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FINAL
SITE INSPECTION REPORT
METEM CORPORATION
PARSIPPANY, MORRIS COUNTY, NEW JERSEY

CERCLIS ID NO.: NJD002139244

Volume 2 of 2

30 August 1993

Work Order No.: 04200-016-081-0011

Prepared for:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Prepared by:

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Edison, New Jersey 08837

240445

REFERENCE NO. 20

RECORD OF COMMUNICATION
REGIONAL SAMPLE CONTROL CENTER

DATE: 4/18/93
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC/ESAT
TO: George Karras,
Toxic and Hazardous Waste Section

RECEIVED
JUN 08 1993

Attached is the following INORGANIC Data Package to be reviewed for Quality Assurance

SITE	CASE/SAS#	LAB	MATRIX	# SAMPLES
Metem Corp. AWES/SSI	19370	SKINER	SOIL WATER	9 3

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
		[illegible]	03-02-93 / 8:00
[illegible]	4-18-93 11:49	K. Krisella	4/18/93 11:50
K. Krisella		John Bulich	4/19/93 0845
John Bulich	4/19/93 0950	To DCR [illegible]	4/19/93 0950
J Bulich	4/19/93 1000	[illegible]	4/19/93 0950
[illegible]	4/22/93 1500	J Bulich To DCR	4/22/93 1500
[illegible] (DCR)	4/29/93 0945	[illegible]	4/29 0945
[illegible]	5/4/93 10:27	[illegible]	5/4/93 10:27
[illegible]	5/4/93 2:30	[illegible]	5/7/93 2:00
[illegible]	5/7/93 3:00	[illegible]	5/7/93 3:00
[illegible]	5/10/93 9:20	DCR 5/10 [illegible]	9:21
DCR (KD)	5/25/93 930	[illegible]	5/25/93 9:30
[illegible]	6/1/93 9:37	DCR (CPP)	6/1/93 9:37
DCR	6/8/93 9:34	Harry Smith	6/8/93 9:34

(OVER FOR INSTRUCTIONS) revsd 3/93

TITLE: Evaluation of Metals Data For the Contract Laboratory Program Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision 11

Case # 19370 Site Metem co. Matrix: Soil 9

SDG# MBJM-01 Lab Skinner Water 0

Contractor Weston Reviewer C Agnew Other 0

VALIDATION FLAGS — The following flags have been applied in red by the data validator and must be considered by the data user.

"J" This flag indicates the result is qualified as estimated.

RED LINE — A red line drawn through a sample result indicates unusable data. Red lined data are known to contain significant errors based on documented information and must not be used by the data user.

FULLY USABLE DATA — The results that do not carry "J" or Red line are fully usable.

CONTRACTUAL QUALIFIERS — The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0.

The data assessment is given below and on the attached sheets.

1. Field Blank Criteria:

Ca and Zn were present in the field blank at concentrations of 7900 UG/L and 2230 UG/L respectively. All associated data less than or equal to 5x FB concentration will be rejected.

ACTION:

Rejected	MBJM-01,02,03,04,05,06,07,08,09	for Ca
Rejected	MBJM-01,02,03,04,05,06,07,08,09	for Zn

2. CRDL Standards:

% Recovery for Tl in the associated CRDL: standard is 71.4%. All associated data within the affected range of 0-20 UG/L will be flagged as estimated.

ACTION:
Estimated (J) MBJM- 01,02,03,04,05,06,07,08,09 for Tl

3. Spike Sample Recovery:

SSR for Se was less than 30%. All associated data will be rejected. SSR for Sb was between 30-74%. All associated date will be flagged as estimated.

ACTION:
Rejected MBJM-01,02,03,04,05,06,07,08,09 for Se
Estimated (J) MBJM-01,02,03,04,05,06,07,08,09 for Sb

4. Lab Duplicates

RPD was greater than 100% for Pb when S & D were greater than 5x CRDL. All associated data will be flagged as estimated.

ACTION:
Estimated (J) MBJM-01,02,03,04,05,06,07,08,09 for Pb

(Continuation)

6. Analytical Spike Recovery

ASR for As in samples MBJM-03,04 were not within the control window of 85-115%. As will be flagged as estimated in these two samples.

ACTION:
Estimated (J) MBJM-03,04

HS
6/21/3

Contract-Problem/Non Compliance

MMB/ESAT Reviewer_____ Date:_____
Signature

Contractor Reviewer_____ Date: 5/26/93
Signature

Verified by:_____ Date:_____

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO. 19370

The hardcopied (laboratory name) _____
Inorganic data package received at Region II has been reviewed and the quality assurance performance data summarized. The data reviewed included:
SMO Sample No.: _____

Conc. & Matrix: _____

Contract No. WA87-K025,K026,K027(SOW787) requires that specific analytical work be done a that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments: _____

Reviewer's Initial

5/26/93
Date

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Summary Form (Inorganics)

Date: Feb. 1990
Number: HW-2
Revision: 10

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: Inorganic Date: 5/26/93 Case #: 19370

Site: Metem Co Lab Name: Skinner & Sherman

Reviewer's Initials: LA Number of Samples: 9 Soil

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejecti
ICP				18									162	
Flame AA						~~9~~ 4							~~36~~ 0 4	
Furnace AA						9							~~36~~ 4	
Mercury													9	
Total				18		9							207	27
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

	CLOL STDS								ASR					
ICP						9							162	
Flame AA							~~9~~ 4						36	
Furnace AA	9						9		2				—	
Mercury													9	
Total	9					9	9		2				207	29
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.7: CLP Data Assessment Checklist
Inorganic Analysis

Date: Feb. 1990
Number: HW-2
Revision: 10

INORGANIC REGIONAL DATA ASSESSMENT

Region 2

CASE NO. 19370

SITE Makem Co.

LABORATORY Skinner & Sherman

NO. OF SAMPLES/ MATRIX 9 Soil

SDG# MBAJ-01

REVIEWER (IF NOT ESD) Weston

SOW#

REVIEWER'S NAME C Anon

DPO: ACTION FYI

COMPLETION DATE

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES	O	O	O	NA
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:

AREAS OF CONCERN:

NOTABLE PERFORMANCE:

e: Evaluation of Metals Data for the Contract Laboratory Program

Date: Jan. 1992
Number: HW-2
Revision: 11

Scope

.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90 .

Responsibilities - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

.1 For a total review:

.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1). The reviewer must answer every question on the checklist.

.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2) The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

.1.3 Contract Non-Compliance - SMO Report (Appendix A.3) This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technical Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

.1.4 CLP Data Assessment Summary Forms

.4.1 Appendix A.5
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

.4.2 Appendix A.6
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

1.5 Data Review Log: It is recommended that each data reviewer should maintain a log of the reviews completed to include: a. date of start of case review

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

1.6 Telephone Record Log - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

1.7 Forwarded Paperwork

.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EPA office in Las Vegas are given in Appendix A-4.

.8 Filed Paperwork - Upon completion of review, the following are to be filed within MTB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

Data Completeness:
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete, the RSSC would call the laboratory for missing document(s). If the laboratory does not respond within a week, SMO and MMB coordinator of Region II will be notified.

Rejection of Data - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

Acceptance Criteria - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of October 1, 1989.

SMO Contract Compliance Screening (CCS) - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

Request for Reanalysis - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative. If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

Record of Communication - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

Rounding off numbers - The data reviewer will follow the standard practice.

	YES	NO	N/A
.1 Contract Compliance Screening Report (CCS) - Present?	✓		
ACTION: If no, contact RSCC.			
.2 Record of Communication (from RSCC) - Present?	✓		
ACTION: If no, request from RSCC.			
.3 Trip Report - Present and complete?	✓		
ACTION: If no, contact RSCC for trip report.			
.4 Sample Traffic Report - Present?	✓		
Legible?	✓		
ACTION: If no, request from Regional Sample Control Center (RSCC).			
.5 Cover Page - Present?	✓		
Is cover page properly filled in and signed by the lab manager or the manager's designee?	✓		
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	✓		
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	✓		
(b) Form I's?	✓		
ACTION: If no for any of the above, contact RSCC for clarification.			

		Yes	No	N/A
1.6	Form I to IX:			
1.6.1	Are all the Form I through Form IX labeled with:			
	Laboratory name?	✓		
	Case/SAS number?	✓		
	EPA sample No.?	✓		
	SDG No.?	✓		
	Contract No.?	✓		
	Correct units?	✓		
	Matrix?	✓		

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

1.6.2	Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
	(NOTE: Check all forms against raw data.)			
	(a) all analytes analyzed by ICP?	✓		
	(b) all analytes analyzed by GFAA?	✓		
	(c) all analytes analyzed by AA Flame?			✓
	(d) Mercury?	✓		
	(e) Cyanide?			✓

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
.7	Raw Data			
.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	[✓]	—	—
	Digestion Log for furnace AA Form XIII present?	[✓]	—	—
	Distillation Log for mercury Form XIII present?	[✓]	—	—
	Distillation Log for cyanides Form XIII present?	[ ]	—	✓
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	[ ]	—	✓
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	[✓]	—	—
	Are preparation dates present on sample preparation logs/bench sheets?	[✓]	—	—
.7.2	Measurement read out record present? ICP	[✓]	—	—
	Flame AA	[✓] GA	—	✓
	Furnace AA	[✓]	—	—
	Mercury	[✓]	—	—
	Cyanides	[ ]	—	✓
.7.3	Are all raw data to support all sample analyses and QC operations present?	[✓]	—	—
	Legible?	[✓]	—	—
	Properly Labeled?	[✓]	—	—

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

		YES	NO	N/A
.8	Holding Times:- (aqueous and soil samples.)			
	(Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days). . . . . exceeded?	___	[✓]	___
	Cyanide distillation (14 days). . . . . exceeded?	___	[ ]	✓
	Other Metals analysis (6 months). . . . exceeded?	___	[✓]	___

NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.

ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.

.8.2	Is pH of aqueous samples for:			
	Metals Analysis >2?	___	[ ]	✓
	Cyanides Analysis <12?	___	[ ]	✓

Action: If yes, flag the associated metals and cyanides data as estimated.

Form I (Final Data)

.9.1	Are all Form I's present and complete?	[✓]	___	___

ACTION: If no, prepare telephone record log and contact laboratory for submittal.

.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[✓]	___	___
	Are soil sample results for each parameter corrected for percent solids?	[✓]	___	___
	Are all "less than IDL" values properly coded with "U"?	[✓]	___	___

	YES	NO	N/A
Are the correct concentration qualifiers used with final data?	✓		

ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.

	YES	NO	N/A
.9 Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	✓		
Was a brief physical description of samples given on Form I's?	✓		
Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?		✓	

ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the "Data Assessment Narrative".

.10 Calibration

	YES	NO	N/A
.11 Is record of at least 2 point calibration present for ICP analysis?	✓		
Is record of 5 point calibration present for Hg analysis?	✓		
Is record of 4 point calibration present for:			
Flame AA?			✓
Furnace AA?	✓		
Cyanides?			✓
Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?	✓		

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

		YES	NO	N/A
1.10.2	Is correlation coefficient less than 0.995 for:			
	Mercury Analysis?		✓	
	Cyanide Analysis?		✓	
	Atomic Absorption Analysis?		✓	

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

1.10.3	In the instance where less than 4 standards are measured in absorbance (or peak area, peak height, etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values?			✓

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

1 Form II A (Initial and Continuing Calibration Verification)-

11.1	Present and complete for every metal and cyanide?	✓		
	Present and complete for AA and ICP when both are used for the same analyte?			✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

11.2	Circle on each Form IIA all percent recoveries that are outside the contract windows. Are all calibration standards (initial and continuing) within control limits:			
	Metals- 90-110%R?	✓		
	Hg - 80-120%R?	✓		
	Cyanides- 85-115%R?			✓

	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
.11.3 Was continuing calibration performed every 10 samples or every 2 hours?	✓		
Was ICV for cyanides distilled?			✓

ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".

.12 Form II B (CRDL Standards for AA and ICP) -

	YES	NO	N/A
2.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	✓		
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?			✓
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	✓		

ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are:
AA Analysis - **True Value ± CRDL
ICP Analysis - **True Value ± 2CRDL
CN Analysis - **True Value ± 0.5 x True Value.

rue value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL
ate the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	✓		

ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".

1.12.3 Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.

Are CRA and CRI standards within control limits:

Metals	80 - 120%R?		✓	

Is mid-range standard within control limits:

Cyanide	80 - 120%R?			✓

ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.

Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.

1.13 Form III (Initial and Continuing Calibration Blanks)

		YES	NO	N/A
1.13.1	Present and complete?	✓		
	For both AA and ICP when both are used for the same analyte?			✓
	Was an initial calibration blank analyzed?	✓		
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	✓		

	YES	NO	N/A
ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract Problems/ Non-Compliance section of the "Data Assessment Narrative".			
1.2 Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	✓		
Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?			✓
ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
1 FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
1.1 Was one prep. blank analyzed for:			
each Sample Delivery Group (SDG)?	✓		
each batch of digested samples?	✓		
each matrix type?	✓		
both AA and ICP when both are used for the same analyte?			✓
ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?		✓	
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?			✓
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?		✓	✓
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
1.14.4	Is concentration of prep. blank below the negative CRDL?		✓	
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
1.15	Form IV (ICP Interference Check Sample)			
1.15.1	Present and complete?	✓		
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	✓		
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	✓		
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?			✓

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
16	Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation) (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
16.1	Present and complete for: each SDG?	✓		
	each matrix type?	✓		
	each conc. range (i.e. low, med., high)?	✓		
	For both AA and ICP when both are used for the same analyte?			✓
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
16.2	Was field blank used for spiked sample?		✓	
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?		✓	
	If no, is sample concentration greater than or equal to four times spike concentration?		✓	

	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	✓		
ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".			

16.4 Aqueous

Are any spike recoveries:

(a) less than 30%?			✓
(b) between 30-74%?			✓
(c) between 126-150%?			✓
(d) greater than 150%?			

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

16.5 Soil/Sediment

Are any spike recoveries:

(a) less than 10%?	✓	✓ UA	
(b) between 10-74%?	✓		
(c) between 126-200%?		✓	
(d) greater than 200%?		✓	

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.
MBJM-02, 03

Lab Name: Skinner & Sheinan Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: _____ SDG No.: MBJM-0

Matrix (soil/water): Soil Level (low/med): low

% Solids for Sample: 81.4 % Solids for Duplicate: 82.5

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD/Diff	Q	M
Aluminum	100%	40700.0000		35168.1500		14.3		P
Antimony	—	17.9080	U	18.1500	U	—		P
Arsenic	20.0	20.3500		4.125	B	162		F
Barium	400.0	166.4630	B	143.5500	B	23.1		P
Beryllium	10.0	3.3781	B	2.7225	B	.65		P
Cadmium	—	1.5466	U	1.5675	U	—		P
Calcium	10000.0	11843.7000		15716.2500		3873		P
Chromium	100%	142.0430		91.5750		43.7		P
Cobalt	100.0	141.2280		87.0375		54.2		P
Copper	50.0	135.9380		96.9375		34.0		P
Iron	100%	109483.0000		81262.5000		29.6		P
Lead	100%	63.8990		48.2625		27.0		F
Magnesium	10000.0	17378.9000		13158.7500		4220		P
Manganese	100%	1090.7600		1035.3750		5.1		P
Mercury	—	0.2000	U	0.2000	U	—		CV
Nickel	80.0	164.0210		104.3625		480		P
Potassium	10000.0	6674.8000		4908.7500	B	1766		P
Selenium	—	3.0525	U	2.2537	U	—		F
Silver	10.0	5.2910	B	5.2750	B	0.5		P
Sodium	10000.0	622.7100	B	544.5000	B	18.0		P
Thallium	—	1.7501	U	1.8975	U	—		F
Vanadium	100.0	115.9950		93.2250		22.9		P
Zinc	100%	161.7860		132.4125		19.8		P
Cyanide								

FORM VI - IN

7/88

	YES	NO	N/A
ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			

.17 Form VI (Lab Duplicates)

.17.1 Present and complete for: each SDG?	✓		
each matrix type?	✓		
each concentration range (i.e. low, med., high)?	✓		
both AA and ICP when both are used for the same analyte?			✓

ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.

Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.

2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.

.17.2 Was field blank used for duplicate analysis?		✓	

ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.

.17.3 Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?		✓	
If no, are all results outside the control limits flagged with an * on Form I's and VI?	✓		

ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".

* Substitute IDL for CRDL when IDL > CRDL

	YES	NO	N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.

2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

.17.4 Aqueous

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL? ___ [ ] ✓

Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL? ___ [ ] ✓

ACTION: If yes, flag the associated data as estimated.

.17.5 Soil/Sediment

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) :

> 100%? ✓ [ ] ___

Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) :

> 2x*CRDL? ___ [✓] ___

*Substitute IDL for CRDL when IDL > CRDL.
**Use absolute values of samples and duplicates to calculate the differences.

		YES	NO	N/A
	ACTION: If yes, flag the associated data as estimated.			
1	**Field Duplicates:**			
18.1	Were field duplicates analyzed?	✓		
	ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.			
	NOTE: 1. Do not calculate RPD when both values are less than IDL. 2. Flag all associated data only for field duplicate pair.			
1 2	**Aqueous**			
	Circle all values on self prepared Form VI for field duplicates that are: RPD > 50%, or Difference > CRDL*			
	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?			✓
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?			✓
	ACTION: If yes, flag the associated data as estimated.			

*Substitute IDL for CRDL when IDL > CRDL.
**Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A
.3 Soil/Sediment			

Circle all values on self prepared Form VI for field duplicates that are:

RPD >100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than 5 times *CRDL):

>100%?	✓	✓	

Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL):

>2x *CRDL?	✓		

ACTION: If yes, flag the associated data as estimated.

Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

.1 Was one LCS prepared and analyzed for:

each SDG?	✓		
each batch samples digested/distilled?	✓		
both AA and ICP when both are used for the same analyte?			✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

*Substitute IDL for CRDL when IDL > CRDL.
**Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A
1.29.2 **Aqueous LCS:**			
Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.			
Is any LCS recovery: less than 50%?	___	[ ]	✓
between 50% and 79%?	___	[ ]	✓
between 121% and 150%?	___	[ ]	✓
greater than 150%?	___	[ ]	✓

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

1.29.3 **Solid LCS**			
NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J). 2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.			
Is LCS "Found" value higher than the control limits on Form VII?	___	[✓]	___
ACTION: If yes, qualify all associated positive data as estimated.			
Is LCS "Found" value lower than the Control limits on Form VII?	___	[✓]	___
ACTION: If yes, qualify all associated data as estimated.			

		YES	NO	N/A
20	**Form IX (ICP Serial Dilution) -**			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
21	Was Serial Dilution analysis performed for:			
	each SDG?	✓		
	each matrix type?	✓		
	each concentration range (i.e. low, med.)?	✓		
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
22	Was field blank(s) used for Serial Dilution Analysis?		✓	
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
23	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.			✓
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
24	Circle on each Form IX all percent differences that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?		✓	
	≥ 100%?		✓	

		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL ≤ CRDL)			
21	Furnace Atomic Absorption (AA) QC Analysis			
21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	✓		
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	✓		
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?	✓		
	ACTION: If no for any of the above, flag all the associated data as estimated.			
21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?	✓		
	ACTION: If yes, flag the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

*Analytical spike is not required on the pre-digestion spiked samples.

		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
1.22	Form VIII (Method of Standard Addition Results)			
22.1	Present?	✓		
	If no, is any Form I result coded with "S" or a "+"?		✓	
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	✓		
	ACTION: If yes, reject (red-line) the affected data.			
22.3	Was *MSA required for any sample but not performed?		✓	
	Is coefficient of correlation for MSA less than 0.995?		✓	
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?		✓	
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	✓		
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

* MSA is not required on LCS and prep blank.

		YES	NO	N/A
1.23	Dissolved/Total or Inorganic/Total Analytes:			
1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[___]	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[___]	___
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	___
1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	___
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
1.24	Form I (Field Blank) -			
	(Note: Designate "Field Blank" as such on Form I.)			
1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	___

	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[ ]	✓	

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

1.5 Form X, XI, XII (Verification of Instrumental Parameters).

1.5.1 Is verification report present for:			
Instrument Detection Limits (quarterly)?	[✓]		
ICP Interelement Correction Factors (annually)?	[✓]		
ICP Linear Ranges (quarterly)?	[✓]		

ACTION: If no, contact TPO of the lab.

1.5.2 Form X (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)

1.5.2.1 Are IDLs present for: all the analytes?	[✓]		
all the instruments used?	[✓]		
For both AA and ICP when both are used for the same analyte?	[ ]		✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

1.5.2.2 Is IDL greater than CRDL for any analyte?		[✓]	
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[ ]		✓

	YES	NO	N/A
Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			
1.25.3 **Form XI (Linear Ranges)**			
1.25.3.1 Was any sample result higher than high linear range of ICP.	___	[✓]	___
Was any sample result higher than the highest calibration standard for non-ICP parameters?	___	[✓]	___
If yes for any of the above, was the sample diluted to obtain the result on Form I?	[___]	___	[✓]

ACTION: If no, flag the result reported on Form I as estimated(J).

1.26 **Percent Solids of Sediments**

	YES	NO	N/A
1.26.1 Are percent solids in sediment(s): < 50%?	___	[✓]	___
< 10%?	___	[✓]	___

ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.

TITLE: Evaluation of Metals Data For the Contract Laboratory Program Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision 11

Case # 19370 Site Metem Corp. Matrix: Soil 0

SDG# MBJM-10 LabSkinner Water 5

Contractor Weston Reviewer C. Agnew Other 0

VALIDATION FLAGS	The following flags have been applied in red by the data validator and must be considered by the data user.
	"J" This flag indicates the result is qualified as estimated.
RED LINE	A red line drawn through a sample result indicates unusable data. Red lined data are known to contain significant errors based on documented information and must not be used by the data user.
FULLY USABLE DATA	The results that do not carry "J" or Red line are fully usable.
CONTRACTUAL QUALIFIERS	The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0.

The data assessment is given below and on the attached sheets.

(Continuation)

1. Spike Sample Recovery:

SSR for Tl is between 30-74%. All associated data is being flagged as estimated.

ACTION:
Estimated (J) MBJM-10,11,12,13,14, for Tl

2. Lab Duplicates:

The difference between the sample and its duplicate is greater than CRDL when both S & D were less than 5X CRDL for Pb. All associated data will be flagged as estimated.

ACTION:
Estimated (J) MBJM-10,11,12,13,14 for Pb

3. Field Duplicates:

The RPD between the sample and it duplicate is greater than 50% while both S & D were greater than 5X CRDL for ZN. The duplicate pair will be flagged as estimated for Zn.

ACTION:
Estimated (J) MBJM-11,12 for Zn

4. ICP Serial dilution:

% difference was > than 10% for Fe while its initial concentration was > than 10 x IDL. All associated data > than CRDL will be flagged as estimated.

ACTION:
Estimated (J) MBJM-10,11,12 for Fe.

(Continuation)

Contract-Problem/Non Compliance

MMB/ESAT Reviewer_____ Date:_____
Signature

Contractor Reviewer_____ Date: 5/26/92
Signature

Verified by:_____ Date:_____

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO. 19370

The hardcopied (laboratory name) _____
Inorganic data package received at Region II has been reviewed and the quality assurance performance data summarized. The data reviewed included:
SMO Sample No.: _____

Conc. & Matrix: _____

Contract No. WA87-K025,K026,K027(SOW787) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments: _____

CA
Reviewer's Initial

5/26/93
Date

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: Inorganic Date: 5/26/93 Case #: 19370

Site: Metem Corp. Lab Name: Skinner & Sheinar

Reviewer's Initials: LA Number of Samples: 5 Aqueous

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejecti
ICP													90	
Flame AA													0	
Furnace AA													20	
Mercury													4	
Total													114	0
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

ICP								2			3		90	
Flame AA						~~5~~ LA							0	
Furnace AA						5	5						20	
Mercury													4	
Total						5	5	2			3		114	15
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

No Rejections)

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.7: CLP Data Assessment Checklist
Inorganic Analysis

Date: Feb. 1990
Number: HW-2
Revision: 10

INORGANIC REGIONAL DATA ASSESSMENT

Region 2

CASE NO. 19370

SITE Meka Lab

LABORATORY Skinner & Sleman

NO. OF SAMPLES 5

MATRIX Aqueous

SDG# MB5M-10

REVIEWER (IF NOT ESD) Lesko

SOW#

REVIEWER'S NAME C. Green

DPO: ACTION FYI

COMPLETION DATE

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES	O	O	O	NA
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:

AREAS OF CONCERN:

NOTABLE PERFORMANCE:

TITLE: Evaluation of Metals Data For the Contract Laboratory Program Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision 11

Case # 19370 Site Metem Corp. Matrix: Soil 0

SDG# MBJM-10 Lab Skinner Water 5

Contractor Weston Reviewer C. Agnew Other 0

VALIDATION FLAGS

The following flags have been applied in red by the data validator and must be considered by the data user.

"J" This flag indicates the result is qualified as estimated.

RED LINE

A red line drawn through a sample result indicates unusable data. Red lined data are known to contain significant errors based on documented information and must not be used by the data user.

FULLY USABLE DATA

The results that do not carry "J" or Red line are fully usable.

CONTRACTUAL QUALIFIERS

The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0.

The data assessment is given below and on the attached sheets.

(Continuation)

1. Spike Sample Recovery:

SSR for Tl is between 30-74%. All associated data is being flagged as estimated.

ACTION:
Estimated (J) MBJM-10,11,12,13,14, for Tl

2. Lab Duplicates:

The difference between the sample and its duplicate is greater than CRDL when both S & D were less than 5X CRDL for Pb. All associated data will be flagged as estimated.

ACTION:
Estimated (J) MBJM-10,11,12,13,14 for Pb

3. Field Duplicates:

The RPD between the sample and it duplicate is greater than 50% while both S & D were greater than 5X CRDL for ZN. The duplicate pair will be flagged as estimated for Zn.

ACTION:
Estimated (J) MBJM-11,12 for Zn

4. ICP Serial dilution:

% difference was > than 10% for Fe while its initial concentration was > than 10 x IDL. All associated data > than CRDL will be flagged as estimated.

ACTION:
Estimated (J) MBJM-10,11,12 for Fe.

(Continuation)

Contract-Problem/Non Compliance

MMB/ESAT Reviewer_____ Date:_____
Signature

Contractor Reviewer_____ Date: 5/26/93
Signature

Verified by:_____ Date:_____

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO. 19370

The hardcopied (laboratory name) _____
Inorganic data package received at Region II has been reviewed and the quality assurance performance data summarized. The data reviewed included:
SMO Sample No.: _____

Conc. & Matrix: _____

Contract No. WA87-K025,K026,K027(SOW787) requires that specific analytical work be done a that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments: _____

CA
Reviewer's Initial

5/26/93
Date

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: Inorganic Date: 5/26/93 Case #: 19370

Site: Metem Corp Lab Name: Skinner & Skinner

Reviewer's Initials: CA Number of Samples: 5 Aqueous

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejects
ICP													60	
Flame AA													0	
Furnace AA													20	
Mercury													4	
Total													114	0
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

ICP								2			3		60	
Flame AA						5 CA							0	
Furnace AA						5	5						20	
Mercury													4	
Total						5	5	2			3		114	15
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

No Rejections

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.7: CLP Data Assessment Checklist
Inorganic Analysis

Date: Feb. 1990
Number: HW-2
Revision: 10

INORGANIC REGIONAL DATA ASSESSMENT

Region 2

CASE NO. 19370

SITE Meteor Lab

LABORATORY Skinner & Sleman

NO. OF SAMPLES/ MATRIX 5 Aqueous

SDG# MBJM-10

REVIEWER (IF NOT ESD) Weston

SOW#

REVIEWER'S NAME C. Ayres

DPO: ACTION FYI

COMPLETION DATE

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES	O	O	O	NA
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:

AREAS OF CONCERN:

NOTABLE PERFORMANCE:

TITLE: Evaluation of Metals Data For the Contract Laboratory Program Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision 11

Case # 19370 Site Metem Corp. Matrix: Soil 0

SDG# MBJM-10 Lab Skinner Water 5

Contractor Weston Reviewer C. Agnew Other 0

VALIDATION FLAGS

The following flags have been applied in red by the data validator and must be considered by the data user.

"J" This flag indicates the result is qualified as estimated.

RED LINE

A red line drawn through a sample result indicates unusable data. Red lined data are known to contain significant errors based on documented information and must not be used by the data user.

FULLY USABLE DATA

The results that do not carry "J" or Red line are fully usable.

CONTRACTUAL QUALIFIERS

The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0.

The data assessment is given below and on the attached sheets.

(Continuation)

1. Spike Sample Recovery:

SSR for Tl is between 30-74%. All associated data is being flagged as estimated.

ACTION:
Estimated (J) MBJM-10,11,12,13,14, for Tl

2. Lab Duplicates:

The difference between the sample and its duplicate is greater than CRDL when both S & D were less than 5X CRDL for Pb. All associated data will be flagged as estimated.

ACTION:
Estimated (J) MBJM-10,11,12,13,14 for Pb

3. Field Duplicates:

The RPD between the sample and it duplicate is greater than 50% while both S & D were greater than 5X CRDL for ZN. The duplicate pair will be flagged as estimated for Zn.

ACTION:
Estimated (J) MBJM-11,12 for Zn

4. ICP Serial dilution:

% difference was > than 10% for Fe while its initial concentration was > than 10 x IDL. All associated data > than CRDL will be flagged as estimated.

ACTION:
Estimated (J) MBJM-10,11,12 for Fe.

(Continuation)

Contract-Problem/Non Compliance

MMB/ESAT Reviewer_____ Date:_____
Signature

Contractor Reviewer_____ Date: 5/26/93
Signature

Verified by:_____ Date:_____

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO. 19370

The hardcopied (laboratory name) _____
Inorganic data package received at Region II has been reviewed and the quality assuranc
performance data summarized. The data reviewed included:
SMO Sample No.: _____

Conc. & Matrix: _____

Contract No. WA87-K025,K026,K027(SOW787) requires that specific analytical work be done a
that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO.
general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments: _____

CA
Reviewer's Initial

5/26/93
Date

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: Inorganic Date: 5/26/93 Case #: 19370

Site: Metem Corp Lab Name: Skinner & Sheinar

Reviewer's Initials: LA Number of Samples: 5 Aqueous

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Interferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejecti
ICP													90	
Flame AA													0	
Furnace AA													20	
Mercury													4	
Total													114	0
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

ICP								2			3		90	
Flame AA						5 LA							0	
Furnace AA						5	5						20	
Mercury													4	
Total						5	5	2			3		114	15
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

No Rejections)

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.7: CLP Data Assessment Checklist
Inorganic Analysis

Date: Feb. 1990
Number: HW-2
Revision: 10

INORGANIC REGIONAL DATA ASSESSMENT

Region 2

CASE NO. 19370

SITE Meten Corp

LABORATORY Skinner & Sleeman

NO. OF SAMPLES/ MATRIX 5 Aqueous

SDG# MBJM-10

REVIEWER (IF NOT ESD) Weston

SOW#

REVIEWER'S NAME C. Ayres

DPO: ACTION FYI

COMPLETION DATE

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES	O	O	O	NA
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:

AREAS OF CONCERN:

NOTABLE PERFORMANCE:

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

(SOP Revision XI)

PREPARED BY: _____ DATE: 1-30-92
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 1-30-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 1/30/92
Robert Runyon, Chief
Monitoring Management Branch

: Evaluation of Metals Data for the Contract Laboratory Program

Date: Jan. 1992
Number: HW-2
Revision: 11

Scope

.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90 .

Responsibilities - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

.1. For a total review:

.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1). The reviewer must answer every question on the checklist.

.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2) The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

.1.3 Contract Non-Compliance - EMO Report (Appendix A.3) This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technical Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

.1.4 CLP Data Assessment Summary Forms

.4.1 Appendix A.5
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

.4.2 Appendix A.6
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

1.5 Data Review Log: It is recommended that each data reviewer should maintain a log of the reviews completed to include: a. date of start of case review

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

1.6 Telephone Record Log - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

1.7 Forwarded Paperwork

.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EPA office in Las Vegas are given in Appendix A-4.

