1h-Indene	330	U	229-87-8	Phenanthridine	330	U
95-13-6	1H-Indene	330	U	86-74-8	Carbazole	330	U
91-20-3	Naphthalene	330	U	206-44-0	Fluoranthene	330	U
95-15-8	Benzo(b)thiophene	330	U	129-00-0	Pyrene	330	U
91-22-5	Quinoline	330	U	56-55-3	Benzo(a)anthracene	330	U
119-65-3	Isoquinoline	330	U	218-01-9	Chrysene/Triphenylene	330	U
91-57-6	2-Methylnaphthalene	330	U	NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	330	U	57-97-6	7,12-Dimethylbenz(a)anthrac	330	U
90-12-0	1-Methylnaphthalene	330	U	192-97-2	Benzo(e)pyrene	330	U
92-52-4	Biphenyl	330	U	50-32-8	Benzo(a)pyrene	330	U
208-96-8	Acenaphthylene	330	U	198-55-0	Perylene	330	U
83-32-9	Acenaphthene	330	U	56-49-5	3-Methylcholanthrene	330	U
132-64-9	Dibenzofuran	330	U	193-39-5	Indeno(1,2,3-cd)pyrene	330	U
86-73-7	Fluorene	330	U	53-70-3	Dibenz(a,h)anthracene	330	U
132-65-0	Dibenzothiophene	330	U	191-24-2	Benzo(g,h,i,)perylene	330	U
85-01-8	Phenanthrene	330	U	205-99-2	Benzo(b)fluoranthene	330	U
120-12-7	Anthracene	330	U	207-08-9	Benzo(k)fluoranthene	330	U

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21211 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): CSV0021121 Date Analyzed: 03/24/92

Instrument ID: 4500 Time Analyzed: 2245

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) Y

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	65805	10.99	285334	12.52	236045	17.44
	UPPER LIMIT	131610	11.49	570668	13.02	472090	17.94
	LOWER LIMIT	32902	10.49	142667	12.02	118022	16.94
	EPA SAMPLE NO.						
01	TT-13-01	54925	11.00	205683	12.54	163088	17.45
02	TT-21-01	66179	11.02	268328	12.54	225018	17.45
03	VBLKS	47672	10.95	182521	12.49	161822	17.40

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA 3/90

MSa

8B .

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21211 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): DSPA010362 Date Analyzed: 04/02/92

Instrument ID: 5100D Time Analyzed: 0813

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	12 HOUR STD	9234	9.82	35837	12.74	25187	17.05
	UPPER LIMIT	18468	10.32	71674	13.24	50374	17.55
	LOWER LIMIT	4617	9.32	17918	12.24	12594	16.55
	EPA SAMPLE NO.						
01	TT-13-01	11298	9.79	53687	12.64	40408	16.89
02	TT-21-01	11272	9.77	52791	12.62	39592	16.89
03	SBLKS	10209	9.80	43639	12.74	31780	17.04

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard a values with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21211 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): DSPA010362 Date Analyzed: 04/02/92

Instrument ID: 5100D Time Analyzed: 0813

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	41092	20.70	41286	27.42	47700	30.81
	UPPER LIMIT	82184	21.20	82572	27.92	95400	31.31
	LOWER LIMIT	20546	20.20	20643	26.92	23850	30.31
	EPA SAMPLE NO.						
01	TT-13-01	70372	20.50	76154	27.24	83047	30.64
02	TT-21-01	64286	20.50	63849	27.26	73659	30.66
03	SBLKS	57487	20.69	66829	27.41	69719	30.81

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

SAMPLE DATA PACKAGE

SAMPLE DATA PACKAGE

CASE NARRATIVE

Engineers
Planners
CH2M HILL Economists
Scientists

CASE NARRATIVE FOR VOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21211 SDG NO.: N/A

I. RECEIPT

A. DATE: March 17, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21211001	TT-13-01	SOIL	03/16/92	NA	03/25/92
21211002	TT-21-01	SOIL	03/16/92	NA	03/25/92
Y03242B2	VBLKS	SOIL	NA	NA	03/24/92

C. Documentation
Exceptions : No exceptions were encountered.

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II. EXTRACTION

A. Holding Times: Medium level protocol was not performed; therefore, extraction time is not applicable.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21184.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Herb Kelly 4/15/92

Herb Kelly Date
Manager, Organic Division

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548 Montgomery, Alabama 36116 205 271 1444

Engineers
Planners
CH2M HILL Economists
Scientists

CASE NARRATIVE FOR PNA
MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21211 SDG NO.: N/A

I. RECEIPT

A. DATE: March 17, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21211001	TT-13-01	SOIL	03/16/92	03/18/92	04/02/92
21211002	TT-21-01	SOIL	03/16/92	03/18/92	04/02/92
S03182B1	SBLKS	SOIL	NA	03/18/92	04/02/92

C. Documentation Exceptions : Tentatively Identified Compounds (TIC) were not requested as part of this analysis. Therefore, the TIC forms and raw data will not be included in this package.

As you have requested, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported separately. Due to the low concentrations analyzed for, there may be instances where the native matrix offers chromatographic interferences in this region of the chromatogram, making it difficult to correctly quantitate these isomers as separate compounds. In that case, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported as total Benzo(b&k)fluoranthene. An "NR" (not reported) qualifier will then be used for the compounds for which are not reported.

Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

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II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21128.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Herb Kelly 4/15/92

Herb Kelly Date
Manager, Organic Division

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 1444

SAMPLE DATA PACKAGE

SHIPPING RECEIPTS

7(ILLENROT ROAD
MIN..APOLIS, MN 55439

PROJECT NUMBER N° 01261
13/49-003NSL31
NO: WAUKEGAN COKE PLANT RI

PROJECT CONTACT: MARY MACKEY
LABORATORY: CH2M HILL
REMARKS/ ANALYSIS REQUIRED:

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC-CLP TCL	SEMIVOLATILE ORGANIC CLP TCL	METALS CLP TCL	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	EXTRACTABLES CLP TCL	PESTICIDES/PCB CLP TCL	PAHs	PAH/PHENOLS							TOTAL NO. OF CONTAINERS
TT-13-01	3/16/92	AM	X			X													X						a1		2
TT-21-01	3/16/92	PM	X			X													X						a2		2

FOR LAB USE ONLY
LAB # 21211
PHONE 616 33486 YV
ACK 3/18 VERIFIED
HAZWRAP/NEESA Y (N)
QC LEVEL 1 2 (3)
COC yes ICE yes
ANALYZED yes TEMP °C
CUST SEAL yes PH N/A
SAMPLE COND Good

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
(JMF)	(JMF)	3/16/92	PM		3/17/92	09
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER: 3161694852

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS; YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY

000029

Laboratory No. 21222

-- Volatiles

-- PAH/Phenolic Compounds

Three investigative soil samples (TT1501, TT1501 duplicate, and TT1901) were collected March 17, 1992. Three samples were analyzed for volatiles and two were analyzed for PAH/phenols. The results of these analyses were reported in this case and qualified as described in the following sections.

Holding Times

Holding times were met on all samples and analyses using the EPA holding time criteria for water samples.

Instrument Tuning

Volatiles

GC/MS Tuning met the established method performance criteria for compounds, concentrations, frequencies and relative ion abundances for the volatiles analyses.

PAH/Phenols

GC/MS Tuning met the established method performance criteria for compounds, concentrations, frequencies and relative ion abundances for the semivolatiles analyses.

Instrument Calibration

Volatiles

Initial calibration percent relative standard deviation (%RSD) and continuing calibration percent difference (%D) values for several volatile parameters were outside the appropriate control limits. Control limits for %RSD and %D were $\leq$30 percent and $\leq$25 percent, respectively.

The volatiles analyses initial calibration parameters and %RSD values beyond control limits were chloromethane (-38.9 percent), acetone (-42.9 percent), 2-butanone (-34.1 percent) and bromodichloromethane (-33.5 percent). Sample TT1901 was associated with this calibration. None of these compounds were detected in the sample, so no data were qualified.

The continuing calibration parameters that exceeded the %D control limits were chloromethane (49.0 percent and -71.0 percent), bromomethane (35 percent), methylene chloride (-35.4 percent), vinyl chloride (27.2 percent), bromoform (35.1 percent), 4-methyl-2-pentanone (-27.4 percent), carbon disulfide (26.8 percent and -30.6 percent) and the surrogate standard 1,2-dichloroethane-d4 (-27.2 percent). Carbon disulfide was detected, qualified as estimated and flagged "J" in samples TT1901 and TT1501 duplicate. None of the other outlier compounds were detected in the associated samples, so no further action was taken.

PAH/Phenols

Initial calibration percent relative standard deviation (%RSD) and continuing calibration percent difference (%D) values for all semivolatile parameters were within control limits.

Blanks

Volatiles

Methylene chloride (12, 7 J and 450 µg/kg), acetone (10 and 6 J µg/kg) and chloroform (2 J µg/kg) were detected in the volatiles method blanks. Sample results less than five times the associated blank concentration of chloroform or less than ten times the associated blank concentration of either remaining compound were qualified as nondetects and flagged "U."

PAH/Phenols

No compounds were detected in this blank.

Surrogate Recovery

Volatiles

Volatiles system monitoring compounds recoveries were within the established quality control limits.

PAH/Phenols

PAH/phenols surrogate compound recoveries were within the established quality control limits except recoveries for sample TT1901DL. Surrogate recoveries could not be determined due to the large dilution required for analysis. No data were qualified.

Matrix Spike/Matrix Spike Duplicate

Volatiles

Volatiles analyses matrix spike/matrix spike duplicate samples percent recovery and RPD values were within the appropriate control limits for all spike compounds in both samples. Matrix spike/matrix spike duplicate samples results for TT1901DL had recovery and RPD values beyond control limits. Benzene (60 percent) recoveries were low. RPD values for benzene (38 percent) and toluene (24 percent) were high. Since the results for benzene and toluene in the affected sample were not used, no further action was taken.

PAH/Phenols

Matrix spike/matrix spike duplicate samples had several compounds with recoveries and RPD values outside control limits. These results may be due to the high level of spike compounds in the native sample, so no data were qualified.

Field Duplicates

Field duplicate samples are summarized in Tables 2.3-6 through 2.3-11.

Overall Assessment

The data are considered acceptable with the recommended qualifiers.

Engineers
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Economists
Scientists

April 15, 1992

LMG33486.XY

APR 16 92

Ms. Marti Harding-Smith
Barr Engineering Company
8300 Norman Center Drive
Suite 300
Minneapolis, Minnesota 55437-1026

RE: Analytical Data for LMG Laboratory No. 21222

Dear Ms. Harding-Smith:

On March 18, 1992, the CH2M HILL Montgomery Laboratory received three samples with a request for analysis of selected organic parameters.

The analytical results and associated quality control data are enclosed. Any unusual difficulties encountered during the analyses of these samples are discussed in the case narratives.

If you should have any questions concerning the data, please inquire.

The CH2M HILL policy is to store samples for up to 30 days after reporting. If you desire, our laboratory will maintain your samples for a longer period at a cost of $5.00 per sample per month. Samples determined to be hazardous can either be returned to you or disposed of at a cost of $25.00 per sample.

Sincerely,

Wanda L. Hall

Wanda L. Hall
Data Package Supervisor

Enclosures

cc: Mr. Jim Langseth

Engineers
Planners
CH2M HILL Economists
Scientists

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EPA - DEFINED QUALIFIERS

ORGANICS

Definitions for the EPA-defined qualifiers:

U -- Indicates the compound was analyzed for but not detected. The number adjacent to the "U" qualifier indicates the quantitation limit for that compound. The detection limit can vary from sample to sample depending on dilution factors or percent moisture adjustment when indicated.

J -- Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound below the stated quantitation limit. The "J" qualifier is not used with pesticide results.

C -- This flag applies to pesticide results only. The "C" flag indicates the presence of this compound has been confirmed by GC/MS analysis.

B -- This flag is used when the analyte is found in the associated blank as well as the sample. This notation indicates possible blank contamination and suggests the data user evaluate these compounds and their amounts carefully.

E -- This flag applies to GC/MS only. The "E" qualifier indicates a compound may be above or below the linear range of the instrument. If the particular compound level is deemed above the linear calibration range, then the sample should be reanalyzed at an appropriate dilution. Therefore, the "E" qualified amount is an estimated concentration. The results for the dilution will be reported on a separate Form I and will be flagged with a "D" if the dilution brings the concentration within proper calibration.

D -- This flag identifies compounds which have been run at a dilution to bring the concentration of that compound within the linear range of the instrument. "D" qualifiers are only used for samples that have been run initially with results above acceptable ranges. For secondary dilutions the "DL" suffix is appended to the sample number on the Form I.

A -- Indicates the Tentatively Identified Compound (TIC) is a suspected aldol-condensation product.

X -- Indicates the compound concentration has been manually modified or the EPA qualifier has been manually modified or added.

JX -- The compound was detected and quantitated below the Contract Required Quantitation Limit.

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CLIENT SAMPLE ID QUALIFIERS

LEVEL 3

The qualifiers that GC/MS and GC use with the client sample ID are defined below:

DL -- Dilution Run

R -- Rerun (may be followed by a digit to indicate multiple reruns)

RD -- Diluted Rerun

RX -- Re-extraction Analysis

MS -- Matrix Spike (may be followed by a digit to indicate multiple matrix spikes within a sample set)

MSD -- Matrix Spike Duplicate (may be followed by a digit to indicate multiple matrix spike duplicates within a sample set)

VBLK -- Volatile Blank (will be followed by a "W" for waters, "S" for soils run at a low level, or "SM" for soils run at a medium level -- these letters may be followed by a digit to indicate multiple blanks of that type).

SBLK -- Semivolatile Blank (will be followed by a "W" for waters, "S" for soils run at a low level, or "SM" for soils run at a medium level -- these letters may be followed by a digit to indicate multiple blanks of that type).

PBLK -- Pesticide/PCB Blank (may be followed by digits to indicate multiple blanks)

These qualifiers allow GC/MS and GC to have unique client sample ID's so that the client can get more accurate information from the data reported.

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TABLE 1

AMPLE CROSS-REFERENCE SUMMARY

CH2M HILL Laboratory No. 21222

CH2M HILL Sample No.	Sample Description				
21222001	TT-15-01	03/17/92	GRAB	13/49-003JSL31	PO#01913
21222002	TT-19-01	03/17/92	GRAB	13/49-003JSL31	PO#01913
21222003	M-05	03/17/92	GRAB	13/49-003JSL31	PO#01913

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INTERNAL STANDARD AND SURROGATE COMPOUNDS

VOLATILE ANALYSIS

The internal standards on the GC/MS volatile chromatograms are designated as IS1, IS2, and IS3. The surrogate standards are labelled as SS1, SS2, and SS3. The compounds corresponding to these labels are listed below.

LABEL	INTERNAL STANDARD COMPOUND
IS1	BROMOCHLOROMETHANE
IS2	1,4-DIFLUOROBENZENE
IS3	D5-CHLOROBENZENE

LABEL	SURROGATE STANDARD COMPOUND
SS1	D4-1,2-DICHLOROETHANE
SS2	D8-TOLUENE
SS3	1,4-BROMOFLUOROBENZENE

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INTERNAL STANDARD AND SURROGATE COMPOUNDS

SEMIVOLATILE ANALYSIS

The internal standards on the GC/MS semivolatile chromatograms are designated as IS1, IS2, IS3, IS4, IS5, and IS6. The surrogate standards are labelled as SS1, SS2, SS3, SS4, SS5, and SS6. The compounds corresponding to these labels are listed below.