8 Filed Paperwork - Upon completion of review, the following are to be filed within MTB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

Data Completeness -
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete, the RSSC would call the laboratory for missing document(s). If the laboratory does not respond within a week, SMO and MMB coordinator of Region II will be notified.

Rejection of Data - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

Acceptance Criteria - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of October 1, 1989.

SMO Contract Compliance Screening (CCS) - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

Request for Reanalysis - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative. If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

Record of Communication - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

Rounding off numbers - The data reviewer will follow the standard practice.

	YES	NO	N/A
1.1 Contract Compliance Screening Report (CCS) - Present?	✓		
ACTION: If no, contact RSCC.			
1.2 Record of Communication (from RSCC) - Present?	✓		
ACTION: If no, request from RSCC.			
1.3 Trip Report - Present and complete?	✓		
ACTION: If no, contact RSCC for trip report.			
1.4 Sample Traffic Report - Present?	✓		
Legible?	✓		
ACTION: If no, request from Regional Sample Control Center (RSCC).			
1.5 Cover Page - Present?	✓		
Is cover page properly filled in and signed by the lab manager or the manager's designee?	✓		
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	✓		
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	✓		
(b) Form I's?	✓		
ACTION: If no for any of the above, contact RSCC for clarification.			

		Yes	No	N/A
1.6	Form I to IX:			
1.6.1	Are all the Form I through Form IX labeled with:			
	Laboratory name?	✓		
	Case/SAS number?	✓		
	EPA sample No.?	✓		
	SDG No.?	✓		
	Contract No.?	✓		
	Correct units?	✓		
	Matrix?	✓		

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

1.6.2	Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
	(NOTE: Check all forms against raw data.)			
	(a) all analytes analyzed by ICP?	✓		
	(b) all analytes analyzed by GFAA?	✓		
	(c) all analytes analyzed by AA Flame?			✓
	(d) Mercury?	✓		
	(e) Cyanide?			✓

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
	Raw Data			
7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	✓		
	Digestion Log for furnace AA Form XIII present?	✓		
	Distillation Log for mercury Form XIII present?	✓		
	Distillation Log for cyanides Form XIII present?			✓
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	✓		
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?			✓
	Are preparation dates present on sample preparation logs/bench sheets?	✓		
.2	Measurement read out record present? ICP	✓		
	Flame AA	✓		✓
	Furnace AA	✓		
	Mercury	✓		
	Cyanides			✓
.3	Are all raw data to support all sample analyses and QC operations present?	✓		
	Legible?	✓		
	Properly Labeled?	✓		

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

	YES	NO	N/A
Holding Times: - (aqueous and soil samples)			
(Examine sample traffic reports and digestion/distillation logs.)			
Mercury analysis (28 days). . . . . exceeded?	___	[✓]	___
Cyanide distillation (14 days). . . . . exceeded?	___	[✓]	___
Other Metals analysis (6 months). . . . exceeded?	___	[✓]	___

NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.

ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.

	YES	NO	N/A
.2 Is pH of aqueous samples for: Metals Analysis >2?	___	[✓]	___
Cyanides Analysis <12?	___	[ ]	✓

Action: If yes, flag the associated metals and cyanides data as estimated.

.9 Form I (Final Data)

	YES	NO	N/A
.9.1 Are all Form I's present and complete?	[✓]	___	___

ACTION: If no, prepare telephone record log and contact laboratory for submittal.

	YES	NO	N/A
.9.2 Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[✓]	___	___
Are soil sample results for each parameter corrected for percent solids?	[ ]	___	✓
Are all "less than IDL" values properly coded with "U"?	[✓]	___	___

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	✓		
	ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.			
1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	✓		
	Was a brief physical description of samples given on Form I's?	✓		
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?		✓	
	ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the "Data Assessment Narrative".			
1.10	Calibration			
1.10.1	Is record of at least 2 point calibration present for ICP analysis?	✓		
	Is record of 5 point calibration present for Hg analysis?	✓		
	Is record of 4 point calibration present for:			
	Flame AA?			✓
	Furnace AA?	✓		
	Cyanides?			✓
	Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?	✓		

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

		YES	NO	N/A
1.10.2	Is correlation coefficient less than 0.995 for:			
	Mercury Analysis?		✓	
	Cyanide Analysis?		✓	
	Atomic Absorption Analysis?	✓		

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

10.3	In the instance where less than 4 standards are measured in absorbance (or peak area, peak height, etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values?			✓

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

.11 Form II A (Initial and Continuing Calibration Verification)-

11.1	Present and complete for every metal and cyanide?	✓		
	Present and complete for AA and ICP when both are used for the same analyte?			✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

.11.2	Circle on each Form IIA all percent recoveries that are outside the contract windows. Are all calibration standards (initial and continuing) within control limits:			
	Metals- 90-110%R?	✓		
	Hg - 80-120%R?	✓		
	Cyanides- 85-115%R?			✓

	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
11.3 Was continuing calibration performed every 10 samples or every 2 hours?	✓		
Was ICV for cyanides distilled?			✓
ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
12 Form II B (CRDL Standards for AA and ICP) -			
.12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	✓		
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?			✓
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	✓		
ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are: AA Analysis - **True Value ± CRDL; ICP Analysis - **True Value ± 2CRDL; CN Analysis - **True Value ± 0.5 x True Value.			

rue value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL.
ute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	✓		

ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".

1.12.3 Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.

Are CRA and CRI standards within control limits:

Metals	80 - 120%R?			

Is mid-range standard within control limits:

Cyanide	80 - 120%R?			✓

ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.

Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.

1.13 Form III (Initial and Continuing Calibration Blanks)

1.13.1	Present and complete?	✓		
	For both AA and ICP when both are used for the same analyte?			✓
	Was an initial calibration blank analyzed?	✓		
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	✓		

	YES	NO	N/A
ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
.13.2 Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	✓		
Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?			✓
ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
.14 FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
.14.1 Was one prep. blank analyzed for:			
each Sample Delivery Group (SDG)?	✓		
each batch of digested samples?	✓		
each matrix type?	✓		
both AA and ICP when both are used for the same analyte?			✓
ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?		✓	
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?			✓
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?			✓
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
1.14.4	Is concentration of prep. blank below the negative CRDL?		✓	
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
1.15	Form IV (ICP Interference Check Sample)			
1.15.1	Present and complete?	✓		
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	✓		
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	✓		
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?			✓

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
16	Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation) - (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
16.1	Present and complete for: each SDG?	✓		
	each matrix type?	✓		
	each conc. range (i.e. low, med., high)?	✓		
	For both AA and ICP when both are used for the same analyte?			✓
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
16.2	Was field blank used for spiked sample?		✓	
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?		✓	
	If no, is sample concentration greater than or equal to four times spike concentration?		✓	

	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	✓		

ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".

6.4 Aqueous

Are any spike recoveries:

(a) less than 30%?		✓	
(b) between 30-74%?	✓		
(c) between 126-150%?	✓		
(d) greater than 150%?		✓	

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

6.5 Soil/Sediment

Are any spike recoveries:

(a) less than 10%?			
(b) between 10-74%?			
(c) between 126-200%?			
(d) greater than 200%?			

		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
.17	Form VI (Lab Duplicates)			
.17.1	Present and complete for: each SDG?	✓		
	each matrix type?	✓		
	each concentration range (i.e. low, med., high)?	✓		
	both AA and ICP when both are used for the same analyte?			✓
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
	2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
.17.2	Was field blank used for duplicate analysis?		✓	
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?		✓	
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	✓		
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL

	YES	NO	N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.

2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

7.4 Aqueous

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	✓	✓	
Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	✓		

ACTION: If yes, flag the associated data as estimated.

7.5 Soil/Sediment

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?			✓
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?			✓

*Substitute IDL for CRDL when IDL > CRDL.
**Use absolute values of samples and duplicates to calculate the difference.

		YES	NO	N/A
	ACTION: If yes, flag the associated data as estimated.			
.18	Field Duplicates:			
18.1	Were field duplicates analyzed?	✓		
	ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.			
	NOTE: 1. Do not calculate RPD when both values are less than IDL. 2. Flag all associated data only for field duplicate pair.			
.18.2	Aqueous			
	Circle all values on self prepared Form VI for field duplicates that are: RPD > 50%, or Difference > CRDL*			
	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	✓		
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	✓		
	ACTION: If yes, flag the associated data as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A
18.3 Soil/Sediment			
Circle all values on self prepared Form VI for field duplicates that are: RPD >100%, or Difference > 2 x CRDL*			
Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%?	___	[ ]	✓
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL): >2x *CRDL?	___	[ ]	✓
ACTION: If yes, flag the associated data as estimated.			
19 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)			
19.1 Was one LCS prepared and analyzed for:			
each SDG?	[✓]	___	___
each batch samples digested/distilled?	[✓]	___	___
both AA and ICP when both are used for the same analyte?	[ ]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

*Substitute IDL for CRDL when IDL > CRDL.
**Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
1.19.2	**Aqueous LCS:**			
	Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.			
	Is any LCS recovery: less than 50%?	___	[✓]	___
	between 50% and 79%?	___	[✓]	___
	between 121% and 150%?	___	[✓]	___
	greater than 150%?	___	[✓]	___

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

1.19.3 **Solid LCS**

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).

2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

Is LCS "Found" value higher than the control limits on Form VII?	___	[ ]	✓

ACTION: If yes, qualify all associated positive data as estimated.

Is LCS "Found" value lower than the Control limits on Form VII?	___	[ ]	✓

ACTION: If yes, qualify all associated data as estimated.

		YES	NO	N/A
.20	**Form IX (ICP Serial Dilution) -**			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
.20.1	Was Serial Dilution analysis performed for: each SDG?	✓		
	each matrix type?	✓		
	each concentration range (i.e. low, med.)?	✓		
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
.20.2	Was field blank(s) used for Serial Dilution Analysis?		✓	
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.			✓
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
.20.4	Circle on each Form IX all percent differences that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?	✓		
	≥ 100%?		✓	

		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL ≤ CRDL)			
1.21	Furnace Atomic Absorption (AA) QC Analysis			
1.21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	✓		
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
1.21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	✓		
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?			✓
	ACTION: If no for any of the above, flag all the associated data as estimated.			
1.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?	✓		
	ACTION: If yes, flag the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

*analytical spike is not required on the pre-digestion spiked samples.

		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
1.22	Form VIII (Method of Standard Addition Results)			
1.22.1	Present?	☐	✓	☐
	If no, is any Form I result coded with "S" or a "+"?	☐	✓	☐
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	☐	☐	✓
	ACTION: If yes, reject (red-line) the affected data.			
1.22.3	Was *MSA required for any sample but not performed?	☐	☐	✓
	Is coefficient of correlation for MSA less than 0.995?	☐	☐	✓
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	☐	☐	✓
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	✓	☐	☐
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

* MSA is not required on LCS and prep blank.

		YES	NO	N/A
.23	Dissolved/Total or Inorganic/Total Analytes:			
1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[ ]	✓
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[ ]	✓
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[ ]	✓
.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[ ]	✓
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
.24	Form I (Field Blank) -			
	(Note: Designate "Field Blank" as such on Form I.)			
1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[ ]	___	✓

	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[ ]		✓

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

1.25 Form X, XI, XII (Verification of Instrumental Parameters).

	YES	NO	N/A
1.25.1 Is verification report present for:			
Instrument Detection Limits (quarterly)?	[✓]		
ICP Interelement Correction Factors (annually)?	[✓]		
ICP Linear Ranges (quarterly)?	[✓]		

ACTION: If no, contact TPO of the lab.

1.25.2 Form X (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)

	YES	NO	N/A
1.25.2.1 Are IDLs present for: all the analytes?	[✓]		
all the instruments used?	[✓]		
For both AA and ICP when both are used for the same analyte?	[ ]		✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

	YES	NO	N/A
1.25.2.2 Is IDL greater than CRDL for any analyte?		[✓]	
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[ ]		✓

	YES	NO	N/A
Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			
1.25.3 Form XI (Linear Ranges)			
1.25.3.1 Was any sample result higher than high linear range of ICP.		✓	
Was any sample result higher than the highest calibration standard for non-ICP parameters?		✓	
If yes for any of the above, was the sample diluted to obtain the result on Form I?			✓

ACTION: If no, flag the result reported on Form I as estimated(J).

1.26 Percent Solids of Sediments			
1.26.1 Are percent solids in sediment(s): < 50%?			✓
< 10%?			✓

ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO. 19370

hardcopied (laboratory name): _____
rganic data package received at Region II has been reviewed and the quality assurance and
rformance data summarized. The data reviewed included:
Sample No.: _____

no. & Matrix: _____

tract No. (_____) requires that specific analytical work be done and
at associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The
eral criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

s of non-compliance with the above contract are described below.

ents: _____

Reviewer's Initial _____ Date _____

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1. USEPA Region I (ESD)
   60 Westview Street
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   Dan Stone
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   Islands, Wake Island
   ALS, CAL Western, S-Cubed, JT-CA,
   Vegas

10. USEPA Region X Laboratory
    P.O. BOX 549
    Manchester, WA 98353
    Gerald Ruth
    (206) 442-0370
    AK, ID, OR, WA
    Lewis Testing Labs, Century Testing
    Labs(For VOA Only), Weyerhauser Co.
    Columbia Testing, Silver Valley

11. Carla Dempsey - (OS-230)
    USEPA
    401 "M" Street, S.W.
    Washington, DC 20460
    FTS 382-5766

12. Edward Kantor
    USEPA
    DSI-LV
    944 E. Harmon Avenue
    BOX 93478
    Las Vegas, NV 89119

13. Sample Management Office
    Viar and Company
    P.O. BOX 818
    Alexandria, VA 22313

U.S. EPA - CLP

RECEIVED
MAR 0 1 1993

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: SDG No.: MBMJ10

SOW No.: ILM02.1

EPA Sample No.	Lab Sample ID.
MBMJ10	01201-01S
MBMJ10D	01201-01S2
MBMJ10S	01201-01DS
MBMJ11	01201-02S
MBMJ12	01201-03S
MBMJ13	01201-04S
MBMJ14	01201-05S

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:

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: Kirk D. Johnson

Date: 2/24/93 Title: USEPA Data Manager

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

RECEIVED
MAR 0 1 1993

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: SDG No.: MBMJ01

SOW No.: ILM02.1

EPA Sample No.	Lab Sample ID.
MBMJ01	01200-01S
MBMJ01D	01200-01S2
MBMJ01S	01200-01DS
MBMJ02	01200-02S
MBMJ03	01200-03S
MBMJ04	01200-04S
MBMJ05	01200-05S
MBMJ06	01200-06S
MBMJ07	01200-07S
MBMJ08	01200-08S
MBMJ09	01200-09S

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:

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: Kirk D. Johnson

Date: 2/24/93 Title: USEPA Data Manager

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBMJ01

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: SDG No.: MBMJ01

Matrix (soil/water): SOIL Lab Sample ID: 01200-01S

Level (low/med): LOW Date Received: 01/29/93

% Solids: 92.5

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9640			P
7440-36-0	Antimony	10.0	B	N J	P
7440-38-2	Arsenic	0.79	U		F
7440-39-3	Barium	35.8	B		P
7440-41-7	Beryllium	1.0	B		P
7440-43-9	Cadmium	0.34	U		P
~~7440-70-2~~	~~Calcium~~	~~2510~~			~~P~~
7440-47-3	Chromium	1320		*	P
7440-48-4	Cobalt	1600		*	P
7440-50-8	Copper	1160		*	P
7439-89-6	Iron	21300			P
7439-92-1	Lead	39.6		S* J	F
7439-95-4	Magnesium	4480			P
7439-96-5	Manganese	173			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	4460		*	P
7440-09-7	Potassium	2200			P
~~7782-49-2~~	~~Selenium~~	~~0.71~~	~~U~~	~~WN~~	~~F~~
7440-22-4	Silver	0.90	B		P
7440-23-5	Sodium	218	B		P
7440-28-0	Thallium	0.41	U	J	F
7440-62-2	Vanadium	22.2			P
~~7440-66-6~~	~~Zinc~~	~~65.7~~			~~P~~
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROCKS
[illegible]

2

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBMJ02

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: SDG No.: MBMJ01

Matrix (soil/water): SOIL Lab Sample ID: 01200-02S

Level (low/med): LOW Date Received: 01/29/93

% Solids: 81.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10000			P
7440-36-0	Antimony	4.4	U	NJ	P
7440-38-2	Arsenic	5.0			F
7440-39-3	Barium	40.9	B		P
7440-41-7	Beryllium	0.83	B		P
7440-43-9	Cadmium	0.38	U		P
~~7440-70-2~~	~~Calcium~~	~~2910~~			~~P~~
7440-47-3	Chromium	34.9		*	P
7440-48-4	Cobalt	34.7		*	P
7440-50-8	Copper	33.4		*	P
7439-89-6	Iron	26900			P
7439-92-1	Lead	15.7		* J	F
7439-95-4	Magnesium	4270			P
7439-96-5	Manganese	268			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	40.3		*	P
7440-09-7	Potassium	1640			P
~~7782-49-2~~	~~Selenium~~	~~0.75~~	~~U~~	~~WN~~	~~F~~
7440-22-4	Silver	1.3	B		P
7440-23-5	Sodium	153	B		P
7440-28-0	Thallium	0.43	U	J	F
7440-62-2	Vanadium	28.5			P
~~7440-66-6~~	~~Zinc~~	~~39.8~~			~~P~~
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROCKS

3

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBMJ03

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: SDG No.: MBMJ01

Matrix (soil/water): SOIL Lab Sample ID: 01200-03S

Level (low/med): LOW Date Received: 01/29/93

% Solids: 82.5

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8550			P
7440-36-0	Antimony	4.4	U	N	P
7440-38-2	Arsenic	1.0	B	W	F
7440-39-3	Barium	34.8	B		P
7440-41-7	Beryllium	0.66	B		P
7440-43-9	Cadmium	0.38	U		P
~~7440-70-2~~	~~Calcium~~	~~3810~~			~~P~~
7440-47-3	Chromium	22.2		*	P
7440-48-4	Cobalt	21.1			P
7440-50-8	Copper	23.5		*	P
7439-89-6	Iron	19700			P
7439-92-1	Lead	11.7		*	F
7439-95-4	Magnesium	3190			P
7439-96-5	Manganese	251			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	25.3		*	P
7440-09-7	Potassium	1190	B		P
~~7782-49-2~~	~~Selenium~~	~~0.79~~	~~U~~	~~WN~~	~~F~~
7440-22-4	Silver	1.4	B		P
7440-23-5	Sodium	132	B		P
7440-28-0	Thallium	0.46	U		F
7440-62-2	Vanadium	22.6			P
~~7440-66-6~~	~~Zinc~~	~~32.1~~			~~P~~
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROCKS

4

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBMJ04

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: SDG No.: MBMJ01

Matrix (soil/water): SOIL Lab Sample ID: 01200-04S

Level (low/med): LOW Date Received: 01/29/93

% Solids: 75.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10900			P
7440-36-0	Antimony	4.8	U	N	P
7440-38-2	Arsenic	2.0	B	W	F
7440-39-3	Barium	39.2	B		P
7440-41-7	Beryllium	0.38	B		P
7440-43-9	Cadmium	0.42	U		P
~~7440-70-2~~	~~Calcium~~	~~2860~~			~~P~~
7440-47-3	Chromium	16.9		*	P
7440-48-4	Cobalt	7.7	B	*	P
7440-50-8	Copper	31.1		*	P
7439-89-6	Iron	16700			P
7439-92-1	Lead	26.8		*	F
7439-95-4	Magnesium	3100			P
7439-96-5	Manganese	283			P
7439-97-6	Mercury	0.06	B		CV
7440-02-0	Nickel	13.6		*	P
7440-09-7	Potassium	760	B		P
~~7782-49-2~~	~~Selenium~~	~~6.1~~	~~U~~	~~N~~	~~F~~
7440-22-4	Silver	1.0	U		P
7440-23-5	Sodium	131	B		P
7440-28-0	Thallium	0.48	U	W	F
7440-62-2	Vanadium	31.5			P
~~7440-66-6~~	~~Zinc~~	~~44.4~~			~~P~~
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROCKS, ROOTS

5

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBMJ05

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: SDG No.: MBMJ01

Matrix (soil/water): SOIL Lab Sample ID: 01200-05S

Level (low/med): LOW Date Received: 01/29/93

% Solids: 81.3

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8260			P
7440-36-0	Antimony	4.4	U	NJ	P
7440-38-2	Arsenic	1.6	B		F
7440-39-3	Barium	36.0	B		P
7440-41-7	Beryllium	0.33	B		P
7440-43-9	Cadmium	0.39	U		P
~~7440-70-2~~	~~Calcium~~	~~3950~~			~~P~~
7440-47-3	Chromium	14.6		*	P
7440-48-4	Cobalt	8.0	B	*	P
7440-50-8	Copper	20.9		*	P
7439-89-6	Iron	15800			P
7439-92-1	Lead	10.5		* J	F
7439-95-4	Magnesium	3690			P
7439-96-5	Manganese	314			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	13.2		*	P
7440-09-7	Potassium	815	B		P
~~7782-49-2~~	~~Selenium~~	~~0.76~~	~~U~~	~~WN~~	~~F~~
7440-22-4	Silver	0.94	U		F
7440-23-5	Sodium	144	B		P
7440-28-0	Thallium	0.44	U	J	F
7440-62-2	Vanadium	26.7			P
~~7440-66-6~~	~~Zinc~~	~~34.2~~			~~P~~
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROCKS, ROOTS

6

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBMJ06

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: SDG No.: MBMJ01

Matrix (soil/water): SOIL Lab Sample ID: 01200-06S

Level (low/med): LOW Date Received: 01/29/93

% Solids: 55.6

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12700			P
7440-36-0	Antimony	6.1	U	N J	P
7440-38-2	Arsenic	2.0	B		F
7440-39-3	Barium	90.6			P
7440-41-7	Beryllium	0.36	B		P
7440-43-9	Cadmium	0.53	U		P
~~7440-70-2~~	~~Calcium~~	~~1750~~			~~P~~
7440-47-3	Chromium	579		*	P
7440-48-4	Cobalt	348		*	P
7440-50-8	Copper	53.9		*	P
7439-89-6	Iron	20000			P
7439-92-1	Lead	59.4		S* J	F
7439-95-4	Magnesium	2360			P
7439-96-5	Manganese	129			P
7439-97-6	Mercury	0.20			CV
7440-02-0	Nickel	345		*	P
7440-09-7	Potassium	753	B		P
~~7782-49-2~~	~~Selenium~~	~~1.2~~	~~U~~	~~WN~~	~~F~~
7440-22-4	Silver	2.6	B		P
7440-23-5	Sodium	213	B		P
7440-28-0	Thallium	0.66	U	W J	F
7440-62-2	Vanadium	36.2			P
~~7440-66-6~~	~~Zinc~~	~~64.5~~			~~P~~
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROCKS, ROOTS

7

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBMJ07

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: SDG No.: MBMJ01

Matrix (soil/water): SOIL Lab Sample ID: 01200-07S

Level (low/med): LOW Date Received: 01/29/93

% Solids: 67.7

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9910			P
7440-36-0	Antimony	5.4	U	N J	P
7440-38-2	Arsenic	2.4	B	S	F
7440-39-3	Barium	64.2			P
7440-41-7	Beryllium	0.64	B		P
7440-43-9	Cadmium	0.47	U		P
~~7440-70-2~~	~~Calcium~~	~~6300~~			~~P~~
7440-47-3	Chromium	162		*	P
7440-48-4	Cobalt	94.0		*	F
7440-50-8	Copper	48.6		*	P
7439-89-6	Iron	28700			P
7439-92-1	Lead	73.8		* J	F
7439-95-4	Magnesium	5150			P
7439-96-5	Manganese	571			P
7439-97-6	Mercury	0.13	B		CV
7440-02-0	Nickel	121		*	P
7440-09-7	Potassium	681	B		P
~~7782-49-2~~	~~Selenium~~	~~0.92~~	~~U~~	~~WN~~	~~F~~
7440-22-4	Silver	1.3	B		P
7440-23-5	Sodium	232	B		P
7440-28-0	Thallium	0.53	U	J	F
7440-62-2	Vanadium	30.7			P
~~7440-66-6~~	~~Zinc~~	~~269~~			~~P~~
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROCKS, ROOTS

8

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBMJ08

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: SDG No.: MBMJ01

Matrix (soil/water): SOIL Lab Sample ID: 01200-08S

Level (low/med): LOW Date Received: 01/29/93

% Solids: 80.5

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4360			P
7440-36-0	Antimony	4.4	U	N J	P
7440-38-2	Arsenic	5.8			F
7440-39-3	Barium	29.8	B		P
7440-41-7	Beryllium	0.37	B		P
7440-43-9	Cadmium	0.39	U		P
~~7440-70-2~~	~~Calcium~~	~~2700~~			~~P~~
7440-47-3	Chromium	9.3		*	P
7440-48-4	Cobalt	5.7	B	*	P
7440-50-8	Copper	17.2		*	P
7439-89-6	Iron	14100			P
7439-92-1	Lead	44.0		S* J	F
7439-95-4	Magnesium	2680			P
7439-96-5	Manganese	275			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	9.0	B	*	P
7440-09-7	Potassium	446	B		P
~~7782-49-2~~	~~Selenium~~	~~0.81~~	~~U~~	~~WN~~	~~F~~
7440-22-4	Silver	0.94	U		P
7440-23-5	Sodium	155	B		P
7440-28-0	Thallium	0.47	U	J	F
7440-62-2	Vanadium	16.7			P
~~7440-66-6~~	~~Zinc~~	~~77.9~~			~~F~~
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROCKS

9

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBMJ09

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: SDG No.: MBMJ01

Matrix (soil/water): SOIL Lab Sample ID: 01200-09S

Level (low/med): LOW Date Received: 01/29/93

% Solids: 54.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10200			P
7440-36-0	Antimony	6.7	U	N J	P
7440-38-2	Arsenic	6.5		S	F
7440-39-3	Barium	89.8			P
7440-41-7	Beryllium	0.40	B		P
7440-43-9	Cadmium	0.58	U		P
~~7440-70-2~~	~~Calcium~~	~~6510~~			~~P~~
7440-47-3	Chromium	44.9		*	P
7440-48-4	Cobalt	11.1	B	*	P
7440-50-8	Copper	56.0		*	P
7439-89-6	Iron	17700			P
7439-92-1	Lead	126		W* J	F
7439-95-4	Magnesium	2720			P
7439-96-5	Manganese	974			P
7439-97-6	Mercury	0.28			CV
7440-02-0	Nickel	17.1		*	P
7440-09-7	Potassium	763	B		P
~~7782-49-2~~	~~Selenium~~	~~1.2~~	~~U~~	~~MWN~~	~~F~~
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	184	B		P
7440-28-0	Thallium	0.66	U	J	F
7440-62-2	Vanadium	39.9			P
~~7440-66-6~~	~~Zinc~~	~~185~~			~~P~~
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROCKS

10

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBMJ10

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: SDG No.: MBMJ10

Matrix (soil/water): WATER Lab Sample ID: 01201-01S

Level (low/med): LOW Date Received: 01/29/93

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	80.0	B		P
7440-36-0	Antimony	18.4	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	13.0	B		P
7440-41-7	Beryllium	0.50	U		P
7440-43-9	Cadmium	1.6	U		P
7440-70-2	Calcium	12000			P
7440-47-3	Chromium	2.7	U		P
7440-48-4	Cobalt	2.5	U		P
7440-50-8	Copper	6.3	B		P
7439-89-6	Iron	179		J	P
7439-92-1	Lead	6.7		*J	F
7439-95-4	Magnesium	3420	B		P
7439-96-5	Manganese	19.7			P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	3.0	U		P
7440-09-7	Potassium	1180	B		P
7782-49-2	Selenium	3.8	U	MW	F
7440-22-4	Silver	3.9	U		P
7440-23-5	Sodium	30700			P
7440-28-0	Thallium	2.6	U	WNJ	F
7440-62-2	Vanadium	2.5	U		P
7440-66-6	Zinc	317			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLOUDY Texture:

Color After: COLORLESS Clarity After: CLOUDY Artifacts:

Comments:

2

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBMJ11

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: SDG No.: MBMJ10

Matrix (soil/water): WATER Lab Sample ID: 01201-02S

Level (low/med): LOW Date Received: 01/29/93

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	127	B		P
7440-36-0	Antimony	18.4	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	12.6	B		P
7440-41-7	Beryllium	0.50	U		P
7440-43-9	Cadmium	1.6	U		P
7440-70-2	Calcium	14100			P
7440-47-3	Chromium	2.8	B		P
7440-48-4	Cobalt	2.5	U		P
7440-50-8	Copper	10.5	B		P
7439-89-6	Iron	313		J	P
7439-92-1	Lead	16.2		J	F
7439-95-4	Magnesium	3930	B		P
7439-96-5	Manganese	20.9			P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	3.0	U		P
7440-09-7	Potassium	1270	B		P
7782-49-2	Selenium	3.8	U		F
7440-22-4	Silver	3.9	U		P
7440-23-5	Sodium	32000			P
7440-28-0	Thallium	2.6	U	WN J	F
7440-62-2	Vanadium	2.5	U		P
7440-66-6	Zinc	200		J	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLOUDY Texture:

Color After: COLORLESS Clarity After: CLOUDY Artifacts:

Comments:

3

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBMJ12

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: SDG No.: MBMJ10

Matrix (soil/water): WATER Lab Sample ID: 01201-03S

Level (low/med): LOW Date Received: 01/29/93

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	151	B		P
7440-36-0	Antimony	18.4	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	16.1	B		P
7440-41-7	Beryllium	0.50	U		P
7440-43-9	Cadmium	1.6	U		P
7440-70-2	Calcium	15300			P
7440-47-3	Chromium	2.7	U		P
7440-48-4	Cobalt	2.5	U		P
7440-50-8	Copper	8.1	B		P
7439-89-6	Iron	329		J	P
7439-92-1	Lead	4.3		W J	F
7439-95-4	Magnesium	4610	B		P
7439-96-5	Manganese	21.2			P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	3.0	U		P
7440-09-7	Potassium	1170	B		P
7782-49-2	Selenium	3.8	U		F
7440-22-4	Silver	3.9	U		P
7440-23-5	Sodium	32200			P
7440-28-0	Thallium	2.6	U	WN J	F
7440-62-2	Vanadium	2.5	U		P
7440-66-6	Zinc	533		J	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLOUDY Texture:

Color After: COLORLESS Clarity After: CLOUDY Artifacts:

Comments:

4

U.S. EPA — CLP
1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBMJ13

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: SDG No.: MBMJ10

Matrix (soil/water): WATER Lab Sample ID: 01201-04S

Level (low/med): LOW Date Received: 01/29/93

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.5	B		P
7440-36-0	Antimony	18.4	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	4.2	B		P
7440-41-7	Beryllium	0.50	U		P
7440-43-9	Cadmium	1.6	U		P
7440-70-2	Calcium	5060			P
7440-47-3	Chromium	2.7	U		P
7440-48-4	Cobalt	2.5	U		P
7440-50-8	Copper	2.9	U		P
7439-89-6	Iron	23.1	B		P
7439-92-1	Lead	5.1		J	F
7439-95-4	Magnesium	2900	B		P
7439-96-5	Manganese	1.2	B		P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	3.0	U		P
7440-09-7	Potassium	116	U		P
7782-49-2	Selenium	3.8	U		F
7440-22-4	Silver	3.9	U		P
7440-23-5	Sodium	58.7	B		P
7440-28-0	Thallium	2.6	U	NJ	F
7440-62-2	Vanadium	2.5	U		P
7440-66-6	Zinc	1520			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

5

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBMJ14

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: 19370 SAS No.: SDG No.: MBMJ10

Matrix (soil/water): WATER Lab Sample ID: 01201-05S

Level (low/med): LOW Date Received: 01/29/93

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	559			P
7440-36-0	Antimony	18.4	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	10.4	B		P
7440-41-7	Beryllium	0.50	U		P
7440-43-9	Cadmium	3.5	B		P
7440-70-2	Calcium	7900			P
7440-47-3	Chromium	2.7	U		P
7440-48-4	Cobalt	2.5	U		P
7440-50-8	Copper	2.9	U		P
7439-89-6	Iron	66.1	B		P
7439-92-1	Lead	7.7		J	F
7439-95-4	Magnesium	4100	B		P
7439-96-5	Manganese	17.6			P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	3.0	U		P
7440-09-7	Potassium	116	U		P
7782-49-2	Selenium	3.8	U		F
7440-22-4	Silver	3.9	U		P
7440-23-5	Sodium	201	B		P
7440-28-0	Thallium	2.6	U	N J	F
7440-62-2	Vanadium	2.5	U		P
7440-66-6	Zinc	2230			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6

RECORD OF COMMUNICATION
REGIONAL SAMPLE CONTROL CENTER

DATE: 4/18/93
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC/ESAT
TO: George Karras
Toxic and Hazardous Waste Section

RECEIVED JUN 23 1993

Attached is the following ORGANIC Data Package to be reviewed for Quality Assurance

SITE	CASE/SAS#	LAB	MATRIX	# SAMPLES
Metem Corporation AWES/SSI	19370	MCCOY	SOIL WATER	9 6

REGION II RSCC DATA TRANSFER LOG

Relinquished By: Signature	Date/Time	Received By: Signature	Date/Time
		Eric Davis	4-6-93 / 800
Eric Davis	4-18-93 11:59	K. Kinsella	4/18/93 1200
K. Kinsella		J Bulich	4/19/93 0845
J Bulich	4/19/93 1000	to DCR JB	4/19/93 1000
J Bulich	4/19/93 1000	RA VV	4/19/93 10:00
[illegible]	6/1/93 9:37	DCR (CER)	6/1/93 9:37
[illegible] DCR	6-8-93 9:34	D Rosenberg	6/8/93 9:35
David Rosenberg	6-15-93 9:26	[illegible] DCR	6-15-93 9:27
G. Carras DCR	6/16/93 3:06 pm	[illegible]	6-17-93 2:30
[illegible]	6/21/93 2:20 pm		
G. Carras	6/23/93 9:33 AM	[illegible]	6/23/93 9:33

(OVER FOR INSTRUCTIONS) revsd 3/93

DATA ASSESSMENT

Functional Guidelines for Evaluating Organic Analysis

Case No. 19370 SDG No. BMZ01 LABORATORY McCoy SITE Metem

DATA ASSESSMENT:

The current Functional Guidelines for evaluating organic data have been applied.

All data are valid and acceptable except those analytes which have been qualified with a "J" (estimated), "N" (presumptive evidence for the presence of the material), "U" (non-detects), "R" (unusable), or "JN" (presumptive evidence for the presence of the material at an estimated value). All action is detailed on the attached sheets.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Reviewer's Signature: _____

Verified by: _____ Date: 6/1/93

_____ Date: _____

DATA ASSESSMENT

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following analytes in the samples shown were qualified because of holding time:

✓ *VOA*	*All met.*
✓ *BNA*	*BMZ02 - All analytes were flagged with "J".*
✓ *PEST/PCB*	*BMZ01 through BMZ09 - All analytes were flagged with "J"*

DATA ASSESSMENT

2. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank contamination level (10 times for the common contaminants), the analytes are qualified as non-detects, "U". The following analytes in the samples shown were qualified with "U" for these reasons:

A) Method blank contamination

VOA *BMZ06 - acetone (80U)*

BNA *di-n-butylphthalate: BMZ01 (740U), BMZ02 (770U), BMZ03 (1900U), BMZ04 (1500U), BMZ05 (3200U), BMZ06 (7400U), BMZ07 (4300U), BMZ08 (4400U), BMZ09 (6800U), BMZ10 (14U), BMZ11 (11U), BMZ12 (11U)*

bis(2-ethylhexyl)phthalate: BMZ10 (10U), BMZ11 (11U), BMZ12 (11U)

"R" for TICs Rt= 5.01; 5.42; 6.65; 7.09; 7.39; 7.57; 7.93; 8.21; 8.47; 8.57; 8.65; 8.74; 11.76; 19.28; 22.47; 25.56; 31.06 for samples BMZ01, 02, 03, 04, 05, 06, 07, 10, 11, and 12.

PEST/PCB *BMZ11 - alpha-chlordane (U)*
BMZ10, 11 - alpha-chlordane (U), gamma-chlordane (U)

B) Field or rinse blank contamination ("water blanks" or "distilled water blanks" are validated like any other samples)

VOA *TIC Rt= 30.81 (R) for sample BMZ03* *TIC Rt= 30.77 (R) for sample BMZ07*

BNA *bis(2-ethylhexyl)phthalate: BMZ01 (720U), MBZ06 (1400U), BMZ09 (1200U)*
"R" TICs Rt= 5.24; 13.96; 24.61 for samples BMZ01, BMZ03, and BMZ06

PEST/PCB *BMZ06, 09 - alpha-chlordane*
BMZ11, 12 - dieldrin
BMZ07 - alpha-chlordane, gamma-chlordane

C) Trip blank contamination

~~None~~ YY VOA - BMZ06 for Carbon disulfide

DATA ASSESSMENT

3. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds, and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is bromofluorobenzene (BFB) and for semi-volatiles is decafluorotriphenylphosphine (DFTPP).

If the mass calibration is in error, or missing, all associated data will be classified as unusable, "R". The following samples shown were qualified with "R" because of tuning:

All met.

DATA ASSESSMENT

4. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

A) RESPONSE FACTOR

The response factor measures the instrument's response to specific chemical compounds. The response factor for the VOA/BNA Target Compound List (TCL) must be $\geq$ 0.05 in both the initial and continuing calibrations. A value < 0.05 indicates a serious detection and quantitation problem (poor sensitivity). If the mean RRF of the initial calibration or the continuing calibration has a response factor <0.05 for any analyte, those analytes detected in environmental samples will be qualified as estimated, "J". All non-detects for those compounds will be rejected ("R"). The following analytes in the samples shown were qualified because of response factor:

All > 0.05

DATA ASSESSMENT

5. CALIBRATION:

A) PERCENT RELATIVE STANDARD DEVIATION (%RSD) AND PERCENT DIFFERENCE (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be <30% and %D must be <25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J"; and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detect data may be qualified "R".

For the PCB/PESTICIDE fraction, if %RSD exceeds 20% for all analytes except for the 2 surrogates (which must not exceed 30% RSD), qualify all associated positive results "J" and non-detects "UJ".

The following analytes in the samples shown were qualified for %RSD and %D:

VOA *Acetone (%RSD >30% in both initial calibration)*
"UJ" - VBLK01, 02, 03, BMZ02, 03, 04, 05, 08, 10 thru 15
"J" - BMZ01, 06, 07, and 09

Chloromethane (%D >25%)
"UJ" - VBLK03, BMZ01, 07 thru 09

2-Butanone (%D >25%)
"UJ" - VBLK03 and BMZ08
"J" - BMZ01, 07, 09

For initial calibration on 1/26/93, 2-butanone %RSD = 34%. After eliminated RRF10, the %RSD =12%. The %D of 2-butanone in the pertinent CBCHKs were recalculated by the reviewer and were within the 25% limit. Data were therefore not flagged.

BNA - *Pyrene and di-n-octylphthalate (J) - SBLK01, and samples BMZ10 thru 14.*

PEST/PCB
%RSD >20%:

"J"- PBLK01, BMZ01 thru BMZ09 for alpha-, beta-, gamma-BHCs, heptachlor, aldrin, heptachlor epoxide, endosulfan I, dieldrin, endrin, endosulfan II, endosulfan sulfate, DDT, and alpha-chlordane. Note: Samples BMZ01 thru BMZ09 were already flagged for holding time violation.

"J"- PBLK02, BMZ10 thru BMZ14 for alph-, beta-, gamma-BHCs, heptachlor, heptachlor epoxide, endosulfan I, DDE, endrin, endosulfan II, endosulfan sulfate, methoxychlor, and alpha-chlordane.

(continued on next page)

DATA ASSESSMENT

5. CALIBRATION (continued)

%D >25%:

"J" -PBLK01, BMZ01 thru BMZ09 for DDD, DDT, methoxychlor, aldrin, endosulfan II, and endrin ketone. Note: Samples BMZ01 thru BMZ09 were already flagged for holding time violation.

"J" -PBLK02, BMZ10 thru BMZ14 for gamma-BHC, aldrin, heptachlor epoxide, endosulfan II, endrin, endosulfan sulfate, endrin ketone, and endrin aldehyde.

%D >90%:

"R" - PBLK01, BMZ01 thru BMZ09 for endosulfan sulfate and endrin aldehyde.

DATA ASSESSMENT

6. SURROGATES/SYSTEM MONITORING COMPOUNDS (SMC):

All samples are spiked with surrogate/SMC compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate/SMC concentrations were outside contract specifications, qualifications were applied to the samples and analytes shown below. The following analytes for the samples shown were qualified because of surrogate/SMC recovery:

VOA	BMZ12	*BFB recovery exceeded the QC limit. All the positive results were already flagged with a "J" due to their concentration being less than the CRQL.*
	BMZ08	*BFB recovery exceeded the QC limit. Data were not qualified because there was no positive hits.*
BNA	BMZ12, 13	*Two BN surrogate recoveries were below the QC limits. All the BN results were qualified with a "J".*

NOTE: As per Case Narrative, the lab used the un-deuterated 2-chlorophenol, instead of 2-chlorophenol-d4, as one of the surrogates. As a result, 2-chlorophenol-d4 was not recovered in any method blank or sample, with the exception of sample BMZ02. In the data reviewer's opinion, 2-chlorophenol should not be used to flag sample data.

PEST/PCB ~~*For each surrogate, the average recovery from the two columns was used to qualify the sample results. As a result, BMZ13 was qualified with "J" for all the compounds.*~~

~~*Note: On the DB-1701 column, the TCX %RSD was > 50% and the DCB %RSD was > 40% in one of the curve. This might be the reason why the recoveries were high on the DB-1701 column.*~~ YY

It was observed that the TCMX recoveries are above or around 100% on column 1, while on ~~the~~ YY column 2, they are all below 50%. For DCBP on the other hand, the recoveries are above 100% in most samples ~~and~~ YY on column 1 and above 200% on ~~the~~ YY column 2. It is not possible to determine which column will provide more accurate quantitative results. In addition, the specified QC limits are only for advisory purpose because there is not sufficient data yet to provide a statiscally sound QC limits. As a result, the data reviewer ~~that~~ YY decided not to qualify any data for this QC criteria. YY 6/21/93

DATA ASSESSMENT

7. INTERNAL STANDARDS PERFORMANCE:

Internal Standard (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The initial standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than ± 30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ" only if IS is <50%. Non-detects are qualified as "R" if there is a severe loss of sensitivity (< 25% of associated is area counts).

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgment to determine either partial or total rejection of the data for that sample fraction. The following analytes in the samples shown were qualified because of internal standards performance:

VOA

"UJ"	*BMZ01*	*4-methyl-2-pentanone, 2-hexanone, 1,1,2,2-tetrachloroethane, chlorobenzene, styrene.*
	BMZ06, 07	*4-methyl-2-pentanone, 2-hexanone, 1,1,2,2-tetrachloroethane, toluene, chlorobenzene, ethylbenzene, styrene, and xylenes.*
	BMZ08	*4-methyl-2-pentanone, 2-hexanone, 1,1,2,2-tetrachloroethane, tetrachloroethene, toluene, chlorobenzene, ethylbenzene, styrene, and xylenes.*
	BMZ09	*all compounds reported were flagged with "J".*

BNA

"J" or "UJ" *BMZ01, 06, and 07 for*

4,6-dinitro-2-methylphenol, N-nitrosodiphenylamine, 2,4,6-tribomophenol, 4-bromophenyl-phenylether, hexachlorobenzene, pentachlorophenol, phenanthrene, anthracene, carbazole, di-n-butylphthalate, and fluoranthene.

Note: BMZ06 and BMZ07 were reanalyzed outside the holding time. Even though all the IS responses were within the QC limits, the original data were used to qualify the results.

DATA ASSESSMENT

8. COMPOUND IDENTIFICATION:

A) VOLATILE AND SEMI-VOLATILE FRACTIONS

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and ion spectra. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of the standard compound, and have an ion spectra which has ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For tentatively identified compounds (TIC), the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications. The following analytes in the samples shown were qualified for compound identification:

VOA *BMZ06, 07* *False identification of 1,2-dichloroethene (total) was reported because of the retention time violation. Result were changed to 20U and 14U respectively.*

B) PESTICIDE FRACTION:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns. The percent difference (%D) of the positive results obtained on the two GC columns should be ≤ 25%. The following analytes in the samples shown were qualified because of compound identification:

PBLK02 as per the raw data, endosulfan sulfate and methoxychlor were detected on DB-5 column; methoxychlor was identified by the computer on the DB-1701 column. Since the peak identified as methoxychlor on the DB-1701 column can also be endosulfan sulfate (see the PEST/PCB section under "contractual non-compliance"), on Form I, endosulfan sulfate was flagged with "R" and methoxychlor was flagged with "N".

BMZ06 *DDD (N)*

BMZ07 *DDD (N), AR1254 (R), alpha-chlordane and gamma-chlordane already flagged as (U)*

BMZ08 *DDD and DDT (R), alpha-chlordane already flagged for holding time.*

(continued on next page)

DATA ASSESSMENT

8. COMPOUND IDENTIFICATION:
B) PESTICIDE FRACTION: (continued)

BMZ09 *DDE (N)*

BMZ10 *delta-BHC (R), alpha-chlordane and gamma-chlordane already flagged for blank contamination*
On DB-5 column, peak Rt= 29.25 was identified as endosulfan sulfate but could not be confirmed, because on DB-1701, peak Rt= 24.49 was identified as methoxychlor. Because the DB-1701 column could not separate endosulfan sulfate and methoxychlor, the non-detects reported for both compounds were qualified as "R".

BMZ13 *endosulfan sulfate and alpha-chlordane (R), dieldrin and gamma-chlordane (J)*

BMZ14 *delta-BHC (R)*

DATA ASSESSMENT

9. MATRIX SPIKE/MATRIX SPIKE DUPLICATE, MS/MSD:

The MS/MSD data generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for some additional qualification of data. The following analytes, for the samples shown, were qualified because of MS/MSD:

VOA *BMZ01 MS/MSD*

All three IS in the analysis of BMZ01 MS were less than 25% of the IS in the pertinent continuing calibration check standard. In the analysis of BMZ01 MSD, the first IS, bromochloromethane, had no response at all. The other two IS areas were also less than 25% of those in the pertinent continuing standard. This observation indicates that the purging efficiency was poor in both analyses. Although the SOW indicates never to re-analyze the MS/MSD, the lab should have made efforts to obtain valid MS/MSD information in this case.

As a result of the poor, target compound 1,1-dichloroethene was not recovered in MS/MSD and toluene was not recovered in the MSD. The results of the non-spiked sample (BMZ01) were not qualified.

BNA *BMZ01 MS/MSD*

The recoveries of 2-chlorophenol should be considered unusable because the lab spiked 2-chlorophenol as one of the surrogates, which resulted in a "double-spike" effect.

4-Nitrophenol was not recovered in both MS and MSD analyses. As a result, the 4-nitrophenol result of sample BMZ01 were flagged as unusable (R).

DATA ASSESSMENT

10. OTHER QC DATA OUT OF SPECIFICATION:

VOA *1. System Monitoring Compounds (SMC) toluene-d8 and 1,2-dichlorobenzene-d4 were not recovered in BMZ01 MSD.*

2. Sample BMZ06 contains more than 50% of the moisture. All the results were flagged with a "J".

BNA *GPC Blank contains trace amount of di-n-butylphthalate, which was also identified in the method and field blanks.*

PEST/PCB *Florisil and GPC efficiencies were out of the specifications.*

11. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT (continued on next page if necessary):

VOA

1. *The recoveries of the SMC in one of the soil summary table were incorrectly calculated. The correct values were entered in Form 2B. All values are within the QC limits.*
2. *The system performance was deteriorating toward the end of the analyses acquired on 2/4/93. This can be proved by the low IS area counts of the re-analyses of samples BMZ07, 08, 09, BMZ01 MS and BMZ01 MSD.*
3. *The % moisture of BMZ04 was incorrectly calculated. The results reported in Forms I were not affected after rounding the values.*

(continued on next page)

12. CONTRACTUAL NON-COMPLIANCE:

VOA

1. *Sample BMZ12 was not re-analyzed because of the SMC recovery violation.*
2. *The pH of the water samples were not documented in the case narrative as required by the SOW. It cannot be verified that these samples were acidified. However, all samples were analyzed within 7 days of collection. It is not critical not to have this information.*

(continued on page 15)

13. This package contains re-extraction, re-analysis or dilution. Upon reviewing the QA results, the following form I(s) are identified to used:

VOA *Samples BMZ07, 08, and 09 were reported from the original analyses.*
Sample BMZ06 - The original analysis was used; the results of 1,1-dichloroethane and 1,1,1-trichloroethane were transcribed from the 1:5 dilution analysis.

BNA *Samples BMZ06 and BMZ07 were re-analyzed for low IS area counts. The re-analyses were performed outside the holding time. The data from the first analysis were used.*

DATA ASSESSMENT

11. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT (continued):

BNA

1. *The 2,4,6-tribromophenol RRFs (in all the standards) could not be reproduced by the area counts listed in the quant reports. All the RRFs, including the average RRF, were recalculated by the data reviewer based on the areas listed in the quant reports. The new calculations were transcribed into Forms 6 and 7.*

2. *For soil samples (BMZ01 thru BMZ09), the lab used final volume (FV) 0.5 ml to for calculations of TCLs, surrogates, and matrix spike compounds, but used FV= 1 ml to calculate the TIC results. After verified with the lab, the final volume of one (1) ml was used to calculate all the TCLs, surrogates, and matrix spike compounds. Associated forms were revised to reflect the new values.*

3. *Sample BMZ06 moisture content is greater than 25%. As a result, all the data were flagged as estimated "J".*

4. *Since 2-chlorophenol, a target compound, was spiked as surrogate, the presence of this compound in all the blanks and samples were flagged as unusable (R).*

5. *As mentioned in the Case Narrative that 2-chlorophenol, not 2-chlorophenol-d4, was spiked as surrogate. In sample BMZ02, however, 2-chlorophenol-d4 was detected and the recovery was reported in the summary form (Form 2). The spectrum of 2-chlorophenol-d4 was not available for review, therefore, the identification of 2-chlorophenol-d4 could not be confirmed. There seems no logical explanation for this.*

PEST/PCB

1. *The % moisture of BMZ04 was incorrectly calculated by the lab. All the quantitation limits were recalculated by the reviewer. The correct CRQLs were transcribed to the Form I.*

2. *The moisture content of sample BMZ06 was more than 50%. All the results were flagged with "J" unless flagged otherwise due to other QC problems.*

3. *Narrow bore columns (0.25 mm ID) were used for sample analyses.*

4. *A lot of interferences were present in the INDA and INDB standards on both columns. In addition, because of the inclining baseline, the toxaphene and Aroclor patterns could hardly be recognized on both columns. The presence of AR1254 in sample BMZ06 was qualified for this reason.*

5. *For sample BMZ01, five (5) grams of the sample were extracted. As a result, the CRQLs were elevated.*

DATA ASSESSMENT

12. CONTRACTUAL NON-COMPLIANCE: (continued)

BNA

1. *The %RSDs of pentachlorophenol and pyrene were greater than the specified 20.5%. The %D of pyrene was greater than the specified 25%.*

2. *Sample BMZ02 was analyzed outside the holding time.*

3. *GPC cleanup was performed for all soil sample extracts for BNA analysis. The final volume of the extract should be concentrated to a final volume of 0.5 ml and 0.5 ml of surrogate/matrix spike solution should be added before extraction. The lab spiked 1 ml of the surrogate/matrix spike solution and concentrated the extracts to a final volume of 1 ml. As a result, all the CRQLs were elevated.*

PEST/PCB

1. *Soil samples (BMZ01 thru BMZ09) were extracted 1 day outside of the contract required holding time.*

2. *Linearity requirement violation:*

   - Surrogate %RSDs >30% on the DB-1701 column
   - More than 2 compounds (not surrogates) %RSDs >30% in the initial calibration curves on both columns
   - Various compounds %D >25% in the PEM and/or INDA and INDB standards for the calibration verification purpose

3. *Peak resolution:*

   - DDE and dieldrin peak resolution <60% on the DB-5 column
   - Endosulfan sulfate and methoxychlor could not be separated on the DB-1701 column

4. *Cleanup Efficiency:*

   - Florisil: The SOW specified that at least 10 ng of compounds in the INDA standard mixture must be spiked for efficiency check. The lab only spiked 0.04 ng.

   - GPC: The Aroclor 1016/1260 pattern was not available for evaluating the effect of GPC cleanup on the Aroclors.

DPO: [ ] ACTION [ ] FYI

Region II

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO. 19370

LABORATORY McCoy & McCoy

SDG NO. BMZ01

DATA USER

SOW OLM01.0 + Revisions

REVIEW COMPLETION DATE

NO. OF SAMPLES 3 WATER 9 SOIL ____ OTHER

REVIEWER [ ] ESD [ ] ESAT [M] OTHER, CONTRACT/CONTRACTOR AWES

	VOA	BNA	PEST	OTHER
1. HOLDING TIMES	O	M	M	
2. GC-MS TUNE/ GC PERFORMANCE	O	O	X	
3. INITIAL CALIBRATIONS	X	O	M	
4. CONTINUING CALIBRATIONS	X	X	M	
5. FIELD BLANKS ("F" = not applicable)	X	X	X	
6. LABORATORY BLANKS	X	X	X	
7. SURROGATES	O	M	O	
8. MATRIX SPIKE/DUPLICATES	O	O	O	
9. REGIONAL QC ("F" = not applicable)	F	F	F	
10. INTERNAL STANDARDS	M	X		
11. COMPOUND IDENTIFICATION	X	O	X	
12. COMPOUND QUANTITATION	O	M	X	
13. SYSTEM PERFORMANCE	X	M	M	
14. OVERALL ASSESSMENT	X	M	M	

O = No problems or minor problems that do not affect data usability.
X = No more than *about* 5% of the data points are qualified as either estimated or unusable.
M = More than *about* 5% of the data points are qualified as estimated.
Z = More than *about* 5% of the data points are qualified as unusable.

DPO ACTION ITEMS:

AREAS OF CONCERN:

In Reference to Case No(s): 19370

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: 30 April, 1993

Laboratory Name: McCoy & McCoy

Lab Contact: John Murray

Region: II

Regional Contact: Yun ru Yang

Call Initiated By: ___ Laboratory x Region

In reference to data for the following sample number(s):

SBLK02, BMZ01, 02, 03, 04, 05, 06, 07, 08, 09 (all soil samples)
BMZ01MS, BMZ01MSD,

Summary of Questions/Issues Discussed:

The extraction log (page 2369) indicates final extract volume = 1 ml; also 1 ml each of the matrix spike and surr. solutions were spiked. On the Forms I, 500 µl (0.5 ml) was put down as the final extract volume. Please verify which one is correct. All the incorrect Forms I, Form II, and Form III must be revised and re-submitted with all concentrations and/or recoveries corrected (if F.V. = 1 ml). If the extraction log is incorrect, the correction must be made and then resubmitted.

Summary of Resolution:

John will get back to the originator after investigation

Signature: Yun Ru Yang

Date: 4/30/93

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

McCOY & McCOY, INC.

McCOY & McCOY, INC.
85 E. NOEL AVENUE
MADISONVILLE, KY 42431
(502) 821-7375

TO: YUNRU YANG

PHONE: 908-417-5801

FROM: John Murray

DATE: 4/28/93

SUBJECT:

NUMBER OF PAGES FOLLOWING: 8

BNA samples Acid First date, change to Base second date, extracts combined and concentrated from 2ml to 1ml Final volume, then analyst receives sample extract for analysis. JSM 4/28/93

McCOY & McCOY TELEFAX NUMBER: (502) 821-5673

In Reference to Case No(s): 19370

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: 30 April, 1993

Laboratory Name: McCoy & McCoy

Lab Contact: John Murray

Region: II

Regional Contact: Yun ru Yang

Call Initiated By: ___ Laboratory x Region

In reference to data for the following sample number(s):

SBLK02, BMZ01, 02, 03, 04, 05, 06, 07, 08, 09 (all soil samples)
BMZ01MS, BMZ01MSD,

Summary of Questions/Issues Discussed:

The extraction log (page 2369) indicates final extract volume = 1 ml. also 1 ml each of the matrix spike and surr. solutions were spiked. On the forms I, 500 µl (0.5 ml) was put down as the final extract volume. Please verify which one is correct. All the incorrect Forms I, Form II, and Form III must be revised and re-submitted with all concentrations and/or recoveries corrected (if F.V. = 1 ml). If the extraction log is incorrect, the correction must be made and then resubmitted.

Summary of Resolution:

John will get back to the originator after investigation

5/11/93 4:20 pm As per John Murray the final volumes of the above referenced samples are 1 ml & not 0.5 ml as documented in Form I. Revised Forms 1, 2, and 3 will be provided tomorrow (5/12/93) hopefully. — YY 5/11/93

Signature: Yun Ru Yang

Date: 4/30/93

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

In Reference to Case No(s):
19370

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM

Telephone Record Log

Date of Call: May ~~8~~ 7, 1993 5/7/93

Laboratory Name: McCoy & McCoy

Lab Contact: John Murray

Region: II (AWES/SSI)

Regional Contact: Yunru Yang

Call Initiated By: ___ Laboratory ✓ Region

In reference to data for the following sample number(s):

PEST/PCB data - all samples

Summary of Questions/Issues Discussed:

① Need Forms IX PEST-I & II (9A & 9B) summarizing water samples. The extraction log indicates both water and soil extracts were cleaned up by GPC & Florisil, but only soils were summarized.

② The "Spike added (ng)" reported in forms 9A & 9B couldn't be reproduced. Need the equations to verify the reported values.

③ The Aroclor calibration factors reported in form 6 PEST-3 (page 2019) couldn't be reproduced using the area counts listed in the quant reports. Page 2019 must be revised to reflect correct calibration factors.

~~Summary of Resolutions~~

④ Pages 2011 & 2015: The Rt. and area count of β-BHC don't match those in the quant report (pages 2142, 2143, 2144) — INDBLB1

⑤ GPC calibration check for AR1016/AR1260 pattern not available

⑥ GPC calibration std: one page of chromatogram from the UV-detector is missing: btwn pages 2379 and 2380

⑦ The extraction date in forms 1 disagree with that in the extraction log. water sample

Signature

5/7/93
Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

In Reference to Case No(s): 19370

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: May 17, '93

Laboratory Name: McCoy

Lab Contact: John Murray

Region: II / AWES

Regional Contact: Yunru Yang

Call Initiated By: X Laboratory ___ Region

In reference to data for the following sample number(s):

BNA, Pesticide/PCB

Summary of Questions/Issues Discussed:

John needed to find out how to revise the Forms I for BNA. Changing the E.V. from 500 µl to 1000 µl or Changing the DF. from 1 or 2? — Change the 500 µl to 1000 µl on form I and revise the CRQLs accordingly

As per John, the same Florisil Lot # was used for both soil and water extracts in pesticide/PCB fraction.

Summary of Resolution:

Signature: [signature] Date: 5/17/93

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

In Reference to Case No(s): 19370

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM

Telephone Record Log

Date of Call: May 17, 1993

Laboratory Name: McCoy & McCoy

Lab Contact: John Murray

Region: II / AWES

Regional Contact: Yunru Yang

Call Initiated By: ___ Laboratory X Region

In reference to data for the following sample number(s):
BNA and PEST/PCB info requested on 4/30/93 and 5/7/93.

Summary of Questions/Issues Discussed:
Asked John when he can get the requested info back to me. John couldn't provide a definite date. My address was given to John to have him Fedx the info.

Summary of Resolutions:

Signature

Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

In Reference to Case No(s):
19370

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: May 18, 1993

Laboratory Name: McCoy & McCoy

Lab Contact: John Murray

Region: II / AWES

Regional Contact: Yunne Yang

Call Initiated By: ___ Laboratory X Region

In reference to data for the following sample number(s):
BNA & PEST/PCB

Summary of Questions/Issues Discussed:
① BNA TIC Tables (Form I-F) conc. ok
② Resubmittals faxed ~~were~~ received, but for BNA, the kits conc. not correc by a factor of 2. Same for Form 3-D (page 1325)
③ 2,4,6-Tribromophenol recoveries couldn't be replicated. The RRFs of 2,4,6-T in all stds couldn't be reproduced by the area in the quant report.
④ PEST/PCB Forms 9A & 9B :- missing resubmittal for pages 2042 & 2046
- "spike added (ng)" still not verified

Summary of Resolution:
- All changes can be made by hand
- John will look into ③
- Still working on ④

Signature [signature] Date 5/18/93

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

In Reference to Case No(s): 19370

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: May 26, 1993

Laboratory Name: McCoy & McCoy

Lab Contact: John Murray

Region: II (AWES)

Regional Contact: Yun-ru Yang

Call Initiated By: ___ Laboratory ×_ Region

In reference to data for the following sample number(s):
PEST/PCB fraction

Summary of Questions/Issues Discussed:
① p. 2041-2044 (Forms 9A & 9B): need to know how much of the standard (at what conc.) solutions used to achieve the values reported under the "spike added (ng)" column.
② p. 2019 (form 6): Revision was required for correct calibration factors for Aroclors.
③ p. 2011 & 2015: β-BHC RT/area don't match those in the quant report (p. 2142 & 2144).

~~Summary of Resolutions~~ YY
④ Was AR1016 & AR1260 standard undergone GPC cleanup?

All the requested info must be provided by the end of 5/27/93.

Signature: [signature] Date: 5/26/93

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

CASE 19370 SDG: BM201

Florisil Cartridge Check

5/27/93 JSm

alpha-BHC

20 ng/ml INDA mid x 40ml → 10ml Final Vol = 0.08ng

0.5ml of .08 ng/ml onto Florisil column = 0.04ng

$\boxed{0.04\text{ ng}}$

Pesticide GPC Calibration

~~0.5 ml~~ 1.0 ml of Pest Spike Soln. which is 0.5 and 1.0 ug/ml of components.

1.0ml of 0.5ug/ml → 10ml → GPC → 5ml Final Volume.

1.0ml of 500ng/ml = 500ng in 10ml which is loaded onto GPC.

McCOY & McCOY LABORATORIES INC.
85 EAST NOEL AVENUE MADISONVILLE, KY 42431 (502)-821-7375

SDG NARRATIVE

LABORATORY NAME: McCOY & McCOY LABORATORIES INC.

CONTRACT NO.: 68-D1-0081 CASE NO.:19370 SDG NO.:BMZ01

#	SAMPLE #	MATRIX	VOA	BILL	BNA EXT	BILL	BNA ANL	BILL	PEST EXT	BILL	PEST ANL	BILL
1	BMZ01	S	X	X	X	X	X	X	X	X	X	X
2	BMZ01MS	S	X	X	X	X	X	X	X	X	X	X
3	BMZ01MSD	S	X	X	X	X	X	X	X	X	X	X
4	BMZ02	S	X	X	X	X	X	X	X	X	X	X
5	BMZ03	S	X	X	X	X	X	X	X	X	X	X
6	BMZ04	S	X	X	X	X	X	X	X	X	X	X
7	BMZ05	S	X	X	X	X	X	X	X	X	X	X
8	BMZ06	S	X	X	X	X	X	X	X	X	X	X
9	BMZ07	S	X	X	X	X	X	X	X	X	X	X
10	BMZ08	S	X	X	X	X	X	X	X	X	X	X
11	BMZ09	S	X	X	X	X	X	X	X	X	X	X
12	BMZ10	W	X	X	X	X	X	X	X	X	X	X
13	BMZ10MS	W	X	X	X	X	X	X	X	X	X	X
14	BMZ10MSD	W	X	X	X	X	X	X	X	X	X	X
15	BMZ11	W	X	X	X	X	X	X	X	X	X	X
16	BMZ12	W	X	X	X	X	X	X	X	X	X	X
17	BMZ13	W	X	X	X	X	X	X	X	X	X	X
18	BMZ14	W	X	X	X	X	X	X	X	X	X	X
19	BMZ15	W	X	X								
20	BMZ07 RE	S	X	X	X	X	X	X				
21	BMZ08 RE	S	X	X	X	X	X	X				
22	BMZ06 RE	S			X	X	X	X				
23	BMZ09 RE	S	X	X								
24												

RECEIVED APR 6 1993

4-1-93 SC

~~0001~~ 1000

McCoy & McCoy Laboratories, Inc.