LABEL	INTERNAL STANDARD COMPOUND
IS1	D4-1,4-DICHLOROBENZENE
IS2	D8-NAPHTHALENE
IS3	D10-ACENAPHTHENE
IS4	D10-PHENANTHRENE
IS5	D12-CHRYSENE
IS6	D12-PERYLENE

LABEL	SURROGATE STANDARD COMPOUND
SS1	2-FLUOROPHENOL
SS2	D5-PHENOL
SS3	D5-NITROBENZENE
SS4	2-FLUOROBIPHENYL
SS5	2,4,6-TRIBROMOPHENOL
SS6	D14-TERPHENYL

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SAMPLE DATA SUMMARY PACKAGE

Engineers
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Scientists

CASE NARRATIVE FOR VOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21222 SDG NO.: N/A

I. RECEIPT

A. DATE: March 18, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21222001	TT-15-01	SOIL	03/17/92	NA	03/30/92
21222002	TT-19-01	SOIL	03/17/92	NA	03/26/92
21222003DL	TT-19-01_DL	SOIL	03/17/92	03/31/92	04/01/92
21222003	M-05	SOIL	03/17/92	NA	03/26/92
Y03262B2	VBLKS	SOIL	NA	NA	03/26/92
L03312B3	VBLKSM	SOIL	NA	03/31/92	04/01/92
Y03302B3	VBLKS_2	SOIL	NA	NA	03/30/92

C. Documentation
Exceptions : No exceptions were encountered.

II. EXTRACTION

A. Holding Times: All holding times were met. Sample 21222002DL (TT-19-01_DL) was analyzed using medium level soil protocols.

B. Extraction
Exceptions : No exceptions were encountered.

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 ....

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : The original analysis of sample 21222002 (TT-19-01) showed target compounds above the calibration range. The sample was diluted and reanalzyed. The results of both analyses have been reported.

Please see attached table for information concerning methylene chloride and acetone.

No other exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within other batches of samples. The results for samples 21222001, 21222002, and 21222003 will be reported with the results of our laboratory contract number 21184. The results for sample 21222002DL will be reported with the results of our laboratory contract number 21232.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Herb Kelly 4/15/92

Herb Kelly
Manager, Organic Division

Date

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive P.O. Box 230548 Montgomery, Alabama 36116 205 271 1444

Engineers
Planners
CH2M HILL Economists
Scientists

METHYLENE CHLORIDE/ACETONE SUMMARY

Due to the level of target compounds, the following samples required large dilutions for analysis. As required by the Statement of Work, these dilution factors have been applied, without background subtraction, to all detected compounds, particularly methylene chloride and acetone. As methylene chloride and acetone are common laboratory contaminants, the following table is being provided to present a more accurate perspective of these compounds. Included in the table is 1) the amount of methylene chloride and acetone, detected at the instrument, prior to multiplication by the dilution factor; and 2) the amount of methylene chloride and acetone for that particular sample's laboratory method blank.

SAMPLE	METHYLENE CHLORIDE	ACETONE	METHOD BLANK	METHYLENE CHLORIDE	ACETONE
21222002	11 ug/Kg	21 ug/Kg	Y03262B2	12 ug/Kg	10 ug/Kg
21222002DL	3 ug/Kg	10 U	L03312B3	4 ug/Kg	10 U

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Quality Analytical Laboratories
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205 271 1444

Engineers
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Scientists

CASE NARRATIVE FOR PNA MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21222 SDG NO.: N/A

I. RECEIPT

A. DATE: March 18, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21222001	TT-15-01	SOIL	03/17/92	03/23/92	04/02/92
21222002	TT-19-01	SOIL	03/17/92	03/23/92	04/02/92
21222002DL	TT-19-01_DL	SOIL	03/17/92	03/23/92	04/03/92
S03232B1	SBLKS	SOIL	NA	03/23/92	04/02/92

C. Documentation Exceptions : Tentatively Identified Compounds (TIC) were not requested as part of this analysis. Therefore, the TIC forms and raw data will not be included in this package.

As you have requested, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported separately. Due to the low concentrations analyzed for, there may be instances where the native matrix offers chromatographic interferences in this region of the chromatogram, making it difficult to correctly quantitate these isomers as separate compounds. In that case, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported as total Benzo(b&k)fluoranthene. An "NR" (not reported) qualifier will then be used for the compounds for which are not reported.

Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548 Montgomery, Alabama 36116 205 271 1444

II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : The original analysis of sample 21222002 (TT-19-01) showed target compounds above the calibration range. The sample was diluted and reanalyzed. The results of both analyses have been reported.

No other exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Sample 21222002DL (TT-19-01_DL) required a large dilution for analysis. Therefore, the surrogate recoveries could not be determined for this sample.

All other samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21128.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Herb Kelly 4/15/92
Herb Kelly Date
Manager, Organic Division

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-15-01

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21222001

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C2VO021253

Level: (low/med) LOW Date Received: 03/18/92

% Moisture: not dec. 14 Date Analyzed: 03/30/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	16	B
67-64-1	Acetone	23	B
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	12	U
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
591-78-6	2-Hexanone	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	12	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-15-01

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21222001

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C2VO021253

Level: (low/med) LOW Date Received: 03/18/92

% Moisture: not dec. 14 Date Analyzed: 03/30/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 556-67-2	CYCLOTETRASILOXANE, OCTAMETH	18.67	6	J
2.	BENZENE, TETRAMETHYL- ISOMER	23.62	8	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-19-01

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21222002

Sample wt/vol: 1.0 (g/mL) G Lab File ID: C1VO021172

Level: (low/med) LOW Date Received: 03/18/92

% Moisture: not dec. 22 Date Analyzed: 03/26/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	64	U
74-83-9	Bromomethane	64	U
75-01-4	Vinyl Chloride	64	U
75-00-3	Chloroethane	64	U
75-09-2	Methylene Chloride	71	B
67-64-1	Acetone	130	B
75-15-0	Carbon Disulfide	9	J
75-35-4	1,1-Dichloroethene	64	U
75-34-3	1,1-Dichloroethane	64	U
540-59-0	1,2-Dichloroethene (total)	64	U
67-66-3	Chloroform	13	BJ
107-06-2	1,2-Dichloroethane	64	U
78-93-3	2-Butanone	61	J
71-55-6	1,1,1-Trichloroethane	64	U
56-23-5	Carbon Tetrachloride	64	U
75-27-4	Bromodichloromethane	64	U
78-87-5	1,2-Dichloropropane	64	U
10061-01-5	cis-1,3-Dichloropropene	64	U
79-01-6	Trichloroethene	64	U
124-48-1	Dibromochloromethane	64	U
79-00-5	1,1,2-Trichloroethane	64	U
71-43-2	Benzene	750	
10061-02-6	trans-1,3-Dichloropropene	64	U
75-25-2	Bromoform	64	U
591-78-6	2-Hexanone	64	U
108-10-1	4-Methyl-2-Pentanone	64	U
127-18-4	Tetrachloroethene	64	U
79-34-5	1,1,2,2-Tetrachloroethane	64	U
108-88-3	Toluene	64	J
108-90-7	Chlorobenzene	64	U
100-41-4	Ethylbenzene	1700	E
100-42-5	Styrene	64	U
1330-20-7	Xylene (total)	3900	E