P. O. Box 907
55 East Noel Avenue
Madisonville, Kentucky 42431
Telephone
502 821-7375

a subsidiary of
McCoy & McCoy, Inc.

Case Narrative

Case: 19370 SDG: BMZ01 Contract #: 68-D1-0081 Lab: MCCOY

Volatiles Data:

One surrogate failed high on sample BMZ12 and we did not rerun it.
Sample BMZ06 was rerun using one gram rather than 5 grams since the initial analysis exceeded the calibration range. Samples BMZ07,08, and 09 were rerun for low internal standard recoveries. The reanalyses failed the internal standard recovery criteria also therefore the reanalyses are billable also. Sample BMZ01MSD failed the internal standard recovery criteria but was not rerun.
All standards and samples were manually integrated for 1,2-dichloroethene and xylene.
All other manual integrations are clearly indicated on the quant output report for each analysis.

Semivolatiles Data:

We were unable to determine the concentration of 2-chlorophenol in all of the samples below the normal concentration of the surrogate 2-chlorophenol-d4. Our extraction laboratory prepared a new surrogate solution and used the non-deuterated compound in error. Since our semivolatile mass spectrometers were not fully functional during this time we did not discover this error until the samples were well past the holding times. We now have a new mass spectrometer in that area and would be happy to rerun these samples if you request it. The concentration of some Phthalates exceeded the Blank acceptance criteria but again we did not determine this until the case was overdue. The reanalysis for the samples BMZ06 and 07 exceeded the holding time by four days again due to our equipment problems.

Pesticides Data:

Several standards and samples required manual integrations. The manual integrations are clearly indicated on each quant report with an "M" by each compound.

Total Environmental Management for Tomorrow's World

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 or are obvious in the hardcopy submission. Release of the data contained in this hardcopy data package and in the computer-readable submitted on diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

John S. Murray
Organic Section Leader

Date 4/1/93

McCoy & McCoy Laboratories, Inc.

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SDG COVER SHEET

LAB NAME: MCCOY & MCCOY LABORATORIES INC.

CONTRACT NUMBER: 68D10081

SAMPLE ANALYSIS PRICE: $670.00 PER FULL SAMPLE ANALYSIS

CASE NUMBER: 19370

SAMPLE NUMBERS: BMZ01 BMZ05 BMZ09 BMZ13
BMZ02 BMZ06 BMZ10 BMZ14
BMZ03 BMZ07 BMZ11 BMZ15
BMZ04 BMZ08 BMZ12

FIRST SAMPLE RECEIVED: BMZ01 DATE RECEIVED: 01/29/93

LAST SAMPLE RECEIVED: BMZ15 DATE RECEIVED: 01/29/93

SDG: BMZ01

STANDARD OPERATING PROCEDURE

Date: January 1992
Revision: 8

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES
CASE NUMBER: 19370 LAB: McCoy

SITE: Metem Corporation CA 44

1.0 Data Completeness and Deliverables

1.1 Have any missing deliverables been received and added to the data package? [ ] ___ ___

ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of reviewer narrative.

1.2 Was SMO CCS checklist included with package? [ ] ✓ ___

2.0 Cover Letter SDG Narrative

2.1 Is the Narrative or Cover Letter Present? [✓] ___ ___

2.2 Are Case Number and/or SAS number contained in the Narrative or Cover letter? [✓] ___ ___

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any VOA analyses, Part B for any BNA analyses and Part C for Pesticide/PCBs.

Does this package contain:

VOA Data? ✓ ___

BNA Data? ✓ ___

Pesticide/PCB data? ✓ ___

Action: Complete corresponding parts of checklist.

	YES	NO	N/A

PART A: VOA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples?	[✓]		

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		[✓]	

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50%-90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced upon receipt at the laboratory, flag all positive results "J" and all Non-Detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

YES NO N/A

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ ✓ ___

If unpreserved, aqueous samples maintained at 4°C which are to be analyzed for aromatic hydrocarbons must be analyzed within 7 days of collection. If preserved with HCl (pH<2) and stored at 4°C, then aqueous samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or not samples were preserved.

The holding time for soils is 10 days.

Table of Holding Time Violations

Sample ID	Sample Matrix	Preserved?	(See Traffic Report) Date Sampled	Date Lab Received	Date Analyzed

ACTION: If technical holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable (R). If holding times are exceeded by more than 28 days, all non detect data are unusable (R).

	YES	NO	N/A
3.0 System Monitoring Compound (SMC) Recovery (Form II)			
3.1 Are the VOA SMC Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water	✓		
b. Low Soil	✓		
c. Med Soil			✓
3.2 Are all the VOA samples listed on the appropriate System Monitoring Compound Recovery Summary for each of the following matrices:			
a. Low Water	✓		
b. Low Soil	✓		
c. Med Soil			✓
ACTION: Call lab for explanation/ resubmittals. If missing deliverables are unavailable, document effect in data assessments.			
3.3 Were outliers marked correctly with an asterisk?	✓		
ACTION: Circle all outliers in red.			
3.4 Was one or more VOA system monitoring compound recovery outside of contract specifications for any sample or method blank?	✓		
If yes, were samples re-analyzed?	✓		
Were method blanks re-analyzed? One water sample was not reanalyzed			✓

	YES	NO	N/A

ACTION: If recoveries are > 10% but 1 or more compounds fail to meet SOW specifications:

1. All positive results are qualified as estimated (J).
2. Flag all non-detects as estimated detection limits ("UJ") where recovery is less than the lower acceptance limit.
3. If SMC recoveries are above allowable levels, do not qualify non-detects.

If any system monitoring compound recovery is <10% :

1. Flag all positive results as estimated ("J").
2. Flag all non-detects as unusable ("R").

Professional judgement should be used to qualify data that only have method blank SMC recoveries out of specification in both original and re-analyses. Check the internal standard areas.

3.5 Are there any transcription/calculation errors between raw data and Form II? ✓ [ ] ___

ACTION: If large errors exist, call lab for explanation/resubmittal, make any necessary corrections and note errors in the data assessment.

4.0 Matrix Spikes (Form III)

4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present? [✓] ___ ___

	YES	NO	N/A
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[✓]		
b. Low Soil	[✓]		
c. Med Soil	[ ]		

ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
0 out of 10	4 out of 10

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
0 out of 5	2 out of 5

ACTION: No action is taken based on MS/MSD data alone. However, using informed professional judgement, the MS/MSD results may be used in conjunction with other QC criteria to determine the need for qualification of the data.

5.0 Blanks (Form IV)

	YES	NO	N/A
5.1 Is the Method Blank Summary (Form IV) present?	[✓]		
5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been analyzed for each SDG or every 20 samples of similar matrix (low water, low soil, medium soil), whichever is more frequent?	[✓]		

	YES	NO	N/A
5.3 Has a VOA method/instrument blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	✓		

ACTION: If any method blank data are missing, call lab for explanation/ resubmittal. If method blank data are not available, reject (R) all associated positive data. However, using professional judgement, the data reviewer may substitute field blank or trip blank data for missing method blank data.

5.4 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.

	YES	NO	N/A
Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	✓		

ACTION: Use professional judgement to determine the effect on the data.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

	YES	NO	N/A
6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for % moisture when necessary.	✓		
6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)?	✓		

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

	TAL	TIC	Associated Samples
BMZ 15 (TB)	CS_2 (6J)	Rt=21.68 (30) Rt=30.81 (20)	BMZ 10, 11 & 12
BMZ 13 (FB)	—	Rt=30.79 (6)	BMZ01 ~ 09
BMZ 14 (FB)	Chloroform (1J)	Rt=30.84 (10)	"
VBLK01	DCM (2J) acetone (10J)	None	BMZ 10, 11, 12, 13, 14, 15 and BMZ 10MS/MSD
VBLK02	acetone (7J)	None	BMZ02 ~ 06
~~VBLK03~~		None	"

YES NO N/A

NOTE: All field blank results associated to a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped and are not required for non-aqueous matrices. Blanks may not be qualified because of contamination in another blank. Field Blanks & Trip Blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable (R).

	Sample conc > CRQL but < 10x blank value	Sample conc < CRQL & <10x blank value	Sample conc > CRQL & >10x blank value
Methylene Chloride Acetone Toluene 2-Butanone	Flag sample result with a "U;	Report CRQL & qualify "U"	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5x blank value
Other Contam-inants	Flag sample result with a "U"	Report CRQL & qualify "U"	No qualification is needed

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

	YES	NO	N/A
ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).			
6.3 Are there field/rinse/equipment blanks associated with every sample?	[✓]	___	___
ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.			
7.0 GC/MS Instrument Performance Check (Form V)			
7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Bromofluorobenzene (BFB)?	[✓]	___	___
7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	[✓]	___	___
7.3 Has an instrument performance compound been analyzed for every twelve hours of sample analysis per instrument?	[✓]	___	___

YES NO N/A

ACTION: List date, time, instrument ID, and sample analysis for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95? ☑ ___ ___

ACTION: If mass assignment is in error, qualify all associated data as unusable (R).

7.5 Have the ion abundance criteria been met for each instrument used? ☑ ___ ___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) ✓ ☐ ___

	YES	NO	N/A
7.7 Have the appropriate number of significant figures (two) been reported?	[✓]		
ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.			
7.8 Are the spectra of the mass calibration compound acceptable?	[✓]		
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			

8.0 Target Compound List (TCL) Analytes

	YES	NO	N/A
8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate	[✓]		
b. Matrix spikes and matrix spike duplicates	[✓]		
c. Blanks	[✓]		
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	[✓]		
b. Matrix spikes and matrix spike duplicates (Mass spectra not required)	[✓]		
c. Blanks	[✓]		
ACTION: If any data are missing, take action specified in 3.2 above.			

		YES	NO	N/A
8.3	Are the response factors shown in the Quant Report?	[ ]		✓
8.4	Is chromatographic performance acceptable with respect to:			
	Baseline stability?	[✓] majority of them		
	Resolution?	[✓]		
	Peak shape?	[✓]		
	Full-scale graph (attenuation)?	[✓]		
	Other: _____	[ ]		

ACTION: Use professional judgement to determine the acceptability of the data.

8.5	Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[✓]		

ACTION: If any mass spectra are missing, take action specified in 3.2 above. If lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".

8.6	Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[ ]	✓	
8.7	Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]		

	YES	NO	N/A
8.8 Do sample and standard relative ion intensities agree within 20%?	✓		

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected (R), flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (U) at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.6, 8.7, and 8.8.

ACTION: When sample carry-over is a possibility, professional judgement should be used to determine if instrument cross-contamination has affected any positive compound identification.

9.0 Tentatively Identified Compounds (TIC)

	YES	NO	N/A
9.1 Are all Tentatively Identified Compound Forms (Form I Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	✓		
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate	✓		
b. Blanks	✓		

ACTION: If any TIC data are missing, take action specified in 3.2 above.

ACTION: Add "JN" qualifier if missing.

	YES	NO	N/A
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethylbenzene is xylene- a VOA TCL analyte - and should not be reported as a TIC)?	[✓]		

ACTION: Flag with "R" any TCL compound listed as a TIC.

9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]		
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[✓]		

ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate.

Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable (R). (i.e. Common Lab Contaminants: CO_2 (M/E 44), Siloxanes (M/E 73) Hexane, Aldol Condensation Products, Solvent Preservatives, and related by products - see Functional Guidelines for more guidance).

	YES	NO	N/A
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found?	✓	[ ]	—
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	[✓]	—	—

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its associated value on the original Form I and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.

11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant. Reports) present for initial and continuing calibration?	[✓]	—	—

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

	YES	NO	N/A
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete for the volatile fraction at concentrations of 10, 20, 50, 100, 200 ug/l? Are there separate calibrations for low water/med soils and low soil samples?	✓		
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Were all low level soil standards, blanks and samples analyzed by heated purge?	✓		
ACTION: If low level soil samples were not heated during purge, qualify positive hits "J" and non-detects "R".			
12.3 Are response factors stable for VOA's over the concentration range of the calibration (%Relative Standard Deviation (%RSD) <30.0%)?		✓	
ACTION: Circle all outliers in red.			
NOTE: Although 11 VOA compounds have a minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.			
ACTION: If %RSD > 30.0%, qualify associated positive results for that analyte "J" and non-detects using professional judgement. When RSD > 90%, flag all non-detects for that analyte R (unusable).			
NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria.			
12.4 Are the RRFs above 0.05?	✓		
Action: Circle all outliers in red.			
Action: If any RRF are < 0.05, qualify associated non-detects (R) and flag associated positive data as estimated (J).			

	YES	NO	N/A
12.5 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.)		✓	
13.0 GC/MS Continuing Calibration (Form VII)			
13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the volatile fraction?	✓		
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	✓		

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

_____

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

13.3 Do any volatile compounds have a % Difference (% D) between the initial and continuing RRF which exceeds the ± 25% criteria?	✓		

ACTION: Circle all outliers in red.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated. When % D is above 90%, reject all non-detects for that analyte (R) unusable.

YES NO N/A

13.4 Do any volatile compounds have a RRF <0.05? [ ] ✓ ___

ACTION: Circle all outliers in red.

ACTION: If the RRF <0.05, qualify associated non-detects as unusable (R) and "J" associated positive values.

13.5 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or %difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

14.0 Internal Standard (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to + 100%) for each continuing calibration? [ ] ✓ ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit
BMZ06	Chlorobenzene-d5	41609	49398	197592
BMZ01	"	43092	~~99158~~ 49579	198316
BMZ06DL	bromochloromethane	25581	26183	104732
	1,4-difluorobenzene	65347	65463	261852
BMZ07	chlorobenzene-d5	42174	49579	198316

(Attach additional sheets if necessary.)

Sample #	ISTD	Area	Lower limit	Upper limit
BMZ08	Chlorobenzene-d5	34878	49579	198316
BMZ09	bromochloromethane	23897	26183	104732
	1,4-difluorobenzene	61661	65463	130926
	chlorobenzene-d5	31482	49579	198316

YES NO N/A

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Non-detects associated with IS area counts > 100% should not be qualified.

3. If IS area is below the lower limit (< 50%), qualify all associated non-detects (U values) "J". If extremely low area counts are reported, (< 25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [✓] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for VOA analysis? [ ] ✓ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

YES NO N/A

PART B: BNA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [✓] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? [✓] [ ] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50%-90% water, all data should be flagged as estimated ("J"). If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced upon receipt at the laboratory, flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any BNA technical holding times, determined from date of collection to date of extraction, been exceeded? [✓] [ ] ___

Continuous extraction of water samples for BNA analysis must be started within seven days of the date of collection. Soil/ sediment samples must be extracted within 7 days of collection. Extracts must be analyzed within 40 days of the date of extraction.

YES NO N/A

Table of Holding Time Violations

(See Traffic Report)

Sample	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed
BMZ02	Soil	1/28/93	1/29/93	2/1/93	3/18/93

ACTION: If technical holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded.

If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results should be qualified "J", but the reviewer may determine that non-detect data are unusable ("R"). If holding times are exceeded by more than 28 days, all non detect data are unusable (R).

3.0 Surrogate Recovery (Form II)

3.1 Are the BNA Surrogate Recovery Summaries (Form II) present for each of the following matrices:

	YES	NO	N/A
a. Low Water	✓		
b. Low Soil	✓		
c. Med Soil			✓

	YES	NO	N/A
3.2 Are all the BNA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Low Soil	[✓]	___	___
c. Low Soil	[ ]	___	___

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in data assessments.

3.3 Were outliers marked correctly with an asterisk?	[✓]	___	___

ACTION: Circle all outliers in red.

3.4 Were two or more base-neutral <u>OR</u> acid surrogate recoveries out of specification for any sample or method blank?	[✓]	~~___~~	___
If yes, were samples reanalyzed?	[ ]	✓	___
Were method blanks reanalyzed?	[ ]	✓	___

ACTION: If all BNA surrogate recoveries are > 10% but two within the base-neutral or acid fraction do not meet SOW specifications, <u>for the affected fraction only (i.e. base-neutral or acid compounds)</u>:

1. Flag all positive results as estimated ("J").
2. Flag all non-detects as estimated detection limits ("UJ") when recoveries are less than the lower acceptance limit.
3. If recoveries are greater than the upper acceptance limit, do not qualify non-detects.

	YES	NO	N/A
If any base-neutral or acid surrogate has a recovery of <10%:			
1. Positive results for the fraction with <10% surrogate recovery are qualified with "J".			
2. Non-detects for that fraction should be qualified as unusable (R) .			
Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and reanalyses. Check the internal standard areas.			
3.5 Are there any transcription/calculation errors between raw data and Form II?	✓	[ ]	—
ACTION: If large errors exist, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.			
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present?	✓	—	—
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	✓	—	—
b. Low Soil	✓	—	—
c. Med Soil	[ ]	—	✓
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

YES NO N/A

4.3 How many BNA spike recoveries are outside QC limits?

Water	Soils
5 out of 22	3 out of 22

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
6 out of 11	0 out of 11

ACTION: No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the matrix spike and matrix spike duplicate results in conjunction with other QC criteria and determine the need for some qualification of the data.

5.0 Blanks (Form IV)

5.1 Is the Method Blank Summary (Form IV) present? [✓] ___ ___

5.2 Frequency of Analysis:

Has a reagent/method blank analysis been reported per 20 samples of similar matrix, or concentration level, and for each extraction batch? [✓] ___ ___

5.3 Has a BNA method blank been analyzed for each GC/MS system used? [✓] ___ ___
(See SOW p. D - 59/SV, Section 8.7)

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If not available, use professional judgement to determine if the associated sample data should be qualified.

	YES	NO	N/A
5.4 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for BNAs?	[✓]		

ACTION: Use professional judgement to determine the effect on the data.

6.0 Contamination

Note: "Water blanks", "drill blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify the data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for BNAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for % moisture where necessary.	✓	[ ]	
6.2 Do any field/rinse/ blanks have positive BNA results (TCL and/or TIC)?	✓	[ ]	

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

Note: All field blank results associated to a particular group of samples (may exceed one per case) must be used to qualify data. Blanks may not be qualified because of contamination in another blank . Field Blanks must be qualified for surrogate, spectral, instrument performance or calibration QC problems.

WESTON
MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT _____ W.O. NO. _____

TASK DESCRIPTION _____ TASK NO. _____

PREPARED BY _____ DEPT _____ DATE _____

MATH CHECK BY _____ DEPT _____ DATE _____

METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY _____ DEPT _____ DATE _____

	SBLK01 (Water Blank)	SBLK02 (Soil Blank)	BMZ13 (FB01)	BMZ14 (FB02)
Associated Samples:	BMZ 10, 12, 11	BMZ 01 thru BMZ 09	BMZ 01 thru BMZ 09	BMZ 01 thru BMZ 09
di-n-butylphthalate	14 ug/l	670 ug/kg	(133 ug/l) 34 ug/l	29 ug/l
bis(2-ethylhexyl) phthalate	22	—	9	12 (400 ug/kg)
TIC RT= 5.01	5	—	—	—
5.24	—	—	~~4~~ —	4
5.42	5	100	~~8~~ 4	4
6.65	10	—	~~30~~ 8	10
7.09	50	600	~~8~~ 30	40
7.39	10	100	~~8~~ 8	10
7.57	10	200	~~100~~ 8	10
7.93	200	2000	100	200
8.21	60	700	50	60
8.47	100	200	70	70
8.57	70	800	50	60
8.65	80	1000	60	70
8.74	20	200	10	20
11.76	6	—	10	—
13.96	—	—	7	—
19.28	20	300	5	10
21.58	—	—	70	—
22.47	8	—	—	—
22.54	4	—	—	—
24.61	—	—	20	—
25.56	7	—	—	—
31.06	10	—	—	—

RFW 10-05-003/A-5/85
512-5643

YES NO N/A

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If gross contamination exists, all data in the associated samples should be qualified as unusable (R).

Sample conc > CRQL but < 10x blank	Sample conc <CRQL & is< 10x blank value	Sample conc > CRQL value & >10x blank
Common Phthalate Esters		
Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed
Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & >5 blank value
Other Contaminants		
Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [✓] ___ ___

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

	YES	NO	N/A
7.0 GC/MS Instrument Performance Check			
7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Decafluorotriphenylphosphine (DFTPP)?	✓		
7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the DFTPP provided for each twelve hour shift?	✓		
7.3 Has an instrument performance check solution been analyzed for every twelve hours of sample analysis per instrument?	✓		

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

ACTION: If mass assignment is in error, flag all associated sample data as unusable (R).

7.4 Have the ion abundances been normalized to m/z 198?	✓		

	YES	NO	N/A
7.5 Have the ion abundance criteria been met for each instrument used?	[✓]		

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.)		[✓]	
7.7 Have the appropriate number of significant figures (two) been reported?	[✓]		

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.

7.8 Are the spectra of the mass calibration compound acceptable?	[✓]		

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes

8.1 Are the Organic Analysis Data Sheets (Form I BNA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate	[✓]		
b. Matrix spikes and matrix spike duplicates	[✓]		
c. Blanks	[✓]		

	YES	NO	N/A
8.2 Has GPC cleanup been performed on all soil/ sediment sample extracts?	[✓]		
ACTION: If data suggests that GPC was not performed, use professional judgement. Make note in "Contract Problems/Non-Compliance".			
8.3 Are the BNA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	[✓]		
b. Matrix spikes and matrix spike duplicates (Mass spectra not required)	[✓]		
c. Blanks	[✓]		
ACTION: If any data are missing, take action specified in 3.2 above.			
8.4 Are the response factors shown in the Quant Report?	[ ]		✓
8.5 Is chromatographic performance acceptable with respect to:			
Baseline stability?	[✓]		
Resolution?	[✓]		
Peak shape?	[✓]		
Full-scale graph (attenuation)?	[✓]		
Other:_____	[ ]		✓
ACTION: Use professional judgement to determine the acceptability of the data.			

	YES	NO	N/A
8.6 Are the lab-generated standard mass spectra of identified BNA compounds present for each sample?	✓		

ACTION: If any mass spectra are missing, take action specified in 3.2 above. If lab does not generate their own standard spectra, make note in "Contract Problems/ Non-compliance". If spectra are missing, reject all positive data.

8.7 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	✓		
8.8 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	✓		
8.9 Do sample and standard relative ion intensities agree within 20%?	✓		

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected (R), flagged "N" (Presumptive evidence of the presence of the compound) or changed to not detected (U) at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.7, 8.8, and 8.9.

ACTION: When sample carry-over is a possibility, professional judgement should be used to determine if instrument cross-contamination has affected any positive compound identification.

9.0 <u>Tentatively Identified Compounds (TIC)</u>

9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	✓		

	YES	NO	N/A
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate	[✓]		
b. Blanks	[✓]		
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "JN" qualifier if missing.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethylbenzene is xylene a VOA TCL - and should not be reported as a TIC)?		[✓]	
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]		
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[✓]		
ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate. Also, when a compound is not found in any blank, but is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable (R).			

	YES	NO	N/A
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found?	✓	[ ]	—
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	[✓]	—	—

Soil samples were concentrated to 1 ml. All calculations were based on 0.5 ml. FV. Form I indicates 0.5 ml. Form I of TIC used 1 ml as FV.

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and it's associated value on the original Form I and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red " X" across the entire page of all Form I's that should not be used, including any in the summary package.

	YES	NO	N/A
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant, Reports) present for initial and continuing calibration?	[✓]	—	—

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

YES NO N/A

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete for the BNA fraction? [✓] ___ ___

ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.

12.2 Are response factors stable for BNAs over the concentration range of the calibration? (% Relative standard deviation (%RSD) < 30.0%) [✓] ___ ___

ACTION: Circle all outliers in red.

NOTE: Although 20 BNA compounds have a minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

ACTION: If the % RSD is > 30.0%, qualify positive results for that analyte "J" and non-detects using professional judgement. When RSD > 90%, flag all non-detect results for that analyte R (unusable).

NOTE: Analytes previously qualified "U" due to blank contamination are still considered as "hits" when qualifying for calibration criteria.

12.3 Are all BNA compound RRFs > 0.05? [✓] ___ ___

ACTION: Circle all outliers in red.

ACTION: If any RRF < 0.05
1. "R" all non-detects.
2. "J" all positive results.

12.4 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or % RSD? (Check at least two values but if errors are found, check more.) [✓] [ ] ___

ACTION: Circle Errors in red.

YES NO N/A

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors in data assessments.

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the BNA fraction? ☑ ☐ ___

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? ☑ ☐ ___

ACTION: List below all sample analyses that were not within twelve hours of a continuing calibration analysis for each instrument used.

_____

_____

_____

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation/ resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

13.3 Do any semivolatile compounds have a % Difference (% D) between the initial and continuing RRF which exceeds the + 25.0% criteria? ☑ ☐ ___

ACTION: Circle all outliers in red.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated (J). When %D is above 90%, reject all non-detects for that analyte (R) unusable.

	YES	NO	N/A
13.4 Do any semivolatile compounds have a RRF <0.05?		✓	

ACTION: Circle all outliers in red.

ACTION: If RRF <0.05, qualify as unusable (R) associated non-detects and "J" associated positive values.

	YES	NO	N/A
13.5 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or % difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more).	✓		

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

14.0 Internal Standards (Form VIII)

	YES	NO	N/A
14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to + 100%) for each continuing calibration?		✓	

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit
BMZ01	phenanthrene-d10	39360	43445	173780
BMZ06	↓	40295	↓	↓
BMZ07	↓	41046	↓	↓

(Attach additional sheets if necessary.)

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard.

YES NO N/A

2. Non-detects associated with IS areas > 100% should not be qualified.

3. If the IS area is below the lower limit (<50%), qualify all associated non-detects (U-values) "J". If extremely low area counts are reported (<25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable (R).

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [✓] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for BNA analysis? [ ] ___ [✓]

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

YES NO N/A

PART C: PESTICIDE/PCB ANALYSIS

1.0 Traffic Reports and Laboratory Narrative

1.1 Are Traffic Report Forms present for all samples? [✓] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or SDG Narrative indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data? ___ [✓] ___

The lab's SDG Narrative didn't address any problems that will affect the data quality, but there are analytical problems that affect the data quality.

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50%-90% water, all data should be qualified as estimated (J). If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced upon receipt at the laboratory, flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any PEST/PCB technical holding times, determined from date of collection to date of extraction, been exceeded? [✓] [ ] ___

Water and soil samples for PEST/PCB analysis must be extracted within 7 days of the date of collection. Extracts must be analyzed within 40 days of the date extraction.

YES NO N/A

ACTION: If technical holding times are exceeded, flag all positive results as estimated (J) and sample quantitation limits (UJ) and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all the data should at least be qualified "J", but the reviewer may determine that non-detects are unusable (R).

3.0 Surrogate Recovery (Form II)

3.1 Are the PEST/PCB Surrogate Recovery Summaries (Form II) present for each of the following matrices?

a. Low Water [✓] ___ ___

b. Soil [✓] ___ ___

3.2 Are all the PEST/PCB samples listed on the appropriate Surrogate Recovery Summary for each of the following matrices?

a. Low Water [✓] ___ ___

b. Soil [✓] ___ ___

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in data assessments.

3.3 Were outliers marked correctly with an asterisk? [✓] ___ ___

ACTION: Circle all outliers in red.

3.4 Were surrogate recoveries of TCX or DCB outside of the contract specification for any sample or blank? (60-150%) ✓ [ ] ___

	YES	NO	N/A
ACTION: No qualification is done if surrogates are diluted out. If recovery for both surrogates is below the contract limit, but above 10%, flag all results for that sample 'J". If recovery is < 10% for either surrogate, qualify positive results 'J" and flag non-detects "R". If recovery is above the contract advisory limits for both surrogates qualify positive values "J".			
3.5 Were surrogate retention times (RT) within the windows established during the initial 3-point analysis of Individual Standard Mixture A?	✓		
ACTION: If the RT limits are not met, the analysis may be qualified unusable (R) for that sample on the basis of professional judgement.			
3.6 Are there any transcription/calculation errors between raw data and Form II?		✓	
ACTION: If large errors exist, call lab for explanation/resubmittal. Make any necessary corrections and document effect in data assessments.			
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present?	✓		
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices? (1 MS/MSD must be performed for every 20 samples of similar matrix or concentration level)			
a. Low Water	✓		
b. Soil	✓		
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

YES NO N/A

4.3 How many PEST/PCB spike recoveries are outside QC limits?

Water	Soil
0 out of 12	0 out of 12

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soil
0 out of 6	0 out of 6

ACTION: No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the matrix spike and matrix spike duplicate results in conjunction with other QC criteria and determine the need for some qualification of the data.

5.0 Blanks (Form IV)

5.1 Is the Method Blank Summary (Form IV) present? ☑ ___ ___

5.2 Frequency of Analysis: For the analysis of Pesticide/PCB TCL compounds, has a reagent/method blank been analyzed for each SDG or every 20 samples of similar matrix or concentration or each extraction batch, whichever is more frequent? ☑ ___ ___

ACTION: If any blank data are missing, take the action specified above in 3.2. If blank data is not available, reject (R) all associated positive data. However, using professional judgement, the data reviewer may substitute field blank data for missing method blank data.

5.3 Has a PEST/PCB instrument blank been analyzed at the beginning of every 12 hr. period following the initial calibration sequence? (minimum contract requirement) Yes

YES NO N/A

ACTION: If any blank data are missing, call lab for explanation/resubmittals. If missing deliverables are unavailable, document the effect in data assessments.

5.4 Chromatography: review the blank raw data - chromatograms, quant reports or data system printouts.

Is the chromatographic performance (baseline stability) for each instrument acceptable for PEST/PCBs? [ ] ✓ ___

ACTION: Use professional judgement to determine the effect on the data.

6.0 Contamination

NOTE: "Water blanks", "distilled water blanks" and "drilling water blanks" are validated like any other sample and are not used to qualify the data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/instrument/reagent/cleanup blanks have positive results for PEST/PCBs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor and corrected for % moisture when necessary. ✓ [ ] ___

6.2 Do any field/rinse blanks have positive PEST/PCB results? ✓ [ ] ___

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet)

NOTE: All field blank results associated to a particular group of samples (may exceed one per case or one per day) may be used to qualify data. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate, or calibration QC problems.

-PBLK02 - BMZ10, 11, 12

BMZ13
BMZ14 (Field Blanks) - BMZ01 ~ BMZ09

YES NO N/A

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL & > 5x blank value
Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed

NOTE: If gross blank contamination exists, all data in the associated samples should be qualified as unusable (R).

6.3 Are there field/rinse/equipment blanks associated with every sample? [✓] ___ ___

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 Calibration and GC Performance

7.1 Are the following Gas Chromatograms and Data Systems Printouts for both columns present for all samples, blanks, MS/MSD?

a. peak resolution check [✓] ___ ___

b. performance evaluation mixtures [✓] ___ ___

c. aroclor 1016/1260 [✓] ___ ___

d. aroclors 1221, 1232, 1242, 1248, 1254 [✓] ___ ___

e. toxaphene [✓] ___ ___

f. low points individual mixtures A & B [✓] ___ ___

g. med points individual mixtures A & B [✓] ___ ___

h. high points individual mixtures A & B [✓] ___ ___

	YES	NO	N/A
i. instrument blanks	[✓]		

ACTION: If no, take action specified in 3.2 above.

7.2 Are Forms VI - PEST 1-4 present and complete for each column and each analytical sequence? [✓]

ACTION: If no, take action specified in 3.2 above.

7.3 Are there any transcription/calculation errors between raw data and Forms VI? ✓ [ ]

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.

7.4 Do all standard retention times, including each pesticide in each level of Individual Mixtures A & B, fall within the windows established during the initial calibration analytical sequence? (For Initial Calibration Standards, Form VI - PEST - 1). [✓]

ACTION: If no, all samples in the entire analytical sequence are potentially affected. Check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times. If no peaks are found and the surrogates are visible, non-detects are valid. If peaks are present and cannot be identified through pattern recognition or using a revised RT window, qualify all positive results and non-detects as unusable (R).
For aroclors, RT may be outside the RT window, but the aroclor may still be identified from the individual pattern.

7.5 Are the linearity criteria for the initial analyses of Individual Standards A & B within limits for both columns? (% RSD must be < 20.0% for all analytes except for the 2 surrogates, which must not exceed 30.0 % RSD). See Form VI PEST - 2. [ ] ✓

YES NO N/A

ACTION: If no, qualify all associated positive results generated during the entire analytical sequence "J" and all non-detects "UJ". When RSD >90%, flag all non-detect results for that analyte R (unusable).

7.6 Is the resolution between any two adjacent peaks in the Resolution Check Mixture > 60.0% for both columns? (Form VI-PEST - 4) [ ] [✓] ___

ACTION: If no, positive results for compounds that were not adequately resolved should be qualified "J". Use professional judgement to determine if non-detects which elute in areas affected by co-eluting peaks should be qualified "N" as presumptive evidence of presence or unusable (R).

7.7 Is Form VII - Pest-1 present and complete for each Performance Evaluation Mixture analyzed during the analytical sequence for both columns?. [✓] ___ ___

ACTION: If no, take action as specified in 3.2 above.

7.8 Has the individual % breakdown exceeded 20.0% on either column. ___ [✓] ___

- for 4,4' - DDT? ___ [✓] ___
- for endrin? ___ [✓] ___

Has the combined % breakdown for 4,4'- DDT/ Endrin exceeded 30.0% on either column? (required in all instances) ___ [✓] ___

ACTION: 1. If any % breakdown has failed the QC criteria in either PEM in steps 2 and 17 in the initial calibration sequence (p. D-38/Pest SOW 3/90), qualify all sample analyses in the entire analytical sequence as described below.

YES NO N/A

2. If any % breakdown has failed the QC criteria in a PEM Verification calibration, review data beginning with the samples which followed the last <u>in-control</u> standard until the next acceptable PEM & qualify the data as described below.

a. 4,4'-DDT Breakdown: If 4,4'-DDT breakdown is greater than 20.%:

i. Qualify all positive results for DDT with 'J". If DDT was not detected, but DDD and DDE are positive, then qualify the quantitation limit for DDT as unusable (R).

ii. Qualify positive results for DDD and/or DDE as presumptively present at an approximated quantity (NJ).

b. Endrin Breakdown: If endrin breakdown is greater than 20.0%:

i. Qualify all positive results for endrin with "J". If endrin was not detected, but endrin aldehyde and endrin ketone are positive, then qualify the quantitation limit for endrin as unusable (R).

ii. Qualify positive results for endrin ketone and endrin aldehyde as presumptively present at an approximated quantity (NJ).

c. Combined Breakdown: If the combined 4,4'-DDT and endrin breakdown is greater than 30.0%:

i. Qualify all positive results for DDT and endrin with "J". If endrin was not detected, but endrin aldehyde and endrin ketone are positive, then qualify the quantitation limit for endrin as unusable (R). If DDT was not detected, but DDD and DDE are positive, then qualify the quantitation limit for DDT as unusable (R).

YES NO N/A

ii. Qualify positive results for endrin ketone and endrin aldehyde as presumptively present at an approximated quantity (NJ). Qualify positive results for DDD and/or DDE as presumptively present at an approximated quantity (NJ).

7.9 Are the relative percent difference (RPD) values for all PEM analytes <25.0%? (Form VII-PEST-1) [ ] ✓ ___

ACTION: If no, qualify all associated positive results generated during the analytical sequence "J" and sample quantitation limits "UJ".

NOTE: If the failing PEM is part of the initial calibration. all samples are potentially affected. If the offending standard is a verification calibration, the associated samples are those which followed the last in-control standard until the next passing standard.

7.10 Have all samples been injected within a 12 hr. period beginning with the injection of an Instrument Blank? [ ] ✓ ___

ACTION: If no, use professional judgement to determine the severity of the effect on the data and qualify accordingly.

BMZ ¢1 MSD was injected about 20 min. outside the 12-hour period. No qualification applied.

7.11 Is Form VII - Pest-2 present and complete for each INDA and INDB Verification Calibration analyzed? [✓] ___ ___

ACTION: If no, take action specified in 3.2 above.

7.12 Are there any transcription/calculation errors between raw data and Form VII - Pest-2? ___ [✓] ___

ACTION: If large errors exists, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments. under "Conclusions".

	YES	NO	N/A
7.13 Do all standard retention times for each INDA and INDB Verification Calibration fall within the windows established by the initial calibration sequence?	[✓]		

ACTION: If no, beginning with the samples which followed the last in-control standard, check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times. If no peaks are found and the surrogates are visible, non-detects are valid. If peaks are present and cannot be identified through pattern recognition or using a revised RT window, qualify all positive results and non-detects as unusable (R).

	YES	NO	N/A
7.14 Are RPD values for all verification calibration standard compounds < 25.0%?	[ ]	[✓]	

ACTION: If the RPD is >25.0% for the compound being quantitated, qualify all associated positive results "J" and non-detects "UJ". The "associated samples" are those which followed the last in-control standard up to the next passing standard containing the analyte which failed the criteria. If the RPD is >90%, flag all non-detects for that analyte R (unusable).

8.0 Analytical Sequence Check (Form VIII-PEST)

	YES	NO	N/A
8.1 Is Form VIII present and complete for each column and each period of analyses?	[✓]		

ACTION: If no, take action specified in 3.2 above.

	YES	NO	N/A
8.2 Was the proper analytical sequence followed for each initial calibration and subsequent analyses? (see CLP SOW p. D-39 & D-41/PEST)	[✓]		

ACTION: If no, use professional judgement to determine the severity of the effect on the data and qualify it accordingly. Generally, the effect is negligible unless the sequence was grossly altered or the calibration was also out of limits.

	YES	NO	N/A

9.0 Cleanup Efficiency Verification (Form IX)

9.1 Is Form IX - Pest-1 present and complete for each lot of Florisil Cartridges used? (Florisil Cleanup is required for all Pest/PCB extracts.) [✓] ✓ xy

ACTION: If no, take action specified in 3.2 above. If data suggests that florisil cleanup was not performed, make note in "Contract Problems/Non-Compliance".

Form 9A was not submitted for water samples.

9.2 Are all samples listed on the Pesticide Florisil Cartridge Check Form? [ ] ✓ ___

ACTION: If no, take action specified in 3.2 above.

9.3 If GPC Cleanup was performed, (mandatory for all soil sample extracts) is Form IX - Pest-2 present? [✓] ___ ___

ACTION: If no, take action specified in 3.2 above.

ACTION: If GPC was not performed when required, make note in" Contract Problems/Non-Compliance" section of data assessment.

9.4 Are percent recoveries (% R) of the pesticide and surrogate compounds used to check the efficiency of the cleanup procedures within QC limits:

80-120% for florisil cartridge check? [ ] ✓ ___

80-110% for GPC calibration? [ ] ✓ ___

Qualify only the analyte(s) which fail the recovery criteria as follows:

ACTION: If % R are < 80%, qualify positive results "J" and quantitation limits "UJ". Non-detects should be qualified "R" if zero %R was obtained for pesticide compounds. Use professional judgement to qualify positive results if recoveries are greater than the upper limit.

	YES	NO	N/A

NOTE: Sample data should be evaluated for potential interferences if recovery of 2,4,5-trichlorophenol was > 5% in the Florisil Cartridge Performance Check analysis. Make note in Contract Problems/ Non-Compliance section of reviewer narrative.

NOTE: The raw data of the GPC Calibration Check analysis is evaluated for pattern similarity with previously run Aroclor standards. Not provided

10.0 Pesticide/PCB Identification

	YES	NO	N/A
10.1 Is Form X complete for every sample in which a pesticide or PCB was detected?	[✓]		

ACTION: If no, take action specified in 3.2 above.

	YES	NO	N/A
10.2 Are there any transcription/calculation errors between raw data and Forms 6E, 6G, 7E, 7D, 8D, 9A, B, 10A.		[✓]	

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and note error under "Conclusions".

	YES	NO	N/A
10.3 Are retention times (RT) of sample compounds within the established RT windows for both analyses?	[✓]		
Was GC/MS confirmation provided when required (when compound concentration is > 10 ug/ml in final extract)?	[ ]		✓

Action: Use professional judgement to qualify positive results which were not confirmed by GC/MS. Qualify as unusable (R) all positive results which were not confirmed by second GC column analysis. Also qualify as unusable (R) all positive results not meeting RT window unless associated standard compounds are similarly biased. (see Functional Guidelines) The reviewer should use professional judgement to assign an appropriate quantitation limit.

YES NO N/A

10.4 Is the percent difference (% D) calculated for the positive sample results on the two GC columns < 25.0%? [ ] ✓ ___

ACTION: If the reviewer finds neither column shows interference for the positive hits, the data should be flagged as follows:

% Difference	Qualifier
25-50 %	J
50-90 %	JN
> 90 %	R

NOTE: The lower of the two values is reported on Form I. If using professional judgement, the reviewer determines that the higher result was more acceptable, the reviewer should replace the value and indicate the reason for the change in the data assessment.

10.5 Check chromatograms for false negatives, especially the multiple peak compounds toxaphene and PCBs. Were there any false negatives? ___ [✓] ___

ACTION: Use professional judgement to decide if the compound should be reported. If the appropriate PCB standards were not analyzed, qualify the data unusable (R).

11.0 Compound Quantitation and Reported Detection Limits

11.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Were any errors found? ✓ [✓] ___

NOTE: Single-peak pesticide results can be checked for rough agreement between quantitative results obtained on the two GC columns. The reviewer should use professional judgement to decide whethera much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interfering compound is indicated, the lower of the two values should be reported and qualified as presumptively present at an approximated quantity (NJ). This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has interfered with the evaluation of the second column confirmation.

	YES	NO	N/A
11.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, % moisture?	[✓]		

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.

ACTION: Quantitation limits affected by large, off-scale peaks should be qualified as unusable (R). If the interference is on-scale, the reviewer can provide an approximated quantitation limit (UJ) for each affected compound.

12.0 Chromatogram Quality

12.1 Were baselines stable?	[ ]	✓	
12.2 Were any electropositive displacement (negative peaks) or unusual peaks seen?	✓	[ ]	

ACTION: Address comments under System Performance of data assessment.

	YES	NO	N/A
13.0 Field Duplicates			
13.1 Were any field duplicates submitted for PEST/PCB analysis?	[ ]	✓	✓

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ01

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ01

Sample wt/vol: 5.040 (g/mL) G Lab File ID: C1384

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. 7. Date Analyzed: 02/04/93

GC Column: RTX-502 ID: .53 (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	11.	U
67-64-1	Acetone	21.	
75-15-0	Carbon Disulfide	11.	U
75-35-4	1,1-Dichloroethene	11.	U
75-34-3	1,1-Dichloroethane	5.	J
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	22.	
71-55-6	1,1,1-Trichloroethane	11.	J
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
108-10-1	4-Methyl-2-Pentanone	11.	U
591-78-6	2-Hexanone	11.	U
127-18-4	Tetrachloroethene	2.	J
79-34-5	1,1,2,2-Tetrachloroethane	11.	U
108-88-3	Toluene	18.	
108-90-7	Chlorobenzene	11.	U
100-41-4	Ethylbenzene	2 ~~11.~~	~~U~~
100-42-5	Styrene	~~11.~~	U
1330-20-7	Xylene (total)	6.	J

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BMZ01

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ01

Sample wt/vol: 5.040 (g/mL) G Lab File ID: C1384

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. 7. Date Analyzed: 02/04/93

GC Column: RTX-502 ID: .53 (mm) Dilution Factor: 1.0

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

Number TICs found: 8

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN	8.06	7.	J
2.	- -	UNKNOWN AROMATIC	21.67	30.	J
3.	- -	UNKNOWN	29.88	6.	J
4.	- -	UNKNOWN	30.74	500.	J
5.	- -	UNKNOWN HYDROCARBON	32.45	10.	J
6.	- -	UNKNOWN	33.51	10.	J
7.	- -	UNKNOWN	34.03	6.	J
8.	- -	UNKNOWN HYDROCARBON	34.84	300.	J
9.					
10.					
11.					
12.					
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14.					
15.					
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ02

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ02

Sample wt/vol: 5.050 (g/mL) G Lab File ID: C1369

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. 14. Date Analyzed: 02/03/93

GC Column: RTX-502 ID: .53 (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	12.	U
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	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
108-10-1	4-Methyl-2-Pentanone	12.	U
591-78-6	2-Hexanone	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.

BMZ02

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ02

Sample wt/vol: 5.050 (g/mL) G Lab File ID: C1369

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. 14. Date Analyzed: 02/03/93

GC Column: RTX-502 ID: .53 (mm) Dilution Factor: 1.0

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

Number TICs found: 5 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN	8.08	7.	J
2.	- -	UNKNOWN	19.78	90.	J
3.	- -	UNKNOWN	26.98	70.	J
4.	556-67-2	Cyclotetrasiloxane, octameth	29.32	50.	J N
5.	- -	UNKNOWN HYDROCARBON	30.80	20.	J
6.					
7.					
8.					
9.					
10.					
11.					
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ03

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ03

Sample wt/vol: 5.050 (g/mL) G Lab File ID: C1370

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. 13 Date Analyzed: 02/03/93

GC Column: RTX-502 ID: .53 (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	11.	U
67-64-1	Acetone	11.	U
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	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
108-10-1	4-Methyl-2-Pentanone	11.	U
591-78-6	2-Hexanone	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.

BMZ03

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ03

Sample wt/vol: 5.050 (g/mL) G Lab File ID: C1370

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. 13. Date Analyzed: 02/03/93

GC Column: RTX-502 ID: .53 (mm) Dilution Factor: 1.0

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

Number TICs found: 7 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN	7.94	20.	J
2.	- -	UNKNOWN	22.46	10.	J
3.	- -	UNKNOWN HYDROCARBON	26.80	30.	J
4.	- -	UNKNOWN	29.43	20.	J
5.	556-67-2	Cyclotetrasiloxane, octameth	30.81	30.	J N
6.	- -	UNKNOWN HYDROCARBON	32.86	6.	J
7.	- -	UNKNOWN HYDROCARBON	34.58	9.	J
8.					
9.					
10.					
11.					
12.					
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ04

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ04

Sample wt/vol: 5.010 (g/mL) G Lab File ID: C1371

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. ~~15~~ 19 Date Analyzed: 02/03/93

GC Column: RTX-502 ID: .53 (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	12.	U
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	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
108-10-1	4-Methyl-2-Pentanone	12.	U
591-78-6	2-Hexanone	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.

BMZ04

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ04

Sample wt/vol: 5.010 (g/mL) G Lab File ID: C1371

Level: (low/med) LOW Date Received: 01/29/93

Moisture: not dec. ~~15~~ 19 Date Analyzed: 02/03/93

GC Column: RTX-502 ID: .53 (mm) Dilution Factor: 1.0

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

Number TICs found: 4

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN HYDROCARBON	23.53	7.	J
2.	- -	UNKNOWN HYDROCARBON	25.15	800.	J
3.	- -	UNKNOWN	29.69	200.	J
4.	629-50-5	Tridecane (8CI9CI)	33.03	300.	J N
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ05

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ05

Sample wt/vol: 5.030 (g/mL) G Lab File ID: C1372

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. 26. Date Analyzed: 02/03/93

GC Column: RTX-502 ID: .53 (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	13.	U
67-64-1	Acetone	13.	U
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
108-10-1	4-Methyl-2-Pentanone	13.	U
591-78-6	2-Hexanone	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.

BMZ05

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ05

Sample wt/vol: 5.030 (g/mL) G Lab File ID: C1372

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. 26. Date Analyzed: 02/03/93

GC Column: RTX-502 ID: .53 (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.	- -	UNKNOWN HYDROCARBON	26.70	100.	J
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4.					
5.					
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ06

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ06

Sample wt/vol: 5.120 (g/mL) G Lab File ID: C1373

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. 52 Date Analyzed: 02/03/93

GC Column: RTX-502 ID: .53 (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	20.	U
74-83-9	Bromomethane	20.	U
75-01-4	Vinyl Chloride	22.	
75-00-3	Chloroethane	250.	
75-09-2	Methylene Chloride	20.	U
67-64-1	Acetone	80.	B
75-15-0	Carbon Disulfide	~~9.~~	
75-35-4	1,1-Dichloroethene	80.	
75-34-3	1,1-Dichloroethane	400* ~~420.~~	
540-59-0	1,2-Dichloroethene (total)	~~49.~~ 20	U
67-66-3	Chloroform	20.	U
107-06-2	1,2-Dichloroethane	20.	U
78-93-3	2-Butanone	26.	
71-55-6	1,1,1-Trichloroethane	260* ~~530.~~	
56-23-5	Carbon Tetrachloride	20.	U
75-27-4	Bromodichloromethane	20.	U
78-87-5	1,2-Dichloropropane	20.	U
10061-01-5	cis-1,3-Dichloropropene	20.	U
79-01-6	Trichloroethene	32.	
124-48-1	Dibromochloromethane	20.	U
79-00-5	1,1,2-Trichloroethane	20.	U
71-43-2	Benzene	20.	U
10061-02-6	trans-1,3-Dichloropropene	20.	U
75-25-2	Bromoform	20.	U
108-10-1	4-Methyl-2-Pentanone	20.	U
591-78-6	2-Hexanone	20.	U
127-18-4	Tetrachloroethene	9 ~~8.~~	J
79-34-5	1,1,2,2-Tetrachloroethane	20.	U
108-88-3	Toluene	20.	U
108-90-7	Chlorobenzene	20.	U
100-41-4	Ethylbenzene	20.	U
100-42-5	Styrene	20.	U
1330-20-7	Xylene (total)	20.	U

* obtained from the 1:5 dilution analysis

FORM I VOA 3/90

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BMZ06

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ06

Sample wt/vol: 5.120 (g/mL) G Lab File ID: C1373

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. 52. Date Analyzed: 02/03/93

GC Column: RTX-502 ID: .53 (mm) Dilution Factor: 1.0

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

Number TICs found: 8 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN	7.85	40.	J
2.	- -	UNKNOWN HYDROCARBON	20.02	20.	J
3.	- -	UNKNOWN AROMATIC	21.64	20.	J
4.	- -	UNKNOWN	22.45	10.	J
5.	- -	UNKNOWN HYDROCARBON	25.79	10.	J
6.	556-67-2	Cyclotetrasiloxane, octameth	30.76	400.	J
7.	- -	UNKNOWN	31.09	100.	J
8.	- -	UNKNOWN HYDROCARBON	34.20	20.	J
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10.					
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ07

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ07

Sample wt/vol: 4.900 (g/mL) G Lab File ID: C1386

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. 25. Date Analyzed: 02/04/93

GC Column: RTX-502 ID: .53 (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	14.	U
67-64-1	Acetone	130.	J
75-15-0	Carbon Disulfide	48.	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.~~	
67-66-3	Chloroform	14.	U
107-06-2	1,2-Dichloroethane	14.	U
78-93-3	2-Butanone	26.	J
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	5.	J
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
108-10-1	4-Methyl-2-Pentanone	14.	U
591-78-6	2-Hexanone	14.	U
127-18-4	Tetrachloroethene	3.	J
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.

BMZ07

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ07

Sample wt/vol: 4.900 (g/mL) G Lab File ID: C1386

Level: (low/med) LOW Date Received: 01/29/93

Moisture: not dec. 25. Date Analyzed: 02/04/93

GC Column: RTX-502 ID: .53 (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.	- -	UNKNOWN	7.85	30.	J
2.	- -	UNKNOWN	21.60	10.	J
3.	- -	UNKNOWN	26.90	60.	J
4.	556-67-2	Cyclotetrasiloxane, octameth	29.29	20.	J N
5.	- -	UNKNOWN	30.77	60.	J
6.	- -	UNKNOWN HYDROCARBON	32.44	80.	J
7.					
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ08

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ08

Sample wt/vol: 5.060 (g/mL) G Lab File ID: C1387

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. 20. Date Analyzed: 02/04/93

GC Column: RTX-502 ID: .53 (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	12.	U
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	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
108-10-1	4-Methyl-2-Pentanone	12.	U
591-78-6	2-Hexanone	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.

BMZ08

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ08

Sample wt/vol: 5.060 (g/mL) G Lab File ID: C1387

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. 20. Date Analyzed: 02/04/93

GC Column: RTX-502 ID: .53 (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. - -	UNKNOWN	6.32	10.	J
2. - -	UNKNOWN HYDROCARBON	25.08	1000.	J
3. - -	UNKNOWN	27.08	10.	J
4. - -	UNKNOWN	29.66	100.	J
5. - -	UNKNOWN HYDROCARBON	32.96	300.	J
6. - -	UNKNOWN HYDROCARBON	34.77	30.	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ09

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ09

Sample wt/vol: 5.090 (g/mL) G Lab File ID: C1388

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. 45. Date Analyzed: 02/04/93

GC Column: RTX-502 ID: .53 (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	18.	U
74-83-9	Bromomethane	18.	U
75-01-4	Vinyl Chloride	18.	U
75-00-3	Chloroethane	18.	U
75-09-2	Methylene Chloride	18.	U
67-64-1	Acetone	140.	
75-15-0	Carbon Disulfide	18.	U
75-35-4	1,1-Dichloroethene	18.	U
75-34-3	1,1-Dichloroethane	18.	U
540-59-0	1,2-Dichloroethene (total)	18.	U
67-66-3	Chloroform	18.	U
107-06-2	1,2-Dichloroethane	18.	U
78-93-3	2-Butanone	20.	
71-55-6	1,1,1-Trichloroethane	18.	U
56-23-5	Carbon Tetrachloride	18.	U
75-27-4	Bromodichloromethane	18.	U
78-87-5	1,2-Dichloropropane	18.	U
10061-01-5	cis-1,3-Dichloropropene	18.	U
79-01-6	Trichloroethene	18.	U
124-48-1	Dibromochloromethane	18.	U
79-00-5	1,1,2-Trichloroethane	18.	U
71-43-2	Benzene	18.	U
10061-02-6	trans-1,3-Dichloropropene	18.	U
75-25-2	Bromoform	18.	U
108-10-1	4-Methyl-2-Pentanone	18.	U
591-78-6	2-Hexanone	18.	U
127-18-4	Tetrachloroethene	18.	U
79-34-5	1,1,2,2-Tetrachloroethane	18.	U
108-88-3	Toluene	18.	U
108-90-7	Chlorobenzene	18.	U
100-41-4	Ethylbenzene	18.	U
100-42-5	Styrene	18.	U
1330-20-7	Xylene (total)	18.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BMZ09

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ09

Sample wt/vol: 5.090 (g/mL) G Lab File ID: C1388

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. 45. Date Analyzed: 02/04/93

GC Column: RTX-502 ID: .53 (mm) Dilution Factor: 1.0

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

Number TICs found: 5

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN HYDROCARBON	6.58	9.	J
2.	- -	UNKNOWN	8.01	10.	J
3.	- -	UNKNOWN HYDROCARBON	26.48	200.	J
4.	- -	UNKNOWN	29.16	10.	J
5.	- -	UNKNOWN HYDROCARBON	32.26	10.	J
6.					
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ10

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ10

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C1354

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec._____ Date Analyzed: 02/02/93

GC Column: RTX-502 ID: .53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	10.	U
67-64-1	Acetone	10.	UJ
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
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	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.

BMZ10

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ10

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C1354

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec._____ Date Analyzed: 02/02/93

GC Column: RTX-502 ID: .53 (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/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ11

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ11

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C1355

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec._____ Date Analyzed: 02/02/93

GC Column: RTX-502 ID: .53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	10.	U
67-64-1	Acetone	10.	U 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	1.	J
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	1.	J
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
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	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.

BMZ11

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ11

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C1355

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec._____ Date Analyzed: 02/02/93

GC Column: RTX-502 ID: .53 (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/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ12

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ12

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C1356

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec._____ Date Analyzed: 02/02/93

GC Column: RTX-502 ID: .53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	10.	U
67-64-1	Acetone	10.	UJ
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	2.	J
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	1.	J
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
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	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)	2.	J

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BMZ12

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ12

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C1356

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec._____ Date Analyzed: 02/02/93

GC Column: RTX-502 ID: .53 (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/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ13

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ13

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C1357

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec._____ Date Analyzed: 02/02/93

GC Column: RTX-502 ID: .53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	10.	U
67-64-1	Acetone	10.	U
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
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	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.

BMZ13

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ13

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C1357

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec._____ Date Analyzed: 02/02/93

GC Column: RTX-502 ID: .53 (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/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	556-67-2	Cyclotetrasiloxane, octameth	30.79	6.	[redacted]
2.					
3.					
4.					
5.					
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ14

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ14

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C1358

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. _____ Date Analyzed: 02/02/93

GC Column: RTX-502 ID: .53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	10.	U
67-64-1	Acetone	10.	U
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	1.	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
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	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.

BMZ14

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ14

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C1358

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec._____ Date Analyzed: 02/02/93

GC Column: RTX-502 ID: .53 (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/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	556-67-2	Cyclotetrasiloxane, octameth	30.84	10.	[redacted]
2.					
3.					
4.					
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ15

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ15

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C1359

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. Date Analyzed: 02/02/93

GC Column: RTX-502 ID: .53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	10.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	6.	J
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
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	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

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BMZ15

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ15

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C1359

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: not dec. _____ Date Analyzed: 02/02/93

GC Column: RTX-502 ID: .53 (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/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	624-92-0	Disulfide, dimethyl (9CI)	21.68	30.	J N
2.	556-67-2	Cyclotetrasiloxane, octameth	30.81	20.	J N
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ01

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ01

Sample wt/vol: 30.0 (g/mL) G Lab File ID: J0106

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 7. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0

GPC Cleanup: (Y/N) Y pH: 7.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	710.	U
111-44-4	bis(2-Chloroethyl)ether	710.	U
95-57-8	2-Chlorophenol	700.	BJ
541-73-1	1,3-Dichlorobenzene	710.	U
106-46-7	1,4-Dichlorobenzene	710.	U
95-50-1	1,2-Dichlorobenzene	710.	U
95-48-7	2-Methylphenol	710.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	710.	U
106-44-5	4-Methylphenol	710.	U
621-64-7	N-Nitroso-Di-n-propylamine	710.	U
67-72-1	Hexachloroethane	710.	U
98-95-3	Nitrobenzene	710.	U
78-59-1	Isophorone	710.	U
88-75-5	2-Nitrophenol	710.	U
105-67-9	2,4-Dimethylphenol	710.	U
111-91-1	bis(2-Chloroethoxy)methane	710.	U
120-83-2	2,4-Dichlorophenol	710.	U
120-82-1	1,2,4-Trichlorobenzene	710.	U
91-20-3	Naphthalene	710.	U
106-47-8	4-Chloroaniline	710.	U
87-68-3	Hexachlorobutadiene	710.	U
59-50-7	4-Chloro-3-methylphenol	710.	U
91-57-6	2-Methylnaphthalene	710.	U
77-47-4	Hexachlorocyclopentadiene	710.	U
88-06-2	2,4,6-Trichlorophenol	710.	U
95-95-4	2,4,5-Trichlorophenol	1800.	U
91-58-7	2-Chloronaphthalene	710.	U
88-74-4	2-Nitroaniline	1800.	U
131-11-3	Dimethylphthalate	710.	U
208-96-8	Acenaphthylene	710.	U
606-20-2	2,6-Dinitrotoluene	710.	U
99-09-2	3-Nitroaniline	1800.	U
83-32-9	Acenaphthene	710.	U

[redacted]

1C ~~RESUBMITTAL~~

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ01

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ01

Sample wt/vol: 30.0 (g/mL) G Lab File ID: J0106

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 7. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0

GPC Cleanup: (Y/N) Y pH: 7.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1800.	U
100-02-7	4-Nitrophenol	1800.	U
132-64-9	Dibenzofuran	710.	U
121-14-2	2,4-Dinitrotoluene	710.	U
84-66-2	Diethylphthalate	710.	U
7005-72-3	4-Chlorophenyl-phenylether	710.	U
86-73-7	Fluorene	710.	U
100-01-6	4-Nitroaniline	1800.	U
534-52-1	4,6-Dinitro-2-methylphenol	1800.	U
86-30-6	N-Nitrosodiphenylamine	710.	U
101-55-3	4-Bromophenyl-phenylether	710.	U
118-74-1	Hexachlorobenzene	710.	U
87-86-5	Pentachlorophenol	1800.	U
85-01-8	Phenanthrene	710.	U
120-12-7	Anthracene	710.	U
86-74-8	CARBAZOLE	710.	U
84-74-2	Di-n-butylphthalate	730.	~~B~~ U
206-44-0	Fluoranthene	710.	U
129-00-0	Pyrene	710.	U
85-68-7	Butylbenzylphthalate	710.	U
91-94-1	3,3'-Dichlorobenzidine	710.	U
56-55-3	Benzo(a)anthracene	710.	U
218-01-9	Chrysene	710.	U
117-81-7	bis(2-Ethylhexyl)phthalate	~~710.~~ ~~390.~~	~~J~~ U
117-84-0	Di-n-octylphthalate	710.	U
205-99-2	Benzo(b)fluoranthene	710.	U
207-08-9	Benzo(k)fluoranthene	710.	U
50-32-8	Benzo(a)pyrene	710.	U
193-39-5	Indeno(1,2,3-cd)pyrene	710.	U
53-70-3	Dibenz(a,h)anthracene	710.	U
191-24-2	Benzo(g,h,i)perylene	710.	U

(1) - Cannot be separated from diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BMZ01

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ01

Sample wt/vol: 30.0 (g/mL) G Lab File ID: J0106

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 7.7 decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.2

Number TICs found: 21 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN HYDROCARBON	7.90	2000.	~~BJ~~ R
2.	- -	UNKNOWN HYDROCARBON	8.55	700.	~~BJ~~ R
3.	- -	UNKNOWN HYDROCARBON	8.63	900.	~~BJ~~ R
4.	141-63-9	Pentasiloxane, dodecamethyl-	13.90	900.	~~J N~~ R
5.	- -	UNKNOWN HYDROCARBON	14.99	1000.	J
6.	- -	UNKNOWN	16.42	2000.	J
7.	1120-21-4	Undecane (8CI9CI)	16.48	3000.	J N
8.	54833-23-7	Eicosane, 10-methyl- (9CI)	17.86	3000.	J N
9.	- -	UNKNOWN	18.59	5000.	J
10.	55045-08-4	Dodecane, 2-methyl-6-propyl-	19.16	2000.	J N
11.	- -	UNKNOWN	19.31	600.	~~BJ~~ R
12.	- -	UNKNOWN HYDROCARBON	19.76	2000.	J
13.	54833-48-6	Heptadecane, 2,6,10,15-tetra	20.39	3000.	J N
14.	74645-98-0	Dodecane, 2,7,10-trimethyl-	20.46	2000.	J N
15.	- -	UNKNOWN	20.89	2000.	J
16.	- -	UNKNOWN HYDROCARBON	21.55	3000.	J
17.	74645-98-0	Dodecane, 2,7,10-trimethyl-	21.66	2000.	J N
18.	629-78-7	Heptadecane (8CI9CI)	22.65	3000.	J N
19.	- -	UNKNOWN HYDROCARBON	23.68	1000.	J
20.	- -	UNKNOWN	26.41	600.	J
21.	- -	UNKNOWN	26.52	800.	J
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RESUBMITTAL