MSC

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-19-01

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21222002

Sample wt/vol: 1.0 (g/mL) G Lab File ID: C1VO021172

Level: (low/med) LOW Date Received: 03/18/92

% Moisture: not dec. 22 Date Analyzed: 03/26/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	CYCLOHEXANE, TRIMETHYL- ISOM	16.20	3300	J
2.	NOT IDENTIFIED	18.12	2700	J
3. 7146-60-3	OCTANE, 2,3-DIMETHYL-	18.40	3000	J
4. 13151-73-0	DECANE 2-CYCLOHEXYL-, 2-CYCL	18.69	4200	J
5.	OCTENE, DIMETHYL- ISOMER	19.42	3100	J
6. 69405-42-1	3-NONENE, 3-METHYL-, (E)-	19.79	3100	J
7.	BENZENE, TRIMETHYL- ISOMER	20.12	5600	J
8.	BENZENE, TRIMETHYL- ISOMER	20.82	5600	J
9.	BENZENE, ETHENYLMETHYL- ISOM	22.25	8500	J
10. 104-55-2	2-PROPENAL, 3-PHENYL-	23.75	260	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TT-19-01_DL

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21222002DL

Sample wt/vol: 4.0 (g/mL) G Lab File ID: B3VM014761

Level: (low/med) MED Date Received: 03/18/92

% Moisture: not dec. 22 Date Analyzed: 04/01/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 100 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1500	U
74-83-9	Bromomethane	1500	U
75-01-4	Vinyl Chloride	1500	U
75-00-3	Chloroethane	1500	U
75-09-2	Methylene Chloride	540	BDJ
67-64-1	Acetone	1500	U
75-15-0	Carbon Disulfide	1500	U
75-35-4	1,1-Dichloroethene	1500	U
75-34-3	1,1-Dichloroethane	1500	U
540-59-0	1,2-Dichloroethene (total)	1500	U
67-66-3	Chloroform	1500	U
107-06-2	1,2-Dichloroethane	1500	U
78-93-3	2-Butanone	1500	U
71-55-6	1,1,1-Trichloroethane	1500	U
56-23-5	Carbon Tetrachloride	1500	U
75-27-4	Bromodichloromethane	1500	U
78-87-5	1,2-Dichloropropane	1500	U
10061-01-5	cis-1,3-Dichloropropene	1500	U
79-01-6	Trichloroethene	1500	U
124-48-1	Dibromochloromethane	1500	U
79-00-5	1,1,2-Trichloroethane	1500	U
71-43-2	Benzene	290	DJ
10061-02-6	trans-1,3-Dichloropropene	1500	U
75-25-2	Bromoform	1500	U
591-78-6	2-Hexanone	1500	U
108-10-1	4-Methyl-2-Pentanone	1500	U
127-18-4	Tetrachloroethene	1500	U
79-34-5	1,1,2,2-Tetrachloroethane	1500	U
108-88-3	Toluene	1500	U
108-90-7	Chlorobenzene	1500	U
100-41-4	Ethylbenzene	610	DJ
100-42-5	Styrene	1500	U
1330-20-7	Xylene (total)	1400	DJ

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TT-19-01_DL

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21222002DL

Sample wt/vol: 4.0 (g/mL) G Lab File ID: B3VM014761

Level: (low/med) MED Date Received: 03/18/92

% Moisture: not dec. 22 Date Analyzed: 04/01/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 100 (uL)

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 3073-66-3	CYCLOHEXANE, 1,1,3-TRIMETHYL	14.72	820	J
2.	NOT IDENTIFIED	17.20	870	J
3.	BENZENE, TRIMETHYL- ISOMER	18.64	3000	J
4.	BENZENE, TRIMETHYL- ISOMER	19.32	4200	J
5. 611-15-4	BENZENE, 1-ETHENYL-2-METHYL-	20.74	15000	J
6. 2958-76-1	NAPHTHALENE, DECAHYDRO-2-MET	21.75	1100	J
7.	NOT IDENTIFIED	22.22	1300	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

M-05

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21222003

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021167

Level: (low/med) LOW Date Received: 03/18/92

% Moisture: not dec. 15 Date Analyzed: 03/26/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	22	B
67-64-1	Acetone	87	B
75-15-0	Carbon Disulfide	1	J
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	2	BJ
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	40	
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	1	J
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
591-78-6	2-Hexanone	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	2	J
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	6	J

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

M-05

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 21222003

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1VO021167

Level: (low/med) LOW Date Received: 03/18/92

% Moisture: not dec. 15 Date Analyzed: 03/26/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	BENZENE, TRIMETHYL- ISOMER	20.09	12	J
2.	BENZENE, TRIMETHYL- ISOMER	20.79	13	J
3. 271-89-6	BENZOFURAN	21.45	12	J
4.	BENZENE, TRIMETHYL- ISOMER	21.64	14	J
5.	BENZENE, ETHENYLMETHYL- ISOM	22.20	12	J
6.	BENZENE, ETHYNYLMETHYL- ISOM	22.57	91	J
7.	BENZENE, ETHENYL-, DIMETHYL-	23.07	10	J
8.	BENZENE, TETRAMETHYL- ISOMER	23.50	10	J
9.	BENZENE, TETRAMETHYL- ISOMER	23.65	44	J
10. 13610-02-1	BENZENE, (2-PROPYNYLOXY)-	23.84	14	J

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/23/92
Lab Sample ID:	21222001	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	TT-15-01	Percent Moisture:	12.0	Dilution Factor:	1.0

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	130	J	260-94-6	Acridine	370	U
496-11-7	2,3-Dihydro-1h-Indene	65	J	229-87-8	Phenanthridine	370	U
95-13-6	1H-Indene	320	J	86-74-8	Carbazole	370	U
91-20-3	Naphthalene	1100		206-44-0	Fluoranthene	125	J
95-15-8	Benzo(b)thiophene	70	J	129-00-0	Pyrene	120	J
91-22-5	Quinoline	370	U	56-55-3	Benzo(a)anthracene	370	U
119-65-3	Isoquinoline	370	U	218-01-9	Chrysene/Triphenylene	370	U
91-57-6	2-Methylnaphthalene	60	J	NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	370	U	57-97-6	7,12-Dimethylbenz(a)anthrac	370	U
90-12-0	1-Methylnaphthalene	630		192-97-2	Benzo(e)pyrene	370	U
92-52-4	Biphenyl	370	U	50-32-8	Benzo(a)pyrene	370	U
208-96-8	Acenaphthylene	500		198-55-0	Perylene	370	U
83-32-9	Acenaphthene	140	J	56-49-5	3-Methylcholanthrene	370	U
132-64-9	Dibenzofuran	270	J	193-39-5	Indeno(1,2,3-cd)pyrene	370	U
86-73-7	Fluorene	430		53-70-3	Dibenz(a,h)anthracene	370	U
132-65-0	Dibenzothiophene	40	J	191-24-2	Benzo(g,h,i,)perylene	370	U
85-01-8	Phenanthrene	420		205-99-2	Benzo(b)fluoranthene	40	J
120-12-7	Anthracene	38	J	207-08-9	Benzo(k)fluoranthene	370	U

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/MGM
Lab Sample ID: 21222002
Client Sample ID: TT-19-01

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: 21.0

Date Extracted: 03/23/92
Date Analyzed: 04/02/92
Dilution Factor: 20

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	8400	U	260-94-6	Acridine	5100	J
496-11-7	2,3-Dihydro-1h-Indene	17000		229-87-8	Phenanthridine	1200	J
95-13-6	1H-Indene	1100	J	86-74-8	Carbazole	10000	
91-20-3	Naphthalene	81000	E	206-44-0	Fluoranthene	69000	E
95-15-8	Benzo(b)thiophene	3400	J	129-00-0	Pyrene	55000	
91-22-5	Quinoline	8400	U	56-55-3	Benzo(a)anthracene	24000	
119-65-3	Isoquinoline	8400	U	218-01-9	Chrysene/Triphenylene	26000	
91-57-6	2-Methylnaphthalene	11000		NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	8400	U	57-97-6	7,12-Dimethylbenz(a)anthrac	8400	U
90-12-0	1-Methylnaphthalene	22000		192-97-2	Benzo(e)pyrene	9500	
92-52-4	Biphenyl	3900	J	50-32-8	Benzo(a)pyrene	13000	
208-96-8	Acenaphthylene	3900	J	198-55-0	Perylene	2700	J
83-32-9	Acenaphthene	27000		56-49-5	3-Methylcholanthrene	8400	U
132-64-9	Dibenzofuran	16000		193-39-5	Indeno(1,2,3-cd)pyrene	7700	J
86-73-7	Fluorene	46000		53-70-3	Dibenz(a,h)anthracene	8400	U
132-65-0	Dibenzothiophene	7000	J	191-24-2	Benzo(g,h,i,)perylene	3700	J
85-01-8	Phenanthrene	120000	E	205-99-2	Benzo(b)fluoranthene	17000	
120-12-7	Anthracene	32000		207-08-9	Benzo(k)fluoranthene	12000	