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ02

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ02

Sample wt/vol: 30.1 (g/mL) G Lab File ID: J0192

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 14. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000.0 (uL) Date Analyzed: 03/18/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~3.0~~ 1.0

GPC Cleanup: (Y/N) Y pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	770.	U
111-44-4	bis(2-Chloroethyl)ether	770.	U
95-57-8	2-Chlorophenol	770.	U
541-73-1	1,3-Dichlorobenzene	770.	U
106-46-7	1,4-Dichlorobenzene	770.	U
95-50-1	1,2-Dichlorobenzene	770.	U
95-48-7	2-Methylphenol	770.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	770.	U
106-44-5	4-Methylphenol	770.	U
621-64-7	N-Nitroso-Di-n-propylamine	770.	U
67-72-1	Hexachloroethane	770.	U
98-95-3	Nitrobenzene	770.	U
78-59-1	Isophorone	770.	U
88-75-5	2-Nitrophenol	770.	U
105-67-9	2,4-Dimethylphenol	770.	U
111-91-1	bis(2-Chloroethoxy)methane	770.	U
120-83-2	2,4-Dichlorophenol	770.	U
120-82-1	1,2,4-Trichlorobenzene	770.	U
91-20-3	Naphthalene	770.	U
106-47-8	4-Chloroaniline	770.	U
87-68-3	Hexachlorobutadiene	770.	U
59-50-7	4-Chloro-3-methylphenol	770.	U
91-57-6	2-Methylnaphthalene	770.	U
77-47-4	Hexachlorocyclopentadiene	770.	U
88-06-2	2,4,6-Trichlorophenol	770.	U
95-95-4	2,4,5-Trichlorophenol	1900.	U
91-58-7	2-Chloronaphthalene	770.	U
88-74-4	2-Nitroaniline	1900.	U
131-11-3	Dimethylphthalate	770.	U
208-96-8	Acenaphthylene	770.	U
606-20-2	2,6-Dinitrotoluene	770.	U
99-09-2	3-Nitroaniline	1900.	U
83-32-9	Acenaphthene	770.	U

RESUBMITTAL

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ02

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ02

Sample wt/vol: 30.1 (g/mL) G Lab File ID: J0192

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 14. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000.0 (uL) Date Analyzed: 03/18/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0

GPC Cleanup: (Y/N) Y pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1900.	U
100-02-7	4-Nitrophenol	1900.	U
132-64-9	Dibenzofuran	770.	U
121-14-2	2,4-Dinitrotoluene	770.	U
84-66-2	Diethylphthalate	180.	J
7005-72-3	4-Chlorophenyl-phenylether	770.	U
86-73-7	Fluorene	770.	U
100-01-6	4-Nitroaniline	1900.	U
534-52-1	4,6-Dinitro-2-methylphenol	1900.	U
86-30-6	N-Nitrosodiphenylamine	770.	U
101-55-3	4-Bromophenyl-phenylether	770.	U
118-74-1	Hexachlorobenzene	770.	U
87-86-5	Pentachlorophenol	1900.	U
85-01-8	Phenanthrene	770.	U
120-12-7	Anthracene	770.	U
86-74-8	CARBAZOLE	770.	U
84-74-2	Di-n-butylphthalate	~~770~~ 460.	BJ
206-44-0	Fluoranthene	770.	U
129-00-0	Pyrene	770.	U
85-68-7	Butylbenzylphthalate	770.	U
91-94-1	3,3'-Dichlorobenzidine	770.	U
56-55-3	Benzo(a)anthracene	770.	U
218-01-9	Chrysene	770.	U
117-81-7	bis(2-Ethylhexyl)phthalate	770.	U
117-84-0	Di-n-octylphthalate	770.	U
205-99-2	Benzo(b)fluoranthene	770.	U
207-08-9	Benzo(k)fluoranthene	770.	U
50-32-8	Benzo(a)pyrene	770.	U
193-39-5	Indeno(1,2,3-cd)pyrene	770.	U
53-70-3	Dibenz(a,h)anthracene	770.	U
191-24-2	Benzo(g,h,i)perylene	770.	U

(1) - Cannot be separated from diphenylamine

136-KE

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BMZ02

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ02

Sample wt/vol: 30.1 (g/mL) G Lab File ID: J0192

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 14. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/18/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6

Number TICs found: 4 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN	4.64	2000.	J
2.	- -	UNKNOWN	5.49	2000.	J
3.	7225-64-1	Heptadecane, 9-octyl- (8CI9C	31.18	2000.	J N
4.	- -	UNKNOWN HYDROCARBON	32.73	400.	J
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RESUBMITTAL

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ03

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ03

Sample wt/vol: 30.9 (g/mL) G Lab File ID: J0108

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 13. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000.0 (uL) SEA 05/19/93 Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0 SEA 05/19/93

GPC Cleanup: (Y/N) Y pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	750.	U
111-44-4	bis(2-Chloroethyl)ether	750.	U
95-57-8	2-Chlorophenol	1600.	J
541-73-1	1,3-Dichlorobenzene	750.	U
106-46-7	1,4-Dichlorobenzene	750.	U
95-50-1	1,2-Dichlorobenzene	750.	U
95-48-7	2-Methylphenol	750.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	750.	U
106-44-5	4-Methylphenol	750.	U
621-64-7	N-Nitroso-Di-n-propylamine	750.	U
67-72-1	Hexachloroethane	750.	U
98-95-3	Nitrobenzene	750.	U
78-59-1	Isophorone	750.	U
88-75-5	2-Nitrophenol	750.	U
105-67-9	2,4-Dimethylphenol	750.	U
111-91-1	bis(2-Chloroethoxy)methane	750.	U
120-83-2	2,4-Dichlorophenol	750.	U
120-82-1	1,2,4-Trichlorobenzene	750.	U
91-20-3	Naphthalene	750.	U
106-47-8	4-Chloroaniline	750.	U
87-68-3	Hexachlorobutadiene	750.	U
59-50-7	4-Chloro-3-methylphenol	750.	U
91-57-6	2-Methylnaphthalene	750.	U
77-47-4	Hexachlorocyclopentadiene	750.	U
88-06-2	2,4,6-Trichlorophenol	750.	U
95-95-4	2,4,5-Trichlorophenol	1900.	U
91-58-7	2-Chloronaphthalene	750.	U
88-74-4	2-Nitroaniline	1900.	U
131-11-3	Dimethylphthalate	170.	J
208-96-8	Acenaphthylene	750.	U
606-20-2	2,6-Dinitrotoluene	750.	U
99-09-2	3-Nitroaniline	1900.	U
83-32-9	Acenaphthene	750.	U

130 LBB

RESUBMITTAL

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ03

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ03

Sample wt/vol: 30.9 (g/mL) G Lab File ID: J0108

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 13. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0 (uL)~~ 1000.0 µL RSB 05/19/93 Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0 RSB 05/19/93

GPC Cleanup: (Y/N) Y pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1900.	U
100-02-7	4-Nitrophenol	1900.	U
132-64-9	Dibenzofuran	750.	U
121-14-2	2,4-Dinitrotoluene	750.	U
84-66-2	Diethylphthalate	750.	U
7005-72-3	4-Chlorophenyl-phenylether	750.	U
86-73-7	Fluorene	750.	U
100-01-6	4-Nitroaniline	1900.	U
534-52-1	4,6-Dinitro-2-methylphenol	1900.	U
86-30-6	N-Nitrosodiphenylamine	750.	U
101-55-3	4-Bromophenyl-phenylether	750.	U
118-74-1	Hexachlorobenzene	750.	U
87-86-5	Pentachlorophenol	1900.	U
85-01-8	Phenanthrene	750.	U
120-12-7	Anthracene	750.	U
86-74-8	CARBAZOLE	750.	U
84-74-2	Di-n-butylphthalate	1900.	~~B~~ U
206-44-0	Fluoranthene	750.	U
129-00-0	Pyrene	750.	U
85-68-7	Butylbenzylphthalate	750.	U
91-94-1	3,3'-Dichlorobenzidine	750.	U
56-55-3	Benzo(a)anthracene	750.	U
218-01-9	Chrysene	750.	U
117-81-7	bis(2-Ethylhexyl)phthalate	750.	U
117-84-0	Di-n-octylphthalate	750.	U
205-99-2	Benzo(b)fluoranthene	750.	U
207-08-9	Benzo(k)fluoranthene	750.	U
50-32-8	Benzo(a)pyrene	750.	U
193-39-5	Indeno(1,2,3-cd)pyrene	750.	U
53-70-3	Dibenz(a,h)anthracene	750.	U
191-24-2	Benzo(g,h,i)perylene	750.	U

(1) - Cannot be separated from diphenylamine

137 RC

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BMZ03

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ03

Sample wt/vol: 30.9 (g/mL) G Lab File ID: J0108

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 13. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6

Number TICs found: 14 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN HYDROCARBON	4.89	1000.	J
2.	- -	UNKNOWN	5.72	1000.	J
3.	- -	UNKNOWN HYDROCARBON	6.64	200.	BJ
4.	- -	UNKNOWN HYDROCARBON	7.08	500.	BJ
5.	629-20-9	1,3,5,7-Cyclooctatetraene (8	7.36	700.	J N
6.	- -	UNKNOWN HYDROCARBON	7.56	200.	BJ
7.	- -	UNKNOWN HYDROCARBON	7.92	2000.	BJ
8.	- -	UNKNOWN HYDROCARBON	8.20	700.	BJ
9.	- -	UNKNOWN HYDROCARBON	8.45	200.	BJ
10.	- -	UNKNOWN HYDROCARBON	8.56	800.	BJ
11.	- -	UNKNOWN HYDROCARBON	8.64	1000.	BJ
12.	- -	UNKNOWN	8.73	300.	BJ
13.	- -	UNKNOWN AROMATIC	9.00	100.	J
14.	- -	UNKNOWN	19.27	300.	BJ
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RESUBMITTAL

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ04

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ04

Sample wt/vol: 30.2 (g/mL) G Lab File ID: J0109

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: [illegible] decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0

GPC Cleanup: (Y/N) Y pH: 6.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	780.	U
111-44-4	bis(2-Chloroethyl)ether	780.	U
95-57-8	2-Chlorophenol	930.	U
541-73-1	1,3-Dichlorobenzene	780.	U
106-46-7	1,4-Dichlorobenzene	780.	U
95-50-1	1,2-Dichlorobenzene	780.	U
95-48-7	2-Methylphenol	780.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	780.	U
106-44-5	4-Methylphenol	780.	U
621-64-7	N-Nitroso-Di-n-propylamine	780.	U
67-72-1	Hexachloroethane	780.	U
98-95-3	Nitrobenzene	780.	U
78-59-1	Isophorone	780.	U
88-75-5	2-Nitrophenol	780.	U
105-67-9	2,4-Dimethylphenol	780.	U
111-91-1	bis(2-Chloroethoxy)methane	780.	U
120-83-2	2,4-Dichlorophenol	780.	U
120-82-1	1,2,4-Trichlorobenzene	780.	U
91-20-3	Naphthalene	780.	U
106-47-8	4-Chloroaniline	780.	U
87-68-3	Hexachlorobutadiene	780.	U
59-50-7	4-Chloro-3-methylphenol	780.	U
91-57-6	2-Methylnaphthalene	780.	U
77-47-4	Hexachlorocyclopentadiene	780.	U
88-06-2	2,4,6-Trichlorophenol	780.	U
95-95-4	2,4,5-Trichlorophenol	2000 1900.	U
91-58-7	2-Chloronaphthalene	820 780.	U
88-74-4	2-Nitroaniline	2000 1900.	U
131-11-3	Dimethylphthalate	820 780.	U
208-96-8	Acenaphthylene	780.	U
606-20-2	2,6-Dinitrotoluene	780.	U
99-09-2	3-Nitroaniline	2000 1900.	U
83-32-9	Acenaphthene	820 780.	U

1399RE

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ04

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ04

Sample wt/vol: 30.2 (g/mL) G Lab File ID: J0109

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 15. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0

GPC Cleanup: (Y/N) Y pH: 6.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1900.	U
100-02-7	4-Nitrophenol	1900.	U
132-64-9	Dibenzofuran	780.	U
121-14-2	2,4-Dinitrotoluene	780.	U
84-66-2	Diethylphthalate	780.	U
7005-72-3	4-Chlorophenyl-phenylether	780.	U
86-73-7	Fluorene	780.	U
100-01-6	4-Nitroaniline	1900.	U
534-52-1	4,6-Dinitro-2-methylphenol	1900.	U
86-30-6	N-Nitrosodiphenylamine	780.	U
101-55-3	4-Bromophenyl-phenylether	780.	U
118-74-1	Hexachlorobenzene	780.	U
87-86-5	Pentachlorophenol	1900.	U
85-01-8	Phenanthrene	780.	U
120-12-7	Anthracene	780.	U
86-74-8	CARBAZOLE	780.	U
84-74-2	Di-n-butylphthalate	1400.	B
206-44-0	Fluoranthene	780.	U
129-00-0	Pyrene	780.	U
85-68-7	Butylbenzylphthalate	780.	U
91-94-1	3,3'-Dichlorobenzidine	780.	U
56-55-3	Benzo(a)anthracene	780.	U
218-01-9	Chrysene	780.	U
117-81-7	bis(2-Ethylhexyl)phthalate	780.	U
117-84-0	Di-n-octylphthalate	780.	U
205-99-2	Benzo(b)fluoranthene	780.	U
207-08-9	Benzo(k)fluoranthene	780.	U
50-32-8	Benzo(a)pyrene	780.	U
193-39-5	Indeno(1,2,3-cd)pyrene	780.	U
53-70-3	Dibenz(a,h)anthracene	780.	U
191-24-2	Benzo(g,h,i)perylene	780.	U

(1) - Cannot be separated from diphenylamine

1400 RE

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BMZ04

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ04

Sample wt/vol: 30.2 (g/mL) G Lab File ID: J0109

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 15.19 decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: 500.0 (uL) 1000 Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.6

Number TICs found: 13 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN	4.94	2000.	J
2.	- -	UNKNOWN	5.79	1000.	J
3.	- -	UNKNOWN HYDROCARBON	6.72	200.	BJ
4.	- -	UNKNOWN HYDROCARBON	7.17	500.	BJ
5.	- -	UNKNOWN HYDROCARBON	7.48	200.	BJ
6.	- -	UNKNOWN HYDROCARBON	7.65	200.	BJ
7.	- -	UNKNOWN HYDROCARBON	8.01	2000.	BJ
8.	- -	UNKNOWN HYDROCARBON	8.29	700.	BJ
9.	- -	UNKNOWN HYDROCARBON	8.54	200.	BJ
10.	- -	UNKNOWN HYDROCARBON	8.66	700.	BJ
11.	- -	UNKNOWN HYDROCARBON	8.73	900.	BJ
12.	- -	UNKNOWN HYDROCARBON	8.83	200.	BJ
13.	- -	UNKNOWN	19.31	200.	BJ
14.					
15.					
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RESUBMITTAL

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ05

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ05

Sample wt/vol: 30.1 (g/mL) G Lab File ID: J0110

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 26. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0

GPC Cleanup: (Y/N) Y pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	900.	U
111-44-4	bis(2-Chloroethyl)ether	900.	U
95-57-8	2-Chlorophenol	2000.	U
541-73-1	1,3-Dichlorobenzene	900.	U
106-46-7	1,4-Dichlorobenzene	900.	U
95-50-1	1,2-Dichlorobenzene	900.	U
95-48-7	2-Methylphenol	900.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	900.	U
106-44-5	4-Methylphenol	900.	U
621-64-7	N-Nitroso-Di-n-propylamine	900.	U
67-72-1	Hexachloroethane	900.	U
98-95-3	Nitrobenzene	900.	U
78-59-1	Isophorone	900.	U
88-75-5	2-Nitrophenol	900.	U
105-67-9	2,4-Dimethylphenol	900.	U
111-91-1	bis(2-Chloroethoxy)methane	900.	U
120-83-2	2,4-Dichlorophenol	900.	U
120-82-1	1,2,4-Trichlorobenzene	900.	U
91-20-3	Naphthalene	900.	U
106-47-8	4-Chloroaniline	900.	U
87-68-3	Hexachlorobutadiene	900.	U
59-50-7	4-Chloro-3-methylphenol	900.	U
91-57-6	2-Methylnaphthalene	900.	U
77-47-4	Hexachlorocyclopentadiene	900.	U
88-06-2	2,4,6-Trichlorophenol	900.	U
95-95-4	2,4,5-Trichlorophenol	2200.	U
91-58-7	2-Chloronaphthalene	900.	U
88-74-4	2-Nitroaniline	2200.	U
131-11-3	Dimethylphthalate	900.	U
208-96-8	Acenaphthylene	900.	U
606-20-2	2,6-Dinitrotoluene	900.	U
99-09-2	3-Nitroaniline	2200.	U
83-32-9	Acenaphthene	900.	U

1C [redacted]

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ05

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ05

Sample wt/vol: 30.1 (g/mL) G Lab File ID: J0110

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 26. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0

GPC Cleanup: (Y/N) Y pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	2200.	U
100-02-7	4-Nitrophenol	2200.	U
132-64-9	Dibenzofuran	900.	U
121-14-2	2,4-Dinitrotoluene	900.	U
84-66-2	Diethylphthalate	900.	U
7005-72-3	4-Chlorophenyl-phenylether	900.	U
86-73-7	Fluorene	900.	U
100-01-6	4-Nitroaniline	2200.	U
534-52-1	4,6-Dinitro-2-methylphenol	2200.	U
86-30-6	N-Nitrosodiphenylamine	900.	U
101-55-3	4-Bromophenyl-phenylether	900.	U
118-74-1	Hexachlorobenzene	900.	U
87-86-5	Pentachlorophenol	2200.	U
85-01-8	Phenanthrene	900.	U
120-12-7	Anthracene	900.	U
86-74-8	CARBAZOLE	900.	U
84-74-2	Di-n-butylphthalate	3100.	~~B~~
206-44-0	Fluoranthene	900.	U
129-00-0	Pyrene	900.	U
85-68-7	Butylbenzylphthalate	900.	U
91-94-1	3,3'-Dichlorobenzidine	900.	U
56-55-3	Benzo(a)anthracene	900.	U
218-01-9	Chrysene	900.	U
117-81-7	bis(2-Ethylhexyl)phthalate	900.	U
117-84-0	Di-n-octylphthalate	900.	U
205-99-2	Benzo(b)fluoranthene	900.	U
207-08-9	Benzo(k)fluoranthene	900.	U
50-32-8	Benzo(a)pyrene	900.	U
193-39-5	Indeno(1,2,3-cd)pyrene	900.	U
53-70-3	Dibenz(a,h)anthracene	900.	U
191-24-2	Benzo(g,h,i)perylene	900.	U

(1) - Cannot be separated from diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BMZ05

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ05

Sample wt/vol: 30.1 (g/mL) G Lab File ID: J0110

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 26. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6

Number TICs found: 13

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN HYDROCARBON	4.89	1000.	J
2.	- -	UNKNOWN	5.72	1000.	J
3.	- -	UNKNOWN HYDROCARBON	6.65	200.	J
4.	- -	UNKNOWN HYDROCARBON	7.10	700.	J
5.	- -	UNKNOWN HYDROCARBON	7.40	200.	J
6.	- -	UNKNOWN HYDROCARBON	7.58	200.	J
7.	- -	UNKNOWN HYDROCARBON	7.94	3000.	J
8.	- -	UNKNOWN HYDROCARBON	8.22	900.	J
9.	- -	UNKNOWN HYDROCARBON	8.47	200.	J
10.	- -	UNKNOWN HYDROCARBON	8.59	1000.	J
11.	- -	UNKNOWN HYDROCARBON	8.67	1000.	J
12.	- -	UNKNOWN	8.76	300.	J
13.	- -	UNKNOWN	19.30	400.	J
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RESUBMIT-THL

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ06

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ06

Sample wt/vol: 30.2 (g/mL) G Lab File ID: J0111

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 52. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0

GPC Cleanup: (Y/N) Y pH: 5.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	1400.	U
111-44-4	bis(2-Chloroethyl)ether	1400.	U
95-57-8	2-Chlorophenol	3300.	U
541-73-1	1,3-Dichlorobenzene	1400.	U
106-46-7	1,4-Dichlorobenzene	1400.	U
95-50-1	1,2-Dichlorobenzene	1400.	U
95-48-7	2-Methylphenol	1400.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	1400.	U
106-44-5	4-Methylphenol	1400.	U
621-64-7	N-Nitroso-Di-n-propylamine	1400.	U
67-72-1	Hexachloroethane	1400.	U
98-95-3	Nitrobenzene	1400.	U
78-59-1	Isophorone	1400.	U
88-75-5	2-Nitrophenol	1400.	U
105-67-9	2,4-Dimethylphenol	1400.	U
111-91-1	bis(2-Chloroethoxy)methane	1400.	U
120-83-2	2,4-Dichlorophenol	1400.	U
120-82-1	1,2,4-Trichlorobenzene	1400.	U
91-20-3	Naphthalene	1400.	U
106-47-8	4-Chloroaniline	1400.	U
87-68-3	Hexachlorobutadiene	1400.	U
59-50-7	4-Chloro-3-methylphenol	1400.	U
91-57-6	2-Methylnaphthalene	1400.	U
77-47-4	Hexachlorocyclopentadiene	1400.	U
88-06-2	2,4,6-Trichlorophenol	1400.	U
95-95-4	2,4,5-Trichlorophenol	3500.	U
91-58-7	2-Chloronaphthalene	1400.	U
88-74-4	2-Nitroaniline	3500.	U
131-11-3	Dimethylphthalate	1400.	U
208-96-8	Acenaphthylene	1400.	U
606-20-2	2,6-Dinitrotoluene	1400 ~~670.~~	UJ
99-09-2	3-Nitroaniline	3500.	U
83-32-9	Acenaphthene	1400.	U

1&4 RE

REQUISMITTAL

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ06

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ06

Sample wt/vol: 30.2 (g/mL) G Lab File ID: J0111

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 52. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0

GPC Cleanup: (Y/N) Y pH: 5.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	3500.	U
100-02-7	4-Nitrophenol	3500.	U
132-64-9	Dibenzofuran	1400.	U
121-14-2	2,4-Dinitrotoluene	1400.	U
84-66-2	Diethylphthalate	1400.	U
7005-72-3	4-Chlorophenyl-phenylether	1400.	U
86-73-7	Fluorene	1400.	U
100-01-6	4-Nitroaniline	3500.	U
534-52-1	4,6-Dinitro-2-methylphenol	3500.	U
86-30-6	N-Nitrosodiphenylamine	1400.	U
101-55-3	4-Bromophenyl-phenylether	1400.	U
118-74-1	Hexachlorobenzene	1400.	U
87-86-5	Pentachlorophenol	3500.	U
85-01-8	Phenanthrene	1400.	U
120-12-7	Anthracene	1400.	U
86-74-8	CARBAZOLE	1400.	U
84-74-2	Di-n-butylphthalate	7400.	B U
206-44-0	Fluoranthene	1400.	U
129-00-0	Pyrene	1400.	U
85-68-7	Butylbenzylphthalate	1400.	U
91-94-1	3,3'-Dichlorobenzidine	1400.	U
56-55-3	Benzo(a)anthracene	1400.	U
218-01-9	Chrysene	1400.	U
117-81-7	bis(2-Ethylhexyl)phthalate	1400.	U
117-84-0	Di-n-octylphthalate	1400.	U
205-99-2	Benzo(b)fluoranthene	1400.	U
207-08-9	Benzo(k)fluoranthene	1400.	U
50-32-8	Benzo(a)pyrene	1400.	U
193-39-5	Indeno(1,2,3-cd)pyrene	1400.	U
53-70-3	Dibenz(a,h)anthracene	1400.	U
191-24-2	Benzo(g,h,i)perylene	1400.	U

(1) - Cannot be separated from diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BMZ06

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ06

Sample wt/vol: 30.2 (g/mL) G Lab File ID: J0111

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 52. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.8

Number TICs found: 20

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN	4.89	9000.	J
2.	- -	UNKNOWN	5.73	10000.	J
3.	- -	UNKNOWN HYDROCARBON	7.09	1000.	J
4.	- -	UNKNOWN	7.65	500.	J
5.	- -	UNKNOWN HYDROCARBON	7.93	5000.	J
6.	- -	UNKNOWN HYDROCARBON	8.21	2000.	J
7.	- -	UNKNOWN HYDROCARBON	8.46	400.	J
8.	- -	UNKNOWN HYDROCARBON	8.58	1000.	J
9.	- -	UNKNOWN HYDROCARBON	8.65	2000.	J
10.	- -	UNKNOWN	8.75	500.	J
11.	- -	UNKNOWN HYDROCARBON	13.95	600.	J
12.	- -	UNKNOWN HYDROCARBON	14.56	300.	J
13.	- -	UNKNOWN HYDROCARBON	15.69	800.	J
14.	- -	UNKNOWN HYDROCARBON	15.85	500.	J
15.	- -	UNKNOWN HYDROCARBON	16.28	300.	J
16.	- -	UNKNOWN HYDROCARBON	16.46	800.	J
17.	- -	UNKNOWN	17.04	400.	J
18.	- -	UNKNOWN HYDROCARBON	17.80	300.	J
19.	- -	UNKNOWN	18.58	4000.	J
20.	- -	UNKNOWN	19.30	600.	J
21.					
22.					
23.					
24.					
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29.					
30.					

RESUBMITTAL

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BMZ07

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ07

Sample wt/vol: 30.1 (g/mL) G Lab File ID: J0112

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 25. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0

GPC Cleanup: (Y/N) Y pH: 7.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	890.	U
111-44-4	bis(2-Chloroethyl)ether	890.	U
95-57-8	2-Chlorophenol	1700.	U
541-73-1	1,3-Dichlorobenzene	890.	U
106-46-7	1,4-Dichlorobenzene	890.	U
95-50-1	1,2-Dichlorobenzene	890.	U
95-48-7	2-Methylphenol	890.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	890.	U
106-44-5	4-Methylphenol	890.	U
621-64-7	N-Nitroso-Di-n-propylamine	890.	U
67-72-1	Hexachloroethane	890.	U
98-95-3	Nitrobenzene	890.	U
78-59-1	Isophorone	890.	U
88-75-5	2-Nitrophenol	890.	U
105-67-9	2,4-Dimethylphenol	890.	U
111-91-1	bis(2-Chloroethoxy)methane	890.	U
120-83-2	2,4-Dichlorophenol	890.	U
120-82-1	1,2,4-Trichlorobenzene	890.	U
91-20-3	Naphthalene	890.	U
106-47-8	4-Chloroaniline	890.	U
87-68-3	Hexachlorobutadiene	890.	U
59-50-7	4-Chloro-3-methylphenol	890.	U
91-57-6	2-Methylnaphthalene	890.	U
77-47-4	Hexachlorocyclopentadiene	890.	U
88-06-2	2,4,6-Trichlorophenol	890.	U
95-95-4	2,4,5-Trichlorophenol	2200.	U
91-58-7	2-Chloronaphthalene	890.	U
88-74-4	2-Nitroaniline	2200.	U
131-11-3	Dimethylphthalate	890.	U
208-96-8	Acenaphthylene	890.	U
606-20-2	2,6-Dinitrotoluene	890.	U
99-09-2	3-Nitroaniline	2200.	U
83-32-9	Acenaphthene	890.	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ07

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ07

Sample wt/vol: 30.1 (g/mL) G Lab File ID: J0112

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 25. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0

GPC Cleanup: (Y/N) Y pH: 7.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	2200.	U
100-02-7	4-Nitrophenol	2200.	U
132-64-9	Dibenzofuran	890.	U
121-14-2	2,4-Dinitrotoluene	890.	U
84-66-2	Diethylphthalate	890.	U
7005-72-3	4-Chlorophenyl-phenylether	890.	U
86-73-7	Fluorene	890.	U
100-01-6	4-Nitroaniline	2200.	U
534-52-1	4,6-Dinitro-2-methylphenol	2200.	U
86-30-6	N-Nitrosodiphenylamine	890.	U
101-55-3	4-Bromophenyl-phenylether	890.	U
118-74-1	Hexachlorobenzene	890.	U
87-86-5	Pentachlorophenol	2200.	U
85-01-8	Phenanthrene	890.	U
120-12-7	Anthracene	890.	U
86-74-8	CARBAZOLE	890.	U
84-74-2	Di-n-butylphthalate	4300.	~~B~~ U
206-44-0	Fluoranthene	890.	U J
129-00-0	Pyrene	890.	U
85-68-7	Butylbenzylphthalate	890.	U
91-94-1	3,3'-Dichlorobenzidine	890.	U
56-55-3	Benzo(a)anthracene	890.	U
218-01-9	Chrysene	890.	U
117-81-7	bis(2-Ethylhexyl)phthalate	7300.	J
117-84-0	Di-n-octylphthalate	410.	J
205-99-2	Benzo(b)fluoranthene	890.	U
207-08-9	Benzo(k)fluoranthene	890.	U
50-32-8	Benzo(a)pyrene	890.	U
193-39-5	Indeno(1,2,3-cd)pyrene	890.	U
53-70-3	Dibenz(a,h)anthracene	890.	U
191-24-2	Benzo(g,h,i)perylene	890.	U

(1) - Cannot be separated from diphenylamine

1F

EPA SAMPLE NO.