E - Compound concentration exceeded calibration range.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

ORGANICS ANALYSIS DATA SHEET

boratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/23/92
ɔ Sample ID:	21222002DL	Sample Matrix:	SOIL	Date Analyzed:	04/03/92
Client Sample ID:	TT-19-01 DL	Percent Moisture:	21.0	Dilution Factor:	60

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	25000	U	260-94-6	Acridine	5600	J
496-11-7	2,3-Dihydro-1h-Indene	18000	J	229-87-8	Phenanthridine	25000	U
95-13-6	1H-Indene	25000	U	86-74-8	Carbazole	12000	J
91-20-3	Naphthalene	68000		206-44-0	Fluoranthene	81000	
95-15-8	Benzo(b)thiophene	3800	J	129-00-0	Pyrene	58000	
91-22-5	Quinoline	25000	U	56-55-3	Benzo(a)anthracene	21000	J
119-65-3	Isoquinoline	25000	U	218-01-9	Chrysene/Triphenylene	25000	J
91-57-6	2-Methylnaphthalene	12000	J	NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	25000	U	57-97-6	7,12-Dimethylbenz(a)anthrac	25000	U
90-12-0	1-Methylnaphthalene	24000	J	192-97-2	Benzo(e)pyrene	8800	J
92-52-4	Biphenyl	4600	J	50-32-8	Benzo(a)pyrene	13000	J
208-96-8	Acenaphthylene	2700	J	198-55-0	Perylene	2700	J
83-32-9	Acenaphthene	26000		56-49-5	3-Methylcholanthrene	25000	U
132-64-9	Dibenzofuran	18000	J	193-39-5	Indeno(1,2,3-cd)pyrene	7100	J
86-73-7	Fluorene	25000	U	53-70-3	Dibenz(a,h)anthracene	25000	U
132-65-0	Dibenzothiophene	8000	J	191-24-2	Benzo(g,h,i,)perylene	4800	J
85-01-8	Phenanthrene	130000		205-99-2	Benzo(b)fluoranthene	14000	J
120-12-7	Anthracene	31000		207-08-9	Benzo(k)fluoranthene	12000	J

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

μg

2B

SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Level:(low/med) LOW

	EPA SAMPLE NO.	SMC1 (TOL)#	SMC2 (BFB)#	SMC3 (DCE)#	OTHER	TOT OUT
01	M-05	106	103	102	0	0
02	TT-15-01	98	98	101	0	0
03	TT-19-01	109	80	97	0	0
04	VBLKS	107	102	102	0	0
05	VBLKS_2	104	100	101	0	0

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(84-138)
SMC2 (BFB)	= Bromofluorobenzene	(59-113)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

2B

SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Level:(low/med) MED

	EPA SAMPLE NO.	SMC1 (TOL)#	SMC2 (BFB)#	SMC3 (DCE)#	OTHER	TOT OUT
01	TT-19-01_DL	85	97	75	0	0
02	VBLKSM	89	99	82	0	0

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(84-138)
SMC2 (BFB)	= Bromofluorobenzene	(59-113)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

SOIL SURROGATE PERCENT RECOVERY SUMMARY
(Page 1)

Case No. S21232 Contract Laboratory CH2M HILL/MGM
Low XXX Medium

SMO TRAFFIC NO.	-SEMI-VOLATILE- 1-Fluoronaphthalene - SS 0-81	Nitrobenzene-d5 - SS 9-197	2-Fluorobiphenyl - SS 9-109	Terphenyl-d14 - SS 0-143	1,2-Dichlorobenzene - d4 SS 20-130
TT-15-01	60	70	71	62	78
TT-19-01	73	85	76	65	89
TT-19-01_DL	**	**	**	**	**
SBLKS	57	76	75	66	78

Semi-Volatiles: 0 out of 20; outside of QC limits

Comments:

** - Surrogate Standard not determined due to required dilution.

FORM II

4A
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Lab File ID: CBVO021165 Lab Sample ID: Y03262B2

Date Analyzed: 03/26/92 Time Analyzed: 1246

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) Y

Instrument ID: 4500

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	M-05	21222003	C1VO021167	1353
02	TT-19-01	21222002	C1VO021172	1707

COMMENTS: CLP,21184,,VBLKS,L,S,Y03262B2,V,B,
10DG TO 200DG @8DG/MIN IH=3MIN

FORM IV VOA

3/90

000021

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y03262B2

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBV0021165

Level: (low/med) LOW Date Received: 03/26/92

% Moisture: not dec. 0 Date Analyzed: 03/26/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	12	
67-64-1	Acetone	10	
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	2	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y03262B2

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBVO021165

Level: (low/med) LOW Date Received: 03/26/92

% Moisture: not dec. 0 Date Analyzed: 03/26/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

4A
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKS_2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Lab File ID: CBVO021252 Lab Sample ID: Y03302B3

Date Analyzed: 03/30/92 Time Analyzed: 2250

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) Y

Instrument ID: 4500

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	TT-15-01	21222001	C2VO021253	2333

COMMENTS: CLP,12222,,VBLKS,L,S,Y03302B3,V,BLANK,
10DG TO 200DG @8DG/MIN IH=3MIN

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKS_2

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y03302B3

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBVO021252

Level: (low/med) LOW Date Received: 03/30/92

% Moisture: not dec. 0 Date Analyzed: 03/30/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	7	J
67-64-1	Acetone	6	J
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKS_2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y03302B3

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBV0021252

Level: (low/med) LOW Date Received: 03/30/92

% Moisture: not dec. 0 Date Analyzed: 03/30/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

4A
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKSM

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Lab File ID: BBVM014760 Lab Sample ID: L03312B3

Date Analyzed: 04/01/92 Time Analyzed: 1511

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) N

Instrument ID: 5100B

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	TT-19-01_DL	21222002DL	B3VM014761	1554

COMMENTS: CLP,21222,,VBLKS,M,S,L03312B3,V,BLANK,
10DG TO 200DG @8DG/MIN IH=3MIN

FORM IV VOA

3/90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKSM

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: L03312B3

Sample wt/vol: 4.0 (g/mL) G Lab File ID: BBVM014760

Level: (low/med) MED Date Received: 04/01/92

% Moisture: not dec. 0 Date Analyzed: 04/01/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 100 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200	U
74-83-9	Bromomethane	1200	U
75-01-4	Vinyl Chloride	1200	U
75-00-3	Chloroethane	1200	U
75-09-2	Methylene Chloride	450	J
67-64-1	Acetone	1200	U
75-15-0	Carbon Disulfide	1200	U
75-35-4	1,1-Dichloroethene	1200	U
75-34-3	1,1-Dichloroethane	1200	U
540-59-0	1,2-Dichloroethene (total)	1200	U
67-66-3	Chloroform	1200	U
107-06-2	1,2-Dichloroethane	1200	U
78-93-3	2-Butanone	1200	U
71-55-6	1,1,1-Trichloroethane	1200	U
56-23-5	Carbon Tetrachloride	1200	U
75-27-4	Bromodichloromethane	1200	U
78-87-5	1,2-Dichloropropane	1200	U
10061-01-5	cis-1,3-Dichloropropene	1200	U
79-01-6	Trichloroethene	1200	U
124-48-1	Dibromochloromethane	1200	U
79-00-5	1,1,2-Trichloroethane	1200	U
71-43-2	Benzene	1200	U
10061-02-6	trans-1,3-Dichloropropene	1200	U
75-25-2	Bromoform	1200	U
591-78-6	2-Hexanone	1200	U
108-10-1	4-Methyl-2-Pentanone	1200	U
127-18-4	Tetrachloroethene	1200	U
79-34-5	1,1,2,2-Tetrachloroethane	1200	U
108-88-3	Toluene	1200	U
108-90-7	Chlorobenzene	1200	U
100-41-4	Ethylbenzene	1200	U
100-42-5	Styrene	1200	U
1330-20-7	Xylene (total)	1200	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKSM

Lab Name: CH2M HILL/MGM Contract: _____

Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: L03312B3

Sample wt/vol: 4.0 (g/mL) G Lab File ID: BBVM014760

Level: (low/med) MED Date Received: 04/01/92

% Moisture: not dec. 0 Date Analyzed: 04/01/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 100 (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

FORM I VOA-TIC

3/90

4B
SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Lab File ID: DBPA010372 Lab Sample ID: S03232B1

Instrument ID: 5100D Date Extracted: 03/23/92

Matrix: (soil/water) SOIL Date Analyzed: 04/02/92

Level:(low/med) LOW Time Analyzed: 1527

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TT-15-01	21222001	D1PA010376	04/02/92
02	TT-19-01	21222002	D1PA010377	04/02/92
03	TT-19-01_DL	21222002DL	D2PA010390	04/03/92

COMMENTS: CLP,21222,,SBLKS,L,S,S03232B1,B,BLANK,
30DG TO 310DG @10DG/MIN IH=4MINS

FORM IV SV

3/90

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M HILL/MGM	Concentration:	LOW	Date Extracted:	03/23/92
Lab Sample ID:	S03232B1	Sample Matrix:	SOIL	Date Analyzed:	04/02/92
Client Sample ID:	SBLKS	Percent Moisture:	0.0	Dilution Factor:	1.0

POLYNUCLEAR AROMATIC COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
271-89-6	2,3-Benzofuran	330	U	260-94-6	Acridine	330	U
496-11-7	2,3-Dihydro-1h-Indene	330	U	229-87-8	Phenanthridine	330	U
95-13-6	1H-Indene	330	U	86-74-8	Carbazole	330	U
91-20-3	Naphthalene	330	U	206-44-0	Fluoranthene	330	U
95-15-8	Benzo(b)thiophene	330	U	129-00-0	Pyrene	330	U
91-22-5	Quinoline	330	U	56-55-3	Benzo(a)anthracene	330	U
119-65-3	Isoquinoline	330	U	218-01-9	Chrysene/Triphenylene	330	U
91-57-6	2-Methylnaphthalene	330	U	NA	Benzo(b&k)fluoranthene	NR	
120-72-9	Indole	330	U	57-97-6	7,12-Dimethylbenz(a)anthrac	330	U
90-12-0	1-Methylnaphthalene	330	U	192-97-2	Benzo(e)pyrene	330	U
2-52-4	Biphenyl	330	U	50-32-8	Benzo(a)pyrene	330	U
208-96-8	Acenaphthylene	330	U	198-55-0	Perylene	330	U
83-32-9	Acenaphthene	330	U	56-49-5	3-Methylcholanthrene	330	U
132-64-9	Dibenzofuran	330	U	193-39-5	Indeno(1,2,3-cd)pyrene	330	U
86-73-7	Fluorene	330	U	53-70-3	Dibenz(a,h)anthracene	330	U
132-65-0	Dibenzothiophene	330	U	191-24-2	Benzo(g,h,i,)perylene	330	U
85-01-8	Phenanthrene	330	U	205-99-2	Benzo(b)fluoranthene	330	U
120-12-7	Anthracene	330	U	207-08-9	Benzo(k)fluoranthene	330	U

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.

Form I

MS

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): CSV0021163 Date Analyzed: 03/26/92

Instrument ID: 4500 Time Analyzed: 1104

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) Y

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	71435	11.02	288453	12.54	257886	17.44
	UPPER LIMIT	142870	11.52	576906	13.04	515772	17.94
	LOWER LIMIT	35718	10.52	144226	12.04	128943	16.94
	EPA SAMPLE NO.						
01	M-05	59591	10.94	245662	12.49	201646	17.44
02	TT-19-01	47862	10.90	184632	12.47	131281	17.44
03	VBLKS	54456	11.04	225611	12.57	180545	17.47

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): CSVO021250 Date Analyzed: 03/30/92

Instrument ID: 4500 Time Analyzed: 2126

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) Y

	IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
12 HOUR STD	80035	11.04	320963	12.54	285694	17.44
UPPER LIMIT	160070	11.54	641926	13.04	571388	17.94
LOWER LIMIT	40018	10.54	160482	12.04	142847	16.94
EPA SAMPLE NO.						
01 TT-15-01	68308	10.95	265298	12.49	240003	17.40
02 VBLKS_2	59713	11.00	238169	12.50	216967	17.42

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA 3/90

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): BSVM014759 Date Analyzed: 04/01/92

Instrument ID: 5100B Time Analyzed: 1406

GC Column: CAP ID: 0.530(mm) Heated Purge: (Y/N) N

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	69713	9.57	259220	11.09	244025	15.95
	UPPER LIMIT	139426	10.07	518440	11.59	488050	16.45
	LOWER LIMIT	34856	9.07	129610	10.59	122012	15.45
	EPA SAMPLE NO.						
01	TT-19-01_DL	69254	9.54	257708	11.07	238579	15.94
02	VBLKSM	66911	9.59	258484	11.10	237757	15.95

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): DSPA010362 Date Analyzed: 04/02/92

Instrument ID: 5100D Time Analyzed: 0813

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	12 HOUR STD	9234	9.82	35837	12.74	25187	17.05
	UPPER LIMIT	18468	10.32	71674	13.24	50374	17.55
	LOWER LIMIT	4617	9.32	17918	12.24	12594	16.55
	EPA SAMPLE NO.						
01	TT-15-01	7222	9.82	34931	12.65	24082	16.92
02	TT-19-01	10624	9.77	40230	12.62	24779	16.90
03	SBLKS	8258	9.77	36479	12.64	25623	16.89

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): DSPA010362 Date Analyzed: 04/02/92

Instrument ID: 5100D Time Analyzed: 0813

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	41092	20.70	41286	27.42	47700	30.81
	UPPER LIMIT	82184	21.20	82572	27.92	95400	31.31
	LOWER LIMIT	20546	20.20	20643	26.92	23850	30.31
	EPA SAMPLE NO.						
01	TT-15-01	40839	20.54	42606	27.24	49883	30.64
02	TT-19-01	44645	20.57	45748	27.31	50735	30.71
03	SBLKS	45039	20.52	49668	27.26	56959	30.64

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

T N Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): DSPA010381 Date Analyzed: 04/03/92

Instrument ID: 5100D Time Analyzed: 0740

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	12 HOUR STD	10239	9.69	41966	12.52	31814	16.75
	UPPER LIMIT	20478	10.19	83932	13.02	63628	17.25
	LOWER LIMIT	5120	9.19	20983	12.02	15907	16.25
	EPA SAMPLE NO.						
01	TT-19-01_DL	10100	9.67	42026	12.54	29216	16.75

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM VIII SV-1

3/90

000037

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: 21222 SAS No.: _____ SDG No.: _____

Lab File ID (Standard): DSPA010381 Date Analyzed: 04/03/92

Instrument ID: 5100D Time Analyzed: 0740

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	53575	20.37	57198	27.09	60045	30.49
	UPPER LIMIT	107150	20.87	114396	27.59	120090	30.99
	LOWER LIMIT	26788	19.87	28599	26.59	30022	29.99
	EPA SAMPLE NO.						
01	TT-19-01_DL	49010	20.34	53022	27.07	62922	30.46