BMZ07

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ07

Sample wt/vol: 30.1 (g/mL) G Lab File ID: J0112

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 25. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3

Number TICs found: 21

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN	4.89	4000.	J
2.	- -	UNKNOWN	5.73	4000.	J
3.	- -	UNKNOWN	6.32	400.	J
4.	- -	UNKNOWN HYDROCARBON	7.10	700.	J
5.	- -	UNKNOWN HYDROCARBON	7.93	3000.	J
6.	- -	UNKNOWN HYDROCARBON	8.22	800.	J
7.	- -	UNKNOWN HYDROCARBON	8.58	800.	J
8.	- -	UNKNOWN HYDROCARBON	8.66	1000.	J
9.	- -	UNKNOWN	8.76	300.	J
10.	- -	UNKNOWN HYDROCARBON	14.56	300.	J
11.	- -	UNKNOWN HYDROCARBON	15.69	400.	J
12.	- -	UNKNOWN HYDROCARBON	17.36	200.	J
13.	- -	UNKNOWN HYDROCARBON	17.80	400.	J
14.	- -	UNKNOWN	18.59	1000.	J
15.	- -	UNKNOWN HYDROCARBON	18.74	200.	J
16.	- -	UNKNOWN	19.30	500.	J
17.	- -	UNKNOWN HYDROCARBON	19.75	1000.	J
18.	- -	UNKNOWN	20.36	300.	J
19.	1921-70-6	Pentadecane, 2,6,10,14-tetra	20.43	2000.	J N
20.	- -	UNKNOWN HYDROCARBON	20.99	500.	J
21.	- -	UNKNOWN HYDROCARBON	21.63	2000.	J
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

[redacted]

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BMZ08

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ08

Sample wt/vol: 30.9 (g/mL) G Lab File ID: J0113

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 20. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 10.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0

GPC Cleanup: (Y/N) Y pH: 7.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	810.	U
111-44-4	bis(2-Chloroethyl)ether	810.	U
95-57-8	2-Chlorophenol	2000.	U
541-73-1	1,3-Dichlorobenzene	810.	U
106-46-7	1,4-Dichlorobenzene	810.	U
95-50-1	1,2-Dichlorobenzene	810.	U
95-48-7	2-Methylphenol	810.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	810.	U
106-44-5	4-Methylphenol	810.	U
621-64-7	N-Nitroso-Di-n-propylamine	810.	U
67-72-1	Hexachloroethane	810.	U
98-95-3	Nitrobenzene	810.	U
78-59-1	Isophorone	810.	U
88-75-5	2-Nitrophenol	810.	U
105-67-9	2,4-Dimethylphenol	810.	U
111-91-1	bis(2-Chloroethoxy)methane	810.	U
120-83-2	2,4-Dichlorophenol	810.	U
120-82-1	1,2,4-Trichlorobenzene	810.	U
91-20-3	Naphthalene	810.	U
106-47-8	4-Chloroaniline	810.	U
87-68-3	Hexachlorobutadiene	810.	U
59-50-7	4-Chloro-3-methylphenol	810.	U
91-57-6	2-Methylnaphthalene	810.	U
77-47-4	Hexachlorocyclopentadiene	810.	U
88-06-2	2,4,6-Trichlorophenol	810.	U
95-95-4	2,4,5-Trichlorophenol	2000.	U
91-58-7	2-Chloronaphthalene	810.	U
88-74-4	2-Nitroaniline	2000.	U
131-11-3	Dimethylphthalate	810.	U
208-96-8	Acenaphthylene	810.	U
606-20-2	2,6-Dinitrotoluene	810.	U
99-09-2	3-Nitroaniline	2000.	U
83-32-9	Acenaphthene	810.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ08

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ08

Sample wt/vol: 30.9 (g/mL) G Lab File ID: J0113

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 20. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0

GPC Cleanup: (Y/N) Y pH: 7.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	2000.	U
100-02-7	4-Nitrophenol	2000.	U
132-64-9	Dibenzofuran	810.	U
121-14-2	2,4-Dinitrotoluene	810.	U
84-66-2	Diethylphthalate	810.	U
7005-72-3	4-Chlorophenyl-phenylether	810.	U
86-73-7	Fluorene	810.	U
100-01-6	4-Nitroaniline	2000.	U
534-52-1	4,6-Dinitro-2-methylphenol	2000.	U
86-30-6	N-Nitrosodiphenylamine	810.	U
101-55-3	4-Bromophenyl-phenylether	810.	U
118-74-1	Hexachlorobenzene	810.	U
87-86-5	Pentachlorophenol	2000.	U
85-01-8	Phenanthrene	590.	J
120-12-7	Anthracene	100.	J
86-74-8	CARBAZOLE	810.	U
84-74-2	Di-n-butylphthalate	4400.	B
206-44-0	Fluoranthene	800.	J
129-00-0	Pyrene	480.	J
85-68-7	Butylbenzylphthalate	810.	U
91-94-1	3,3'-Dichlorobenzidine	810.	U
56-55-3	Benzo(a)anthracene	280.	J
218-01-9	Chrysene	340.	J
117-81-7	bis(2-Ethylhexyl)phthalate	810.	U
117-84-0	Di-n-octylphthalate	810.	U
205-99-2	Benzo(b)fluoranthene	290.	J
207-08-9	Benzo(k)fluoranthene	240.	J
50-32-8	Benzo(a)pyrene	260.	J
193-39-5	Indeno(1,2,3-cd)pyrene	810.	U
53-70-3	Dibenz(a,h)anthracene	810.	U
191-24-2	Benzo(g,h,i)perylene	200.	J

(1) - Cannot be separated from diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.: BMZ08

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ08

Sample wt/vol: 30.9 (g/mL) G Lab File ID: J0113

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 20. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.2

Number TICs found: 20 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN	4.91	10000.	J
2.	- -	UNKNOWN	5.75	10000.	J
3.	- -	UNKNOWN	5.96	200.	J
4.	- -	UNKNOWN	6.32	300.	J
5.	- -	UNKNOWN HYDROCARBON	6.64	200.	J
6.	- -	UNKNOWN HYDROCARBON	7.09	600.	J
7.	- -	UNKNOWN HYDROCARBON	7.40	200.	J
8.	- -	UNKNOWN HYDROCARBON	7.58	300.	J
9.	- -	UNKNOWN HYDROCARBON	7.88	900.	J
10.	- -	UNKNOWN HYDROCARBON	7.94	2000.	J
11.	- -	UNKNOWN HYDROCARBON	8.22	900.	J
12.	- -	UNKNOWN HYDROCARBON	8.48	200.	J
13.	- -	UNKNOWN HYDROCARBON	8.59	800.	J
14.	- -	UNKNOWN HYDROCARBON	8.67	1000.	J
15.	- -	UNKNOWN	8.76	300.	J
16.	- -	UNKNOWN	8.97	200.	J
17.	- -	UNKNOWN	9.12	300.	J
18.	- -	UNKNOWN	9.59	200.	J
19.	- -	UNKNOWN HYDROCARBON	14.25	200.	J
20.	- -	UNKNOWN	19.28	500.	J
21.					
22.					
23.					
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ09

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ09

Sample wt/vol: 30.1 (g/mL) G Lab File ID: J0114

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 45. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0

GPC Cleanup: (Y/N) Y pH: 6.7

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	2900.	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	1200.	U
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	3000.	U
91-58-7	2-Chloronaphthalene	1200.	U
88-74-4	2-Nitroaniline	3000.	U
131-11-3	Dimethylphthalate	1200.	U
208-96-8	Acenaphthylene	1200.	U
606-20-2	2,6-Dinitrotoluene	1200.	U
99-09-2	3-Nitroaniline	3000.	U
83-32-9	Acenaphthene	1200.	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ09

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ09

Sample wt/vol: 30.1 (g/mL) G Lab File ID: J0114

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 45. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: ~~500.0~~ 1000.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: ~~2.0~~ 1.0

GPC Cleanup: (Y/N) Y pH: 6.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	3000.	U
100-02-7	4-Nitrophenol	3000.	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
100-01-6	4-Nitroaniline	3000.	U
534-52-1	4,6-Dinitro-2-methylphenol	3000.	U
86-30-6	N-Nitrosodiphenylamine	1200.	U
101-55-3	4-Bromophenyl-phenylether	1200.	U
118-74-1	Hexachlorobenzene	1200.	U
87-86-5	Pentachlorophenol	3000.	U
85-01-8	Phenanthrene	240.	J
120-12-7	Anthracene	30 ~~1200.~~	~~U~~ J
86-74-8	CARBAZOLE	1200.	U
84-74-2	Di-n-butylphthalate	6700.	~~B~~ U
206-44-0	Fluoranthene	540.	J
129-00-0	Pyrene	430.	J
85-68-7	Butylbenzylphthalate	1200.	U
91-94-1	3,3'-Dichlorobenzidine	1200.	U
56-55-3	Benzo(a)anthracene	230 ~~1200.~~	~~U~~
218-01-9	Chrysene	260.	J
117-81-7	bis(2-Ethylhexyl)phthalate	1560 ~~430.~~	~~J~~ U
117-84-0	Di-n-octylphthalate	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

(1) - Cannot be separated from diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BMZ09

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: BMZ09

Sample wt/vol: 30.1 (g/mL) G Lab File ID: J0114

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: 45. decanted: (Y/N) N Date Extracted: 02/01/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 03/08/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.7

Number TICs found: 19 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN	4.90	10000.	J
2.	- -	UNKNOWN	5.45	300.	J
3.	- -	UNKNOWN	5.76	20000.	J
4.	- -	UNKNOWN HYDROCARBON	6.65	400.	J
5.	- -	UNKNOWN HYDROCARBON	7.10	1000.	J
6.	- -	UNKNOWN HYDROCARBON	7.42	200.	J
7.	- -	UNKNOWN HYDROCARBON	7.59	500.	J
8.	- -	UNKNOWN	7.88	1000.	J
9.	- -	UNKNOWN HYDROCARBON	7.95	3000.	J
10.	- -	UNKNOWN HYDROCARBON	8.24	1000.	J
11.	- -	UNKNOWN HYDROCARBON	8.49	300.	J
12.	- -	UNKNOWN HYDROCARBON	8.60	1000.	J
13.	- -	UNKNOWN HYDROCARBON	8.68	2000.	J
14.	- -	UNKNOWN	8.77	400.	J
15.	- -	UNKNOWN	13.96	300.	J
16.	- -	UNKNOWN HYDROCARBON	14.26	200.	J
17.	- -	UNKNOWN	19.30	800.	J
18.	- -	UNKNOWN HYDROCARBON	31.35	2000.	J
19.	- -	UNKNOWN HYDROCARBON	32.96	2000.	J
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ10

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ10

Sample wt/vol: 980.0 (g/mL) ML Lab File ID: J0097

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 02/01/93

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 03/05/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

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

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U
95-57-8	2-Chlorophenol	41.	B
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	26.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	26.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U
99-09-2	3-Nitroaniline	26.	U
83-32-9	Acenaphthene	10.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ10

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ10

Sample wt/vol: 980.0 (g/mL) ML Lab File ID: J0097

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 02/01/93

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 03/05/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	26.	U
100-02-7	4-Nitrophenol	26.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	26.	U
534-52-1	4,6-Dinitro-2-methylphenol	26.	U
86-30-6	N-Nitrosodiphenylamine	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	26.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
86-74-8	CARBAZOLE	10.	U
84-74-2	Di-n-butylphthalate	14.	B
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	10.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10 ~~9.~~	~~BJ~~ J
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenz(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BMZ10

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ10

Sample wt/vol: 980.0 (g/mL) ML Lab File ID: J0097

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 02/01/93

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 03/05/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.5

Number TICs found: 20

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN HYDROCARBON	4.90	100.	J
2.	- -	UNKNOWN	5.44	5.	[illegible]
3.	- -	UNKNOWN	5.73	100.	J
4.	- -	UNKNOWN HYDROCARBON	6.65	10.	[illegible]
5.	- -	UNKNOWN HYDROCARBON	7.10	40.	[illegible]
6.	- -	UNKNOWN	7.39	10.	[illegible]
7.	- -	UNKNOWN HYDROCARBON	7.58	10.	[illegible]
8.	- -	UNKNOWN HYDROCARBON	7.93	100.	[illegible]
9.	- -	UNKNOWN HYDROCARBON	8.22	60.	[illegible]
10.	- -	UNKNOWN	8.48	100.	[illegible]
11.	- -	UNKNOWN HYDROCARBON	8.57	50.	BJ
12.	- -	UNKNOWN HYDROCARBON	8.65	70.	BJ
13.	- -	UNKNOWN HYDROCARBON	8.75	20.	BJ
14.	- -	UNKNOWN	11.76	6.	BJ
15.	- -	UNKNOWN	13.91	9.	J
16.	- -	UNKNOWN HYDROCARBON	14.23	9.	J
17.	- -	UNKNOWN HYDROCARBON	14.37	5.	J
18.	74381-40-1	Propanoic acid, 2-methyl-, 1	19.28	10.	BJ N
19.	57-10-3	Hexadecanoic acid (9CI)	23.27	6.	BJ N
20.	2315-61-9	Ethanol, 2-[2-[4-(1,1,3,3-te	25.54	7.	BJ N
21.					
22.					
23.					
24.					
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27.					
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29.					
30.					

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ11

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ11

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: J0098

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 02/01/93

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 03/05/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	11.	U
111-44-4	bis(2-Chloroethyl)ether	11.	U
95-57-8	2-Chlorophenol	37.	U
541-73-1	1,3-Dichlorobenzene	11.	U
106-46-7	1,4-Dichlorobenzene	11.	U
95-50-1	1,2-Dichlorobenzene	11.	U
95-48-7	2-Methylphenol	11.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	11.	U
106-44-5	4-Methylphenol	11.	U
621-64-7	N-Nitroso-Di-n-propylamine	11.	U
67-72-1	Hexachloroethane	11.	U
98-95-3	Nitrobenzene	11.	U
78-59-1	Isophorone	11.	U
88-75-5	2-Nitrophenol	11.	U
105-67-9	2,4-Dimethylphenol	11.	U
111-91-1	bis(2-Chloroethoxy)methane	11.	U
120-83-2	2,4-Dichlorophenol	11.	U
120-82-1	1,2,4-Trichlorobenzene	11.	U
91-20-3	Naphthalene	11.	U
106-47-8	4-Chloroaniline	11.	U
87-68-3	Hexachlorobutadiene	11.	U
59-50-7	4-Chloro-3-methylphenol	11.	U
91-57-6	2-Methylnaphthalene	11.	U
77-47-4	Hexachlorocyclopentadiene	11.	U
88-06-2	2,4,6-Trichlorophenol	11.	U
95-95-4	2,4,5-Trichlorophenol	26.	U
91-58-7	2-Chloronaphthalene	11.	U
88-74-4	2-Nitroaniline	26.	U
131-11-3	Dimethylphthalate	11.	U
208-96-8	Acenaphthylene	11.	U
606-20-2	2,6-Dinitrotoluene	11.	U
99-09-2	3-Nitroaniline	26.	U
83-32-9	Acenaphthene	11.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ11

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ11

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: J0098

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 02/01/93

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 03/05/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	26.	U
100-02-7	4-Nitrophenol	26.	U
132-64-9	Dibenzofuran	11.	U
121-14-2	2,4-Dinitrotoluene	11.	U
84-66-2	Diethylphthalate	11.	U
7005-72-3	4-Chlorophenyl-phenylether	11.	U
86-73-7	Fluorene	11.	U
100-01-6	4-Nitroaniline	26.	U
534-52-1	4,6-Dinitro-2-methylphenol	26.	U
86-30-6	N-Nitrosodiphenylamine	11.	U
101-55-3	4-Bromophenyl-phenylether	11.	U
118-74-1	Hexachlorobenzene	11.	U
87-86-5	Pentachlorophenol	26.	U
85-01-8	Phenanthrene	11.	U
120-12-7	Anthracene	11.	U
86-74-8	CARBAZOLE	11.	U
84-74-2	Di-n-butylphthalate	~~11. 5.~~	~~BJ~~
206-44-0	Fluoranthene	11.	U
129-00-0	Pyrene	11.	U
85-68-7	Butylbenzylphthalate	11.	U
91-94-1	3,3'-Dichlorobenzidine	11.	U
56-55-3	Benzo(a)anthracene	11.	U
218-01-9	Chrysene	11.	U
117-81-7	bis(2-Ethylhexyl)phthalate	11.	~~B~~ U
117-84-0	Di-n-octylphthalate	11.	U
205-99-2	Benzo(b)fluoranthene	11.	U
207-08-9	Benzo(k)fluoranthene	11.	U
50-32-8	Benzo(a)pyrene	11.	U
193-39-5	Indeno(1,2,3-cd)pyrene	11.	U
53-70-3	Dibenz(a,h)anthracene	11.	U
191-24-2	Benzo(g,h,i)perylene	11.	U

(1) - Cannot be separated from diphenylamine

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BMZ11

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ11

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: J0098

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 02/01/93

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 03/05/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.6

Number TICs found: 19

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN	4.92	70.	J
2.	- -	UNKNOWN	5.47	4.	[redacted]
3.	- -	UNKNOWN	5.76	70.	[redacted]
4.	- -	UNKNOWN HYDROCARBON	6.67	10.	[redacted]
5.	- -	UNKNOWN HYDROCARBON	7.12	40.	[redacted]
6.	- -	UNKNOWN	7.42	8.	[redacted]
7.	- -	UNKNOWN HYDROCARBON	7.60	10.	[redacted]
8.	- -	UNKNOWN HYDROCARBON	7.95	100.	[redacted]
9.	- -	UNKNOWN HYDROCARBON	8.23	50.	[redacted]
10.	- -	UNKNOWN	8.48	80.	[redacted]
11.	- -	UNKNOWN HYDROCARBON	8.58	40.	[redacted]
12.	- -	UNKNOWN HYDROCARBON	8.66	60.	[redacted]
13.	- -	UNKNOWN HYDROCARBON	8.75	10.	[redacted]
14.	- -	UNKNOWN	13.88	10.	J
15.	- -	UNKNOWN	14.20	9.	J
16.	- -	UNKNOWN HYDROCARBON	14.34	5.	J
17.	74381-40-1	Propanoic acid, 2-methyl-, 1	19.23	20.	[redacted]
18.	- -	UNKNOWN	23.21	5.	J
19.	2315-61-9	Ethanol, 2-[2-[4-(1,1,3,3-te	25.47	8.	[redacted]
20.					
21.					
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ12

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ12

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: J0099

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 02/01/93

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 03/05/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	11.	U
111-44-4	bis(2-Chloroethyl)ether	11.	U
95-57-8	2-Chlorophenol	33.	B
541-73-1	1,3-Dichlorobenzene	11.	U
106-46-7	1,4-Dichlorobenzene	11.	U
95-50-1	1,2-Dichlorobenzene	11.	U
95-48-7	2-Methylphenol	11.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	11.	U
106-44-5	4-Methylphenol	11.	U
621-64-7	N-Nitroso-Di-n-propylamine	11.	U
67-72-1	Hexachloroethane	11.	U
98-95-3	Nitrobenzene	11.	U
78-59-1	Isophorone	11.	U
88-75-5	2-Nitrophenol	11.	U
105-67-9	2,4-Dimethylphenol	11.	U
111-91-1	bis(2-Chloroethoxy)methane	11.	U
120-83-2	2,4-Dichlorophenol	11.	U
120-82-1	1,2,4-Trichlorobenzene	11.	U
91-20-3	Naphthalene	11.	U
106-47-8	4-Chloroaniline	11.	U
87-68-3	Hexachlorobutadiene	11.	U
59-50-7	4-Chloro-3-methylphenol	11.	U
91-57-6	2-Methylnaphthalene	11.	U
77-47-4	Hexachlorocyclopentadiene	11.	U
88-06-2	2,4,6-Trichlorophenol	11.	U
95-95-4	2,4,5-Trichlorophenol	26.	U
91-58-7	2-Chloronaphthalene	11.	U
88-74-4	2-Nitroaniline	26.	U
131-11-3	Dimethylphthalate	11.	U
208-96-8	Acenaphthylene	11.	U
606-20-2	2,6-Dinitrotoluene	11.	U
99-09-2	3-Nitroaniline	26.	U
83-32-9	Acenaphthene	11.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ12

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ12

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: J0099

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 02/01/93

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 03/05/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	26.	U
100-02-7	4-Nitrophenol	26.	U
132-64-9	Dibenzofuran	11.	U
121-14-2	2,4-Dinitrotoluene	11.	U
84-66-2	Diethylphthalate	11.	U
7005-72-3	4-Chlorophenyl-phenylether	11.	U
86-73-7	Fluorene	11.	U
100-01-6	4-Nitroaniline	26.	U
534-52-1	4,6-Dinitro-2-methylphenol	26.	U
86-30-6	N-Nitrosodiphenylamine	11.	U
101-55-3	4-Bromophenyl-phenylether	11.	U
118-74-1	Hexachlorobenzene	11.	U
87-86-5	Pentachlorophenol	26.	U
85-01-8	Phenanthrene	11.	U
120-12-7	Anthracene	11.	U
86-74-8	CARBAZOLE	11.	U
84-74-2	Di-n-butylphthalate	11. 6.	~~B~~
206-44-0	Fluoranthene	11.	U
129-00-0	Pyrene	11.	U
85-68-7	Butylbenzylphthalate	11.	U
91-94-1	3,3'-Dichlorobenzidine	11.	U
56-55-3	Benzo(a)anthracene	11.	U
218-01-9	Chrysene	11.	U
117-81-7	bis(2-Ethylhexyl)phthalate	11.	~~B~~
117-84-0	Di-n-octylphthalate	11.	U
205-99-2	Benzo(b)fluoranthene	11.	U
207-08-9	Benzo(k)fluoranthene	11.	U
50-32-8	Benzo(a)pyrene	11.	U
193-39-5	Indeno(1,2,3-cd)pyrene	11.	U
53-70-3	Dibenz(a,h)anthracene	11.	U
191-24-2	Benzo(g,h,i)perylene	11.	U

(1) - Cannot be separated from diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BMZ12

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ12

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: J0099

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 02/01/93

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 03/05/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.6

Number TICs found: 19 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN	4.84	70.	J
2.	- -	UNKNOWN HYDROCARBON	4.96	4.	J
3.	- -	UNKNOWN	5.39	4.	BJ
4.	- -	UNKNOWN	5.68	80.	J
5.	- -	UNKNOWN HYDROCARBON	6.60	8.	BJ
6.	- -	UNKNOWN HYDROCARBON	7.06	30.	BJ
7.	- -	UNKNOWN	7.36	7.	BJ
8.	- -	UNKNOWN HYDROCARBON	7.54	9.	BJ
9.	- -	UNKNOWN HYDROCARBON	7.90	100.	BJ
10.	- -	UNKNOWN HYDROCARBON	8.19	40.	BJ
11.	- -	UNKNOWN	8.45	100.	BJ
12.	- -	UNKNOWN HYDROCARBON	8.54	40.	BJ
13.	- -	UNKNOWN HYDROCARBON	8.63	50.	BJ
14.	- -	UNKNOWN HYDROCARBON	8.71	10.	BJ
15.	- -	UNKNOWN	11.73	10.	BJ
16.	- -	UNKNOWN HYDROCARBON	14.20	7.	J
17.	74381-40-1	Propanoic acid, 2-methyl-, 1	19.26	20.	BJ-N R
18.	- -	UNKNOWN HYDROCARBON	23.24	7.	J
19.	2315-61-9	Ethanol, 2-[2-[4-(1,1,3,3-te	25.52	4.	BJ-N R
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ13

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ13

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: J0100

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 02/01/93

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 03/05/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	11.	U
111-44-4	bis(2-Chloroethyl)ether	11.	U
95-57-8	2-Chlorophenol	31.	B
541-73-1	1,3-Dichlorobenzene	11.	U
106-46-7	1,4-Dichlorobenzene	11.	U
95-50-1	1,2-Dichlorobenzene	11.	U
95-48-7	2-Methylphenol	11.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	11.	U
106-44-5	4-Methylphenol	11.	U
621-64-7	N-Nitroso-Di-n-propylamine	11.	U
67-72-1	Hexachloroethane	11.	U
98-95-3	Nitrobenzene	11.	U
78-59-1	Isophorone	11.	U
88-75-5	2-Nitrophenol	11.	U
105-67-9	2,4-Dimethylphenol	11.	U
111-91-1	bis(2-Chloroethoxy)methane	11.	U
120-83-2	2,4-Dichlorophenol	11.	U
120-82-1	1,2,4-Trichlorobenzene	11.	U
91-20-3	Naphthalene	11.	U
106-47-8	4-Chloroaniline	11.	U
87-68-3	Hexachlorobutadiene	11.	U
59-50-7	4-Chloro-3-methylphenol	11.	U
91-57-6	2-Methylnaphthalene	11.	U
77-47-4	Hexachlorocyclopentadiene	11.	U
88-06-2	2,4,6-Trichlorophenol	11.	U
95-95-4	2,4,5-Trichlorophenol	26.	U
91-58-7	2-Chloronaphthalene	11.	U
88-74-4	2-Nitroaniline	26.	U
131-11-3	Dimethylphthalate	11.	U
208-96-8	Acenaphthylene	11.	U
606-20-2	2,6-Dinitrotoluene	11.	U
99-09-2	3-Nitroaniline	26.	U
83-32-9	Acenaphthene	11.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ13

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ13

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: J0100

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 02/01/93

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 03/05/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	26.	U
100-02-7	4-Nitrophenol	26.	U
132-64-9	Dibenzofuran	11.	U
121-14-2	2,4-Dinitrotoluene	11.	U
84-66-2	Diethylphthalate	11.	U
7005-72-3	4-Chlorophenyl-phenylether	11.	U
86-73-7	Fluorene	11.	U
100-01-6	4-Nitroaniline	26.	U
534-52-1	4,6-Dinitro-2-methylphenol	26.	U
86-30-6	N-Nitrosodiphenylamine	11.	U
101-55-3	4-Bromophenyl-phenylether	11.	U
118-74-1	Hexachlorobenzene	11.	U
87-86-5	Pentachlorophenol	26.	U
85-01-8	Phenanthrene	11.	U
120-12-7	Anthracene	11.	U
86-74-8	CARBAZOLE	11.	U
84-74-2	Di-n-butylphthalate	34.	B
206-44-0	Fluoranthene	11.	U
129-00-0	Pyrene	11.	U
85-68-7	Butylbenzylphthalate	11.	U
91-94-1	3,3'-Dichlorobenzidine	11.	U
56-55-3	Benzo(a)anthracene	11.	U
218-01-9	Chrysene	11.	U
117-81-7	bis(2-Ethylhexyl)phthalate	9.	BJ
117-84-0	Di-n-octylphthalate	11.	U
205-99-2	Benzo(b)fluoranthene	11.	U
207-08-9	Benzo(k)fluoranthene	11.	U
50-32-8	Benzo(a)pyrene	11.	U
193-39-5	Indeno(1,2,3-cd)pyrene	11.	U
53-70-3	Dibenz(a,h)anthracene	11.	U
191-24-2	Benzo(g,h,i)perylene	11.	U

(1) - Cannot be separated from diphenylamine

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BMZ13

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ13

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: J0100

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 02/01/93

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 03/05/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

Number TICs found: 16 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN	5.42	4.	BJ
2.	- -	UNKNOWN HYDROCARBON	6.66	8.	BJ
3.	- -	UNKNOWN HYDROCARBON	7.10	30.	BJ
4.	- -	UNKNOWN	7.41	8.	BJ
5.	- -	UNKNOWN HYDROCARBON	7.59	8.	BJ
6.	- -	UNKNOWN HYDROCARBON	7.94	100.	BJ
7.	- -	UNKNOWN HYDROCARBON	8.22	50.	BJ
8.	- -	UNKNOWN	8.49	70.	BJ
9.	- -	UNKNOWN HYDROCARBON	8.59	50.	BJ
10.	- -	UNKNOWN HYDROCARBON	8.66	60.	BJ
11.	- -	UNKNOWN HYDROCARBON	8.76	10.	BJ
12.	- -	UNKNOWN	11.78	10.	BJ
13.	- -	UNKNOWN	13.96	7.	J
14.	74381-40-1	Propanoic acid, 2-methyl-, 1	19.30	5.	BJ N
15.	- -	UNKNOWN HYDROCARBON	21.58	70.	J
16.	- -	UNKNOWN	24.61	20.	J
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ14

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ14

Sample wt/vol: 960.0 (g/mL) ML Lab File ID: J0101

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: decanted: (Y/N) Date Extracted: 02/01/93

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 03/05/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U
95-57-8	2-Chlorophenol	40.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	26.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	26.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U
99-09-2	3-Nitroaniline	26.	U
83-32-9	Acenaphthene	10.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ14

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ14

Sample wt/vol: 960.0 (g/mL) ML Lab File ID: J0101

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 02/01/93

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 03/05/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	26.	U
100-02-7	4-Nitrophenol	26.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	26.	U
534-52-1	4,6-Dinitro-2-methylphenol	26.	U
86-30-6	N-Nitrosodiphenylamine	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	26.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
86-74-8	CARBAZOLE	10.	U
84-74-2	Di-n-butylphthalate	29.	B
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	10.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	12.	B
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenz(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BMZ14

Lab Name: McCoy and McCoy Labs, Inc Contract: 68D10081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: BMZ14

Sample wt/vol: 960.0 (g/mL) ML Lab File ID: J0101

Level: (low/med) LOW Date Received: 01/29/93

% Moisture: _____ decanted: (Y/N)____ Date Extracted: 02/01/93

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 03/05/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.2

Number TICs found: 13 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN HYDROCARBON	5.24	4.	J
2.	- -	UNKNOWN	5.42	4.	BJ
3.	- -	UNKNOWN HYDROCARBON	6.64	10.	BJ
4.	- -	UNKNOWN HYDROCARBON	7.09	40.	BJ
5.	- -	UNKNOWN	7.40	10.	BJ
6.	- -	UNKNOWN HYDROCARBON	7.57	10.	BJ
7.	- -	UNKNOWN HYDROCARBON	7.93	200.	BJ
8.	- -	UNKNOWN HYDROCARBON	8.22	60.	BJ
9.	- -	UNKNOWN	8.48	70.	BJ
10.	- -	UNKNOWN HYDROCARBON	8.58	60.	BJ
11.	- -	UNKNOWN HYDROCARBON	8.66	70.	BJ
12.	- -	UNKNOWN HYDROCARBON	8.75	20.	BJ
13.	74381-40-1	Propanoic acid, 2-methyl-, 1	19.27	10.	BJ N
14.					
15.					
16.					
17.					
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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ01

b Name: McCoy and McCoy Labs, Inc Contract: 68-D1-0081

b Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

atrix: (soil/water) SOIL Lab Sample ID: 931709-1

mple wt/vol: 5.120 (g/mL) G Lab File ID: 02823

Moisture: 7 decanted: (Y/N) N Date Received: 01/29/93

t action: (SepF/Cont/Sonc) SONC Date Extracted: [redacted]

ncentrated Extract Volume: 5000.0 (uL) Date Analyzed: 02/23/93

jection Volume: 2.0 (uL) Dilution Factor: 1.0

C Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

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	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	21.	U
72-55-9	4,4'-DDE	21.	U
72-20-8	Endrin	21.	U
33213-65-9	Endosulfan II	21.	U
72-54-8	4,4'-DDD	21.	U
1031-07-8	Endosulfan Sulfate	21.	U
50-29-3	4,4'-DDT	21.	U
72-43-5	Methoxychlor	100.	U
53494-70-5	Endrin ketone	21.	U
7421-93-4	Endrin aldehyde	21.	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	210.	U
11104-28-2	Aroclor-1221	420.	U
11141-16-5	Aroclor-1232	210.	U
53469-21-9	Aroclor-1242	210.	U
12672-29-6	Aroclor-1248	210.	U
11097-69-1	Aroclor-1254	210.	U
11096-82-5	Aroclor-1260	210.	U

FORM I PEST 3/90

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BMZ02

ame: McCoy and McCoy Labs, Inc Contract: 68-D1-0081

Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

trix: (soil/water) SOIL Lab Sample ID: 931709-4

mple wt/vol: 30.6 (g/mL) G Lab File ID: 02824

Moisture: 14 decanted: (Y/N) N Date Received: 01/29/93

traction: (SepF/Cont/Sonc) SONC Date Extracted: 02/09/93

ncentrated Extract Volume: 5000.0 (uL) Date Analyzed: 02/23/93

jection Volume: 2.0 (uL) Dilution Factor: 1.0

C Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

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	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	3.8	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	19.	U
53494-70-5	Endrin ketone	3.8	U
7421-93-4	Endrin aldehyde	3.8	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	38.	U
11104-28-2	Aroclor-1221	76.	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.

BMZ03

b Name: McCoy and McCoy Labs, Inc Contract: 68-01-0081

b Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

t ix: (soil/water) SOIL Lab Sample ID: 931709-5

mple wt/vol: 31.5 (g/mL) G Lab File ID: 02825

Moisture: 13. decanted: (Y/N) N Date Received: 01/29/93

t action: (SepF/Cont/Sonc) SONC Date Extracted: 02/09/93

ncentrated Extract Volume: 5000.0 (uL) Date Analyzed: 02/23/93

j ction Volume: 2.0 (uL) Dilution Factor: 1.0

C C'eanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	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	18.	U
53494-70-5	Endrin ketone	3.7	U
7421-93-4	Endrin aldehyde	3.7	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180.	U
12674-11-2	Aroclor-1016	37.	U
11104-28-2	Aroclor-1221	73.	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.