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = + 100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT.
RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

SAMPLE DATA PACKAGE

SAMPLE DATA PACKAGE

CASE NARRATIVE

Engineers
Planners
CH2M HILL
Economists
Scientists

CASE NARRATIVE FOR VOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21222 SDG NO.: N/A

I. RECEIPT

A. DATE: March 18, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21222001	TT-15-01	SOIL	03/17/92	NA	03/30/92
21222002	TT-19-01	SOIL	03/17/92	NA	03/26/92
21222003DL	TT-19-01_DL	SOIL	03/17/92	03/31/92	04/01/92
21222003	M-05	SOIL	03/17/92	NA	03/26/92
Y03262B2	VBLKS	SOIL	NA	NA	03/26/92
L03312B3	VBLKSM	SOIL	NA	03/31/92	04/01/92
Y03302B3	VBLKS_2	SOIL	NA	NA	03/30/92

C. Documentation
Exceptions : No exceptions were encountered.

II. EXTRACTION

A. Holding Times: All holding times were met. Sample 21222002DL (TT-19-01_DL) was analyzed using medium level soil protocols.

B. Extraction
Exceptions : No exceptions were encountered.

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 1444

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : The original analysis of sample 21222002 (TT-19-01) showed target compounds above the calibration range. The sample was diluted and reanalzyed. The results of both analyses have been reported.

Please see attached table for information concerning methylene chloride and acetone.

No other exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : All samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, ma[illegible]ke, and matrix spike duplicate results are [illegible]hin other batches of samples. The results [illegible]s 21222001, 21222002, and 21222003 will be reported with the results of our laboratory contract number 21184. The results for sample 21222002DL will be reported with the results of our laboratory contract number 21232.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Herb Kelly 4/15/92

Herb Kelly — Date
Manager, Organic Division

CH2M HILL — Quality Analytical Laboratories — 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 — 205 271 1444

Engineers
Planners
CH2M HILL Economists
Scientists

METHYLENE CHLORIDE/ACETONE SUMMARY

Due to the level of target compounds, the following samples required large dilutions for analysis. As required by the Statement of Work, these dilution factors have been applied, without background subtraction, to all detected compounds, particularly methylene chloride and acetone. As methylene chloride and acetone are common laboratory contaminants, the following table is being provided to present a more accurate perspective of these compounds. Included in the table is 1) the amount of methylene chloride and acetone, detected at the instrument, prior to multiplication by the dilution factor; and 2) the amount of methylene chloride and acetone for that particular sample's laboratory method blank.

SAMPLE	METHYLENE CHLORIDE	ACETONE	METHOD BLANK	METHYLENE CHLORIDE	ACETONE
21222002	11 ug/Kg	21 ug/Kg	Y03262B2	12 ug/Kg	10 ug/Kg
21222002DL	3 ug/Kg	10 U	L03312B3	4 ug/Kg	10 U

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CASE NARRATIVE FOR PNA
MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: BARR ENGINEERING

CASE NO. : N/A CONTRACT NO.: N/A

LAB NO. : 21222 SDG NO.: N/A

I. RECEIPT

A. DATE: March 18, 1992

B. SAMPLE INFORMATION

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
21222001	TT-15-01	SOIL	03/17/92	03/23/92	04/02/92
21222002	TT-19-01	SOIL	03/17/92	03/23/92	04/02/92
21222002DL	TT-19-01_DL	SOIL	03/17/92	03/23/92	04/03/92
S03232B1	SBLKS	SOIL	NA	03/23/92	04/02/92

C. Documentation
Exceptions : Tentatively Identified Compounds (TIC) were not requested as part of this analysis. Therefore, the TIC forms and raw data will not be included in this package.

As you have requested, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported separately. Due to the low concentrations analyzed for, there may be instances where the native matrix offers chromatographic interferences in this region of the chromatogram, making it difficult to correctly quantitate these isomers as separate compounds. In that case, Benzo(b)fluoranthene and Benzo(k)fluoranthene will be reported as total Benzo(b&k)fluoranthene. An "NR" (not reported) qualifier will then be used for the compounds for which are not reported.

Please note that the amount listed on the quantitation report reflects the mass detected at the instrument. According to the CLP Statement of Work, 2-uL injections must be made. Therefore, the amount on the quantitation report must be divided by a factor of two in order to determine the concentration of the extract injected.

No other exceptions were encountered.

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II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding times: All holding times were met.

B. Analytical Exceptions : The original analysis of sample 21222002 (TT-19-01) showed target compounds above the calibration range. The sample was diluted and reanalyzed. The results of both analyses have been reported.

No other exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : All associated method blanks met acceptable QC criteria.

B. Surrogate Recoveries : Sample 21222002DL (TT-19-01_DL) required a large dilution for analysis. Therefore, the surrogate recoveries could not be determined for this sample.

All other samples met acceptable QC limits.

C. Matrix Spike Results : The native sample, matrix spike, and matrix spike duplicate results are contained within another batch of samples. The results will be reported with the results of our laboratory contract number 21128.

Please note that Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Herb Kelly 4/05/92
Herb Kelly Date
Manager, Organic Division

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548 Montgomery, Alabama 36116 205 271 1444

SAMPLE DATA PACKAGE

SHIPPING RECEIPTS

78C LENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER N° 01913
13/149-003JSL31
NO: Waukegan Coke Plant RI

Jim Langseth
PROJECT CONTACT: Mary Mackey
LABORATORY: CH2M Hill
REMARKS/ ANALYSIS REQUIRED:

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC CLP TCL	SEMIVOLATILE ORGANIC	METALS CLP TAL	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	EXTRACTABLES CLP TCL	PESTICIDES/PCB CLP TCL	PAH	PAH/Phenol	TOTAL NO. OF CONTAINERS	
TT-15-01	3/17/92	PM	X			X													X		3	001
TT-19-01	3/17/92	PM	X			X													X		2	002
M-05	3/17/92	PM	X			X															2	003

FOR LAB USE ONLY
LAB # 21222
PROJ # LMG 32486 XY
ACK. 3/19 VERIFIED 3/19/92
HAZWRAP/NEESA Y (N)
QC LEVEL 1 2 (3)
COC Yes ICE Yes
AIA REQ Yes TEMP 2°C
CUST SEAL Yes PH N/A
SAMPLE COND. Sat

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
(JMF)	(JMF)	3/17/92	PM			
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
					3/18/92	1600

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER: 3161694841

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS; YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY

000047

Laboratory No. 21232

-- Volatiles

-- Semivolatiles (includes PAH/Phenolic Compounds)

-- Pesticides/PCBS

-- Metals

Three investigative soil samples (TT1201, TT1401, and MW3D) were collected March 18, 1992. Three samples were analyzed for volatiles; one sample was analyzed for semivolatiles, pesticides/PCBS and metals; and two samples were analyzed for PAH/phenols. The results of these analyses were reported in this case and qualified as described in the following sections.

Holding Times

Holding times were met on all samples and analyses using the EPA holding time criteria for water samples.

Instrument Tuning

Volatiles

GC/MS Tuning met the established method performance criteria for compounds, concentrations, frequencies and relative ion abundances for the volatiles analyses.

Semivolatiles

GC/MS Tuning met the established method performance criteria for compounds, concentrations, frequencies and relative ion abundances for the semivolatiles analyses.

Pesticides

Instrument performance was acceptable for retention times, retention time windows, and DDT and Endrin degradation for all samples.

Metals

Instrument tuning does not apply to the metals analyses.

Instrument Calibration

Volatiles

Initial calibration percent relative standard deviation (%RSD) and continuing calibration percent difference (%D) values were within the appropriate control limits.

Semivolatiles

Initial calibrations had acceptable average relative response factors and %RSD values for all compounds. Continuing calibration relative response factors and percent difference (%D) values were also within the established control limits.

Pesticides

Pesticide/PCB analyses instrument calibration %RSD and %D were within the appropriate quality control limits. The resolution check mixture and performance evaluation mixture samples were analyzed at the proper frequency. All retention time and RPD values were within the appropriate quality control limits.

Metals

Instrument calibrations were completed the proper number of times using the appropriate number and type of standards and blanks. Initial and continuing calibration percent recovery values were acceptable for all metals analyses.

Blanks

Volatiles

Methylene chloride (7 J, 8 J and 450 J µg/kg) and acetone (6 J and 9 J µg/kg) were detected in the volatiles blanks. Sample results less than ten times the associated blank concentration of either compound were qualified as nondetects and flagged "U."

Semivolatiles

The semivolatiles method blank had concentrations of di-n-butylphthalate (130 J µg/kg). Sample results less than ten times the associated blank concentration of this compound were qualified as nondetects and flagged "U."

Pesticides

No compounds were detected in the pesticide/PCB method blank.

Metals

Total metals analyses calibration and preparation blanks had concentrations of aluminum, arsenic, beryllium, calcium, chromium, copper, cyanide, iron, lead, manganese, nickel, selenium, silver, sodium, and zinc. These concentrations were greater than the instrument detection limit (IDL) but less than the contract required detection limit (CRDL). Sample results for these compounds less than five times the blank concentration were qualified as nondetects and flagged "U."

Surrogate Recovery

Volatiles

Volatile system monitoring compounds toluene-d8 (78 percent) and 1,2-dichloroethane-d4 (66 percent) had recoveries outside of the quality control

limits for sample TT1402DLMS. Recoveries for all system monitoring compounds were within control limits on the native sample, so no action was taken.

Semivolatiles

Surrogate recoveries were within the control limits for all semivolatiles analyses samples. The PAH/phenol analyses surrogates could not be determined on samples TT1201 and MW3DDL due to the large dilutions required for analysis. No data were qualified.

Pesticides

Pesticide/PCB surrogate recoveries were within control limits for all samples.

Metals

Total metals analyses ICP interference check sample recoveries and laboratory control sample results were within the established quality control limits.

Matrix Spike/Matrix Spike Duplicate

Volatiles

The matrix spike/matrix spike duplicate samples re[illegible] value for benzene (60 percent) was beyond control limits (66-142 percent) [illegible] RPD values for benzene (38 percent) and toluene (24 percent) were also outside the 21 percent control limits. Benzene was not detected in the associated sample. Since benzene recoveries were low only on the matrix spike sample, and benzene was detected in several other samples, no data were qualified. No action was taken on the toluene results due to acceptable recoveries on the matrix spike/matrix spike duplicate samples. Benzene (1000 J) results for sample TT1402 were taken from the TT1402DL sample. The concentration was qualified as an estimate because it was less than the IDL.

Semivolatiles

Semivolatiles analyses matrix spike/matrix spike duplicate samples RPD values for phenol (77 percent), acenaphthene (32 percent) and pyrene (52 percent) were beyond quality control limits. Since the recoveries for these compounds were acceptable, no data were qualified.

PAH/Phenol analyses matrix spike/matrix spike duplicate samples had several compounds with recoveries and RPD values outside control limits. These results may be due to the high level of spike compounds in the native sample, so no data were qualified.

Pesticides

Pesticide/PCB matrix spike/matrix spike duplicate samples had outlier recovery and RPD values for Aldrin (29%R, 64%RPD). Since all other recoveries and RPD values met performance criteria, and Aldrin recoveries on the matrix spike sample were acceptable, no action was taken.

Metals

Metals analyses quality control samples included a duplicate sample, a spike sample, post digestion spike samples and an ICP serial dilution sample.

Duplicate samples RPD values for cadmium (124.4 percent), lead (103.1 percent), manganese (42.5 percent), mercury (59.0 percent), selenium (27.0 percent), thallium (144.8 percent), and cyanide (23.3 percent) were beyond the appropriate control limits. Results in the investigative samples for these compounds were qualified as estimated and flagged "J."

The spike sample had recoveries beyond control limits (75-125 percent) for antimony (21.0 percent), cadmium (73.8 percent), manganese (144.2 percent), selenium (71.2 percent) and cyanide (-3.1 percent). Results for antimony in Sample TT1402 were less than the IDL, were qualified as unusable, and were flagged "R." Positive antimony results and sample results for the remaining outlier compounds were qualified as estimated and flagged "J."

The post digestion spike recoveries for selenium (70.7 percent) and thallium (118.5 percent) on the laboratory control sample were outside the 85-115 percent control limits. All post digestion spikes recoveries on investigative samples were within the control limits. No sample data were qualified.

ICP serial dilution results were within the 10 percent difference control limit.

Field Duplicates

Field duplicate samples are summarized in Tables 2.3-6 through 2.3-11.

Overall Assessment

All data are considered acceptable with the recommended qualifiers except the "R" qualified antimony results in sample TT1402. These data are not usable.

CH2M HILL
Engineers
Planners
Economists
Scientists

May 4, 1992

LMG33486.XY

Ms. Marti Harding-Smith
Barr Engineering Company
8300 Norman Center Drive
Suite 300
Minneapolis, Minnesota 55437-1026

RE: Analytical Data for LMG Laboratory No. 21232

Dear Ms. Harding-Smith:

On March 19, 1992, the CH2M HILL Montgomery Laboratory received one sample with a request for analysis of selected inorganic parameters.

The analytical results and associated quality control data are enclosed. Any unusual difficulties encountered during the analyses of these samples are discussed in the case narratives.

If you should have any questions concerning the data, please inquire.

The CH2M HILL policy is to store samples for up to 30 days after reporting. If you desire, our laboratory will maintain your samples for a longer period at a cost of $5.00 per sample per month. Samples determined to be hazardous can either be returned to you or disposed of at a cost of $25.00 per sample.

Sincerely,

Wanda L. Hall

Wanda L. Hall
Data Package Supervisor

Enclosures

cc: Mr. Jim Langseth

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Economists
Scientists

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EPA QUALIFIERS

INORGANIC ANALYSES

- C (Concentration) Qualifier -- Enter "B" if the reported value obtained was less than the CRDL but greater than or equal to the IDL. Enter "U" if the value was less than the IDL or was not detected.

- Q Qualifier -- Entries and their meanings are:

  E - The reported value is estimated because of interference. An explanatory comment must be included under "Comments" on the Cover Page if the problem applies to all samples in this data package or on the individual FORM I if it is an isolated problem.

  M - Duplicate injection precision was not met (two analyses of the same sample did not agree).

  N - Spiked sample recovery not within control limits.

  S - The reported value was determined by the Method of Standard Additions (MSA).

  W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

  * - Duplicate analysis not within control limits.

  + - Correlation coefficient for the MSA is less than 0.995.

  Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field.

- M (Method) Qualifier -- Enter one of the following:

  P - ICP
  A - Flame AA
  F - Furnace AA
  CV - Manual Cold Vapor AA
  AV - Automated Cold Vapor AA
  AS - Semi-Automated Spectrophotometric
  C - Manual Spectrophotometric
  T - Titrimetric
  NR - Analyte was not required by your lab

CH2M HILL Quality Analytical Laboratories 2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 1444

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TABLE 1

SAMPLE CROSS-REFERENCE SUMMARY

CH2M HILL Laboratory No. 21232

CH2M HILL Sample No.	Sample Description				
21232002	TT-14-02	03/18/92	GRAB	13/49-003JSL31	PO#01268

CH2M HILL
Quality Analytical Laboratories
2567 Fairlane Drive, P.O. Box 230548, Montgomery, Alabama 36116
205 271 1444