BMZ04

b Name: McCoy and McCoy Labs, Inc Contract: 68-D1-0081

b Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

trix: (soil/water) SOIL Lab Sample ID: 931709-6

mple wt/vol: 30.2 (g/mL) G Lab File ID: 02826

Moisture: 19.3% decanted: (Y/N) N Date Received: 01/29/93

traction: (SepF/Cont/Sonc) SONC Date Extracted: 02/09/93

ncentrated Extract Volume: 5000.0 (uL) Date Analyzed: 02/23/93

jection Volume: 2.0 (uL) Dilution Factor: 1.0

C Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND	Q
319-84-6	alpha-BHC	U
319-85-7	beta-BHC	U
319-86-8	delta-BHC	U
58-89-9	gamma-BHC	U
76-44-8	Heptachlor	U
309-00-2	Aldrin	U
1024-57-3	Heptachlor epoxide	U
959-98-8	Endosulfan I	U
60-57-1	Dieldrin	U
72-55-9	4,4'-DDE	U
72-20-8	Endrin	U
33213-65-9	Endosulfan II	U
72-54-8	4,4'-DDD	U
1031-07-8	Endosulfan Sulfate	U
50-29-3	4,4'-DDT	U
72-43-5	Methoxychlor	U
53494-70-5	Endrin ketone	U
7421-93-4	Endrin aldehyde	U
5103-71-9	alpha-Chlordane	U
5103-74-2	gamma-Chlordane	U
8001-35-2	Toxaphene	U
12674-11-2	Aroclor-1016	U
11104-28-2	Aroclor-1221	U
11141-16-5	Aroclor-1232	U
53469-21-9	Aroclor-1242	U
12672-29-6	Aroclor-1248	U
11097-69-1	Aroclor-1254	U
11096-82-5	Aroclor-1260	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ05

Lab Name: McCoy and McCoy Labs, Inc Contract: 68-D1-0001

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: 931709-7

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 02827

Moisture: 26 decanted: (Y/N) N Date Received: 01/29/93

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 02/09/93

Concentrated Extract Volume: 5000.0 (uL) Date Analyzed: 02/23/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC	2.2	U
76-44-8	Heptachlor	2.2	U
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.5	U
72-55-9	4,4'-DDE	4.5	U
72-20-8	Endrin	4.5	U
33213-65-9	Endosulfan II	4.5	U
72-54-8	4,4'-DDD	4.5	U
1031-07-8	Endosulfan Sulfate	4.5	U
50-29-3	4,4'-DDT	4.5	U
72-43-5	Methoxychlor	22.	U
53494-70-5	Endrin ketone	4.5	U
7421-93-4	Endrin aldehyde	4.5	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220.	U
12674-11-2	Aroclor-1016	45	U
11104-28-2	Aroclor-1221	90.	U
11141-16-5	Aroclor-1232	45.	U
53469-21-9	Aroclor-1242	45.	U
12672-29-6	Aroclor-1248	45.	U
11097-69-1	Aroclor-1254	45.	U
11096-82-5	Aroclor-1260	45.	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ06

Lab Name: McCoy & McCoy Contract: 68D10081

Lab Code: McCoy Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: 931709-8

Sample wt/vol: 21.6 (g/ml) G Lab File ID: 2828

% Moisture: 52 decanted: (Y/N) N Date Received: 1/29/93

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 2/9/93

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 2/23/93

Injection Volume: 2.0 (uL) Dilution Factor: 1

GPC Cleanup: (Y/N) Y pH: 5.8 Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND	UG/KG	Q
319-84-6	alpha-BHC	4.8	U
319-85-7	beta-BHC	4.8	U
319-86-8	delta-BHC	4.8	U
58-89-9	gamma-BHC (Lindane)	4.8	U
76-44-8	Heptachlor	4.8	U
309-00-2	Aldrin	4.8	U
1024-57-3	Heptachlor epoxide	4.8	U
959-98-8	Endosulfan I	4.8	U
60-57-1	Dieldrin	9.7	U
72-55-9	4,4'-DDE	9.7	U
72-20-8	Endrin	9.7	U
33213-65-9	Endosulfan II	9.7	U
75-54-8	4,4'-DDD	10.0	NP
1031-07-8	Endosulfan sulfate	9.7	U R
50-29-3	4,4'-DDT	9.7	U
72-43-5	Methoxychlor	48.0	U
53494-70-5	Endrin ketone	9.7	U
7421-36-3	Endrin aldehyde	9.7	U R
5103-71-9	alpha-Chlordane	4.8	U
5103-74-2	gamma-Chlordane	~~1.3~~ 4.8	~~J~~ J
8001-35-2	Toxaphene	480.0	U
12674-11-2	Aroclor-1016	97.0	U
11104-28-2	Aroclor-1221	190.0	U
11141-16-5	Aroclor-1232	97.0	U
53469-21-9	Aroclor-1242	97.0	U
12672-29-6	Aroclor-1248	97.0	U
11097-69-1	Aroclor-1254	~~71.0~~ 72	
11096-82-5	Aroclor-1260	97.0	U

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EPA SAMPLE NO.

BMZ07

PESTICIDE ORGANICS ANALYSIS DATA SHEET

Lab Name: McCoy & McCoy Contract: 68D10081

Lab Code: McCoy Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: 931709-9

Sample wt/vol: 20.4 (g/ml) G Lab File ID: 2829

% Moisture: 25 decanted: (Y/N) N Date Received: 1/29/93

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 2/9/93

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 2/23/93

Injection Volume: 2.0 (uL) Dilution Factor:

GPC Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND	Q
319-84-6	alpha-BHC	3.3 U
319-85-7	beta-BHC	3.3 U
319-86-8	delta-BHC	3.3 U
58-89-9	gamma-BHC (Lindane)	3.3 U
76-44-8	Heptachlor	3.3 U
309-00-2	Aldrin	3.3 U
1024-57-3	Heptachlor epoxide	3.3 U
959-98-8	Endosulfan I	3.3 U
60-57-1	Dieldrin	6.5 U
72-55-9	4,4'-DDE	6.5 U
72-20-8	Endrin	6.5 U
33213-65-9	Endosulfan II	6.5 U
75-54-8	4,4'-DDD	10.0 UJN
1031-07-8	Endosulfan sulfate	6.5 U
50-29-3	4,4'-DDT	6.5 U
72-43-5	Methoxychlor	33.0 U
53494-70-5	Endrin ketone	6.5 U
7421-36-3	Endrin aldehyde	6.5 U
5103-71-9	alpha-Chlordane	0.9 3.3 JP
5103-74-2	gamma-Chlordane	~~1.8~~ 3.3 JP
8001-35-2	Toxaphene	330.0 U
12674-11-2	Aroclor-1016	65.0 U
11104-28-2	Aroclor-1221	130.0 U
11141-16-5	Aroclor-1232	65.0 U
53469-21-9	Aroclor-1242	65.0 U
12672-29-6	Aroclor-1248	65.0 U
11097-69-1	Aroclor-1254	~~48.0~~ 33
11096-82-5	Aroclor-1260	65.0 U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ08

ne: McCoy and McCoy Labs, Inc Contract: 68-C1-0081

Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

ix: (soil/water) SOIL Lab Sample ID: 931709-10

wt/vol: 30. (g/mL) G Lab File ID: 02830

isture: 20 decanted: (Y/N) N Date Received: 01/29/93

tion: (Sepf/Cont/Sonc) SONC Date Extracted: 02/09/93

ntrated Extract Volume: 5000.0 (uL) Date Analyzed: 02/23/93

ction Volume: 2.0 (uL) Dilution Factor: 1.0

leanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

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	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	4.2	U
72-55-9	4,4'-DDE	6.1	
72-20-8	Endrin	4.2	U
33213-65-9	Endosulfan II	4.2	U
72-54-8	4,4'-DDD	42.	JN
1031-07-8	Endosulfan Sulfate	4.2	UR
50-29-3	4,4'-DDT	4.4	JN
72-43-5	Methoxychlor	21.	U
53494-70-5	Endrin ketone	4.2	U
7421-93-4	Endrin aldehyde	4.2	UR
5103-71-9	alpha-Chlordane	4.0	JR
5103-74-2	gamma-Chlordane	6.	
8001-35-2	Toxaphene	210.	U
12674-11-2	Aroclor-1016	42.	U
11104-28-2	Aroclor-1221	83.	U
11141-16-5	Aroclor-1232	42.	U
53469-21-9	Aroclor-1242	42.	U
12672-29-6	Aroclor-1248	42.	U
11097-69-1	Aroclor-1254	42.	U
11096-82-5	Aroclor-1260	42.	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ09

Lab Name: McCoy and McCoy Labs, Inc Contract: 68 D1 0081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) SOIL Lab Sample ID: 931709-11

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 02831

% Moisture: 45 decanted: (Y/N) N Date Received: 01/29/93

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 02/09/93

Concentrated Extract Volume: 5000.0 (uL) Date Analyzed: 02/23/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	3.0	U
319-85-7	beta-BHC	3.0	U
319-86-8	delta-BHC	3.0	U
58-89-9	gamma-BHC	3.0	U
76-44-8	Heptachlor	3.0	U
309-00-2	Aldrin	3.0	U
1024-57-3	Heptachlor epoxide	3.0	U
959-98-8	Endosulfan I	3.0	U
60-57-1	Dieldrin	5.9	U
72-55-9	4,4'-DDE	1.5	N
72-20-8	Endrin	5.9	U
33213-65-9	Endosulfan II	5.9	U
72-54-8	4,4'-DDD	5.9	U
1031-07-8	Endosulfan Sulfate	5.9	U
50-29-3	4,4'-DDT	5.9	U
72-43-5	Methoxychlor	30.	U
53494-70-5	Endrin ketone	5.9	U
7421-93-4	Endrin aldehyde	5.9	UR
5103-71-9	alpha-Chlordane	3.0	U
5103-74-2	gamma-Chlordane	3.0	U
8001-35-2	Toxaphene	300.	U
12674-11-2	Aroclor-1016	59.	U
11104-28-2	Aroclor-1221	120.	U
11141-16-5	Aroclor-1232	59.	U
53469-21-9	Aroclor-1242	59.	U
12672-29-6	Aroclor-1248	59.	U
11097-69-1	Aroclor-1254	59.	U
11096-82-5	Aroclor-1260	59.	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BMZ10

[redacted]

ab Name: McCoy and McCoy Labs, Inc Contract: 68-01-0081

ab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

at ix: (soil/water) WATER Lab Sample ID: 931709-12

ample wt/vol: 840.0 (g/mL) ML Lab File ID: 02855

Moisture: _____ decanted: (Y/N)___ Date Received: 01/29/93

xt action: (SepF/Cont/Sonc) SONC Date Extracted: ~~02/09/93~~ 2/01/93

oncentrated Extract Volume: 5000.0 (uL) Date Analyzed: 02/24/93

j ction Volume: 2.0 (uL) Dilution Factor: 1.0

PC Cleanup: (Y/N) Y pH: 7.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.060	U J
319-85-7	beta-BHC	.060	U J
319-86-8	delta-BHC	.0053	[illegible]
58-89-9	gamma-BHC	.060	U
76-44-8	Heptachlor	.060	U
309-00-2	Aldrin	.060	U
1024-57-3	Heptachlor epoxide	.060	U
959-98-8	Endosulfan I	.060	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 R
50-29-3	4,4'-DDT	.12	U J
72-43-5	Methoxychlor	.60	U R
53494-70-5	Endrin ketone	.12	U J
7421-93-4	Endrin aldehyde	.12	U J
5103-71-9	alpha-Chlordane	0.06 ~~.0049~~	~~BJ~~
5103-74-2	gamma-Chlordane	0.06 ~~.0077~~	~~BJ~~ U
8001-35-2	Toxaphene	6.0	U
12674-11-2	Aroclor-1016	1.2	U
11104-28-2	Aroclor-1221	2.4	U
11141-16-5	Aroclor-1232	1.2	U
53469-21-9	Aroclor-1242	1.2	U
12672-29-6	Aroclor-1248	1.2	U
11097-69-1	Aroclor-1254	1.2	U
11096-82-5	Aroclor-1260	1.2	U

PESTICIDE ORGANICS ANALYSIS DATA SHEET

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EPA SAMPLE NO.: BMZ11

Name: McCoy and McCoy Labs, Inc. Contract: 68-01-0081

Lab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

Matrix: (soil/water) WATER Lab Sample ID: 931709-15

Sample wt/vol: 940.0 (g/mL) ML Lab File ID: 02B56

Moisture: _____ decanted: (Y/N) ____ Date Received: 01/29/93

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: ~~02/09/93~~ 2/01/93 ~~35~~ 5/17/93

Concentrated Extract Volume: 5000.0 (uL) Date Analyzed: 02/24/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.053	U
319-85-7	beta-BHC	.053	U
319-86-8	delta-BHC	.053	U
58-89-9	gamma-BHC	.053	U
76-44-8	Heptachlor	.053	U
309-00-2	Aldrin	.053	U
1024-57-3	Heptachlor epoxide	.053	U
959-98-8	Endosulfan I	.053	U
60-57-1	Dieldrin	0.053 ~~.0086~~	U
72-55-9	4,4'-DDE	.11	U
72-20-8	Endrin	.11	U
33213-65-9	Endosulfan II	.11	U
72-54-8	4,4'-DDD	.11	U
1031-07-8	Endosulfan Sulfate	.11	U
50-29-3	4,4'-DDT	.11	U
72-43-5	Methoxychlor	.53	U
53494-70-5	Endrin ketone	.11	U
7421-93-4	Endrin aldehyde	.11	U
5103-71-9	alpha-Chlordane	.053	U
5103-74-2	gamma-Chlordane	0.053 ~~.0072~~	U
8001-35-2	Toxaphene	5.3	U
12674-11-2	Aroclor-1016	1.1	U
11104-28-2	Aroclor-1221	2.1	U
11141-16-5	Aroclor-1232	1.1	U
53469-21-9	Aroclor-1242	1.1	U
12672-29-6	Aroclor-1248	1.1	U
11097-69-1	Aroclor-1254	1.1	U
11096-82-5	Aroclor-1260	1.1	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

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BMZ12

Name: McCoy and McCoy Labs, Inc Contract: 68-01-0091

b Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

rix: (soil/water) WATER Lab Sample ID: 931709-16

mple wt/vol: 960.0 (g/mL) ML Lab File ID: 02857

Moisture: _____ decented: (Y/N) _____ Date Received: 01/29/93

traction: (SepF/Cont/Sonc) SONC Date Extracted: ~~02/09/93~~ 02/01/93 JS 6/17/93

ncentrated Extract Volume: 5000.0 (uL) Date Analyzed: 02/24/93

jection Volume: 2.0 (uL) Dilution Factor: 1.0

C Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.052	U
319-85-7	beta-BHC	.052	U
319-86-8	delta-BHC	.052	U
58-89-9	gamma-BHC	.052	U
76-44-8	Heptachlor	.052	U
309-00-2	Aldrin	.052	U
1024-57-3	Heptachlor epoxide	.052	U
959-98-8	Endosulfan I	.052	U
60-57-1	Dieldrin	0.05 ~~.0082~~	~~JJ~~
72-55-9	4,4'-DDE	.10	U
72-20-8	Endrin	.10	U
33213-65-9	Endosulfan II	.10	U
72-54-8	4,4'-DDD	.10	U
1031-07-8	Endosulfan Sulfate	.10	U
50-29-3	4,4'-DDT	.10	U
72-43-5	Methoxychlor	.52	U
53494-70-5	Endrin ketone	.10	U
7421-93-4	Endrin aldehyde	.10	U
5103-71-9	alpha-Chlordane	0.052 ~~.0032~~	~~JJ~~
5103-74-2	gamma-Chlordane	0.052 ~~.0072~~	~~JJ~~ U
8001-35-2	Toxaphene	5.2	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.1	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

PESTICIDE ORGANICS ANALYSIS DATA SHEET

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ID: BMZ13 [redacted]

Name: McCoy and McCoy Labs, Inc. Contract: 68-D1-00A1

ab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

atrix: (soil/water) WATER Lab Sample ID: 931709-17

mple wt/vol: 910.0 (g/mL) ML Lab File ID: 02858

Moisture: decanted: (Y/N) Date Received: 01/29/93

xtraction: (SepF/Cont/Sonc) SONC Date Extracted: ~~02/09/93~~ 02/01/93 5/17/93

oncentrated Extract Volume: 5000.0 (uL) Date Analyzed: 02/24/93

jection Volume: 2.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.055	U
319-85-7	beta-BHC	.055	U
319-86-8	delta-BHC	.055	U
58-89-9	gamma-BHC	.055	U
76-44-8	Heptachlor	.055	U
309-00-2	Aldrin	.055	U
1024-57-3	Heptachlor epoxide	.055	U
959-98-8	Endosulfan I	.055	U
60-57-1	Dieldrin	.010	
72-55-9	4,4'-DDE	.11	U
72-20-8	Endrin	.11	U
33213-65-9	Endosulfan II	.11	U
72-54-8	4,4'-DDD	.11	U
1031-07-8	Endosulfan Sulfate	.018	
50-29-3	4,4'-DDT	.11	U
72-43-5	Methoxychlor	.55	U
53494-70-5	Endrin ketone	.11	U
7421-93-4	Endrin aldehyde	.11	U
5103-71-9	alpha-Chlordane	.0052	
5103-74-2	gamma-Chlordane	.0071	
8001-35-2	Toxaphene	5.5	U
12674-11-2	Aroclor-1016	1.1	U
11104-28-2	Aroclor-1221	2.2	U
11141-16-5	Aroclor-1232	1.1	U
53469-21-9	Aroclor-1242	1.1	U
12672-29-6	Aroclor-1248	1.1	U
11097-69-1	Aroclor-1254	1.1	U
11096-82-5	Aroclor-1260	1.1	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

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BMZ14

b Name: McCoy and McCoy Labs, Inc Contract: 68-D1-0081

ab Code: MCCOY Case No.: 19370 SAS No.: SDG No.: BMZ01

trix: (soil/water) WATER Lab Sample ID: 931709-18

ample wt/vol: 870.0 (g/mL) ML Lab File ID: 02859

Moisture: _____ decanted: (Y/N)___ Date Received: 01/29/93

[redacted] Date Extracted: ~~02/09/93~~ 02/01/93 JS 5/17/93

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/24/93

oncentrated Extract Volume: 5000.0 (uL) Dilution Factor: 1.0

jection Volume: 2.0 (uL)

PC Cleanup: (Y/N) Y pH: 6.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.057	U
319-85-7	beta-BHC	.057	U
319-86-8	delta-BHC	.0029	J [redacted]
58-89-9	gamma-BHC	.057	U
76-44-8	Heptachlor	.057	U
309-00-2	Aldrin	.057	U
1024-57-3	Heptachlor epoxide	.057	U
959-98-8	Endosulfan I	.057	U
60-57-1	Dieldrin	.020	J
72-55-9	4,4'-DDE	.11	U
72-20-8	Endrin	.11	U
33213-65-9	Endosulfan II	.11	U
72-54-8	4,4'-DDD	.11	U
1031-07-8	Endosulfan Sulfate	.11	U
50-29-3	4,4'-DDT	.11	U
72-43-5	Methoxychlor	.57	U
53494-70-5	Endrin ketone	.11	U
7421-93-4	Endrin aldehyde	.11	U
5103-71-9	alpha-Chlordane	.013	BJ
5103-74-2	gamma-Chlordane	.014	BJ P
8001-35-2	Toxaphene	5.7	U
12674-11-2	Aroclor-1016	1.1	U
11104-28-2	Aroclor-1221	2.3	U
11141-16-5	Aroclor-1232	1.1	U
53469-21-9	Aroclor-1242	1.1	U
12672-29-6	Aroclor-1248	1.1	U
11097-69-1	Aroclor-1254	1.1	U
11096-82-5	Aroclor-1260	1.1	U

REFERENCE NO. 21

SELECTION:
SEQUENCE: REGION, STATE, SITE NAME

EVENTS: ALL

EPA ID NO.	SITE NAME / STREET / CITY / COUNTY CODE AND NAME	STATE / ZIP / CONG DIST.	OPRBLE UNIT	EVENT TYPE	EVENT QUAL	ACTUAL START DATE	ACTUAL COMPL DATE	CURRENT EVENT LEAD
NJD002517472 (CONTINUED)	METALTEC/AEROSYSTEMS		(01)	RO1			06/30/86	EPA (FUND)
				TA1		10/23/85	06/30/86	EPA (FUND)
				RD1		03/26/87	05/01/88	EPA (FUND)
				RD2		03/31/87	05/30/89	EPA (FUND)
				RD3		01/06/88		EPA (FUND)
				RA1		05/03/88	11/30/88	EPA (FUND)
				RA2		07/03/89	06/18/91	EPA (FUND)
				RA3		03/29/91		EPA (FUND)
				MA1		03/21/88		EPA (FUND)
				DA1		03/18/87		EPA (FUND)
				AS1			01/01/85	EPA (FUND)
			02	CO1		03/26/87	09/27/90	EPA (FUND)
				RO1			09/27/90	EPA (FUND)
				RD1		03/29/91		EPA (FUND)
NJD002139244	METEM CORPORATION 700 PARSIPPANY PARSIPPANY 027 MORRIS	NJ 07054	00	DS1			03/13/89	EPA (FUND)
				PA1		03/24/89	06/24/89	EPA (FUND)
NJD048608897	METHODE ELECTRONICS ONE INDUSTRIAL PARK WILLINGBORO 005 BURLINGTON	NJ 08046	00	DS1			06/06/89	EPA (FUND)
				PA1			09/27/89	EPA (FUND)
NJD075130815	METRO DISPOSAL SERVICES SMITH ST & CROWS MILL RD KEASBEY 023 MIDDLESEX	NJ 08832	00	DS1			06/01/81	EPA (FUND)
				PA1'			02/01/83	EPA (FUND)
NJD981144033	METRO LTD. MELANIE LANE EAST HANOVER 027 MORRIS	NJ 07936	00	DS1			06/27/86	STATE(FUND)
				PA1		06/27/86	06/30/86	STATE(FUND)
				SI1		07/01/91	09/25/91	EPA (FUND)

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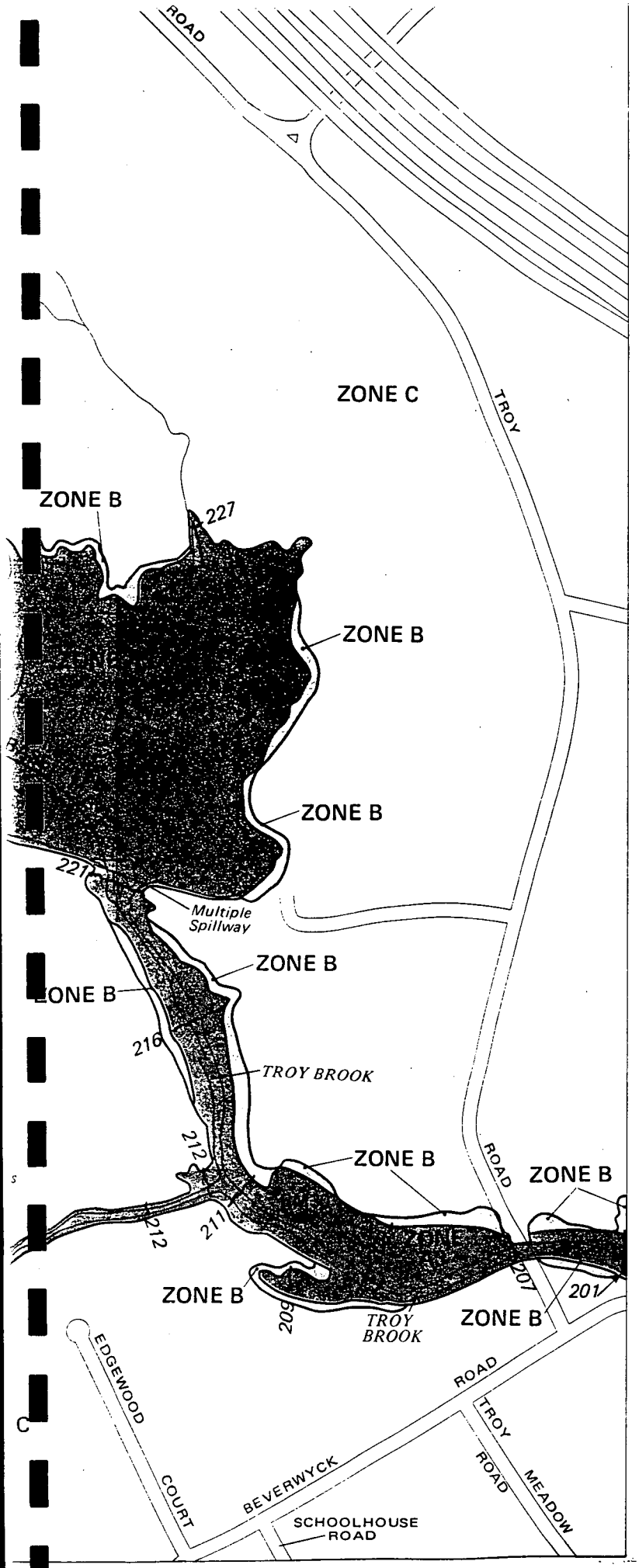
REFERENCE NO. 22



structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE

400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

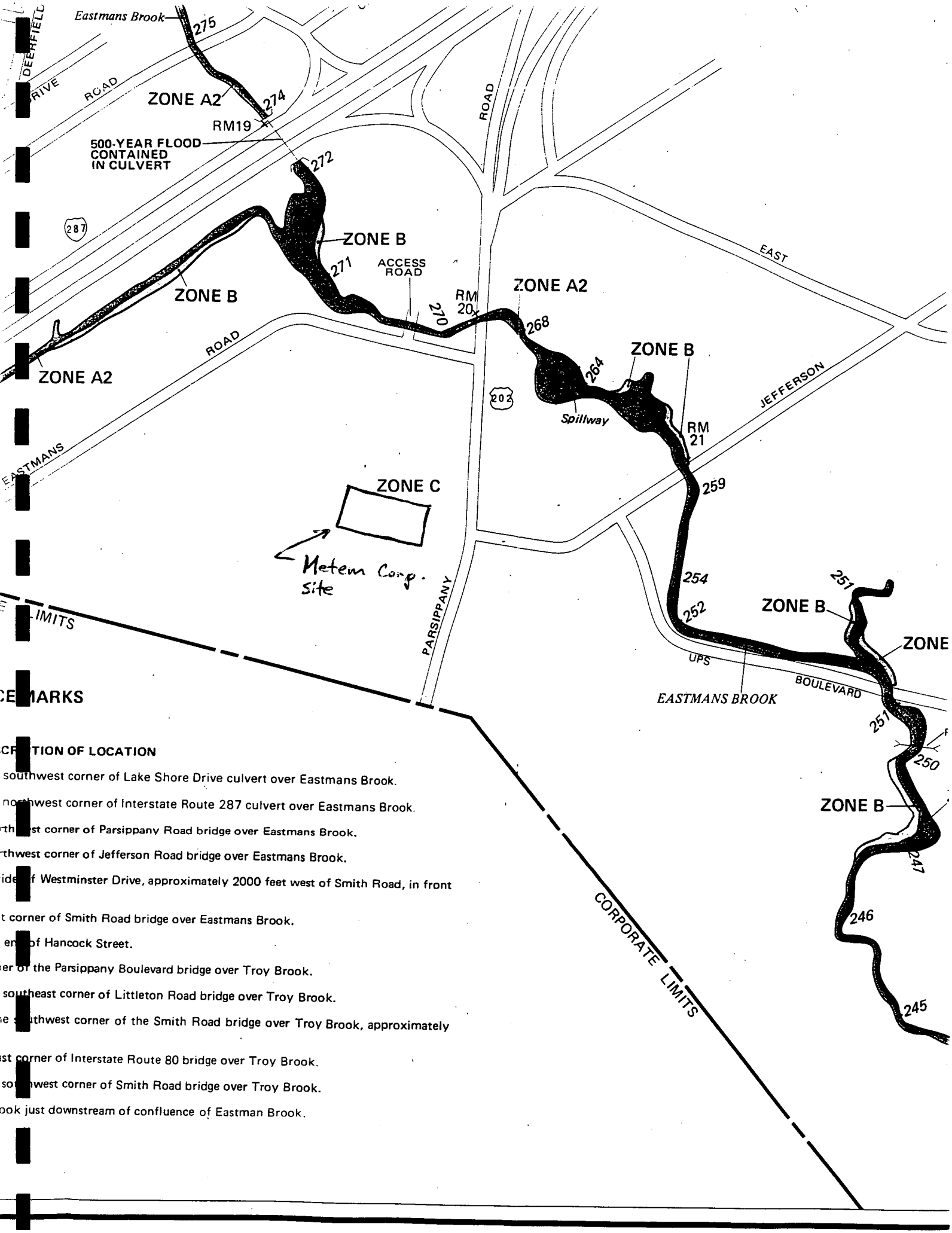
TOWNSHIP OF PARSIPPANY-TROY HILLS, NEW JERSEY
MORRIS COUNTY

PANEL 8 OF 11
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
340355 0008 B

EFFECTIVE DATE:
FEBRUARY 19, 1986

Federal Emergency Management Agency



CE MARKS

CR TION OF LOCATION

southwest corner of Lake Shore Drive culvert over Eastmans Brook.

northwest corner of Interstate Route 287 culvert over Eastmans Brook.

rth st corner of Parsippany Road bridge over Eastmans Brook.

rthwest corner of Jefferson Road bridge over Eastmans Brook.

ide f Westminster Drive, approximately 2000 feet west of Smith Road, in front

t corner of Smith Road bridge over Eastmans Brook.

en of Hancock Street.

er of the Parsippany Boulevard bridge over Troy Brook.

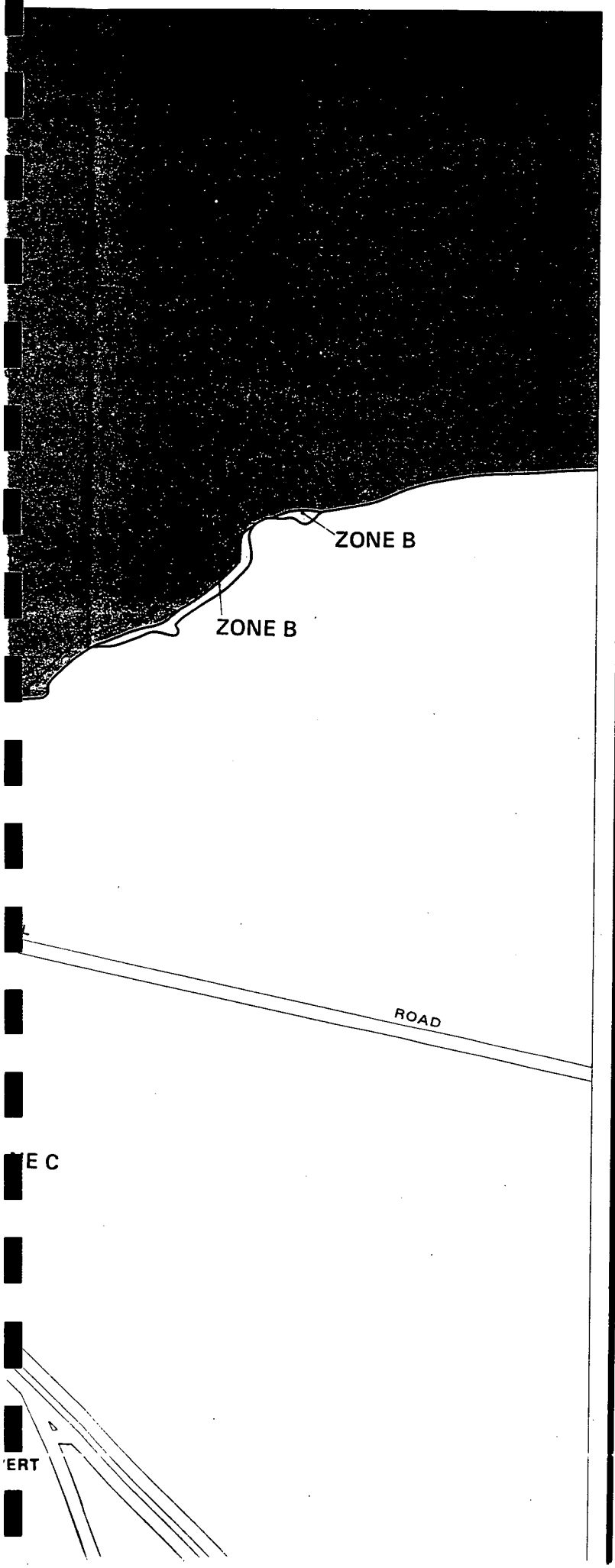
southeast corner of Littleton Road bridge over Troy Brook.

e thwest corner of the Smith Road bridge over Troy Brook, approximately

st corner of Interstate Route 80 bridge over Troy Brook.

so west corner of Smith Road bridge over Troy Brook.

ook just downstream of confluence of Eastman Brook.



KEY TO MAP

500-Year Flood Boundary	
100-Year Flood Boundary	
Zone Designations*	ZONE B
100-Year Flood Boundary	
500-Year Flood Boundary	
Base Flood Elevation Line With Elevation In Feet**	513
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7×
Zone D Boundary	
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

INITIAL IDENTIFICATION:
JUNE 21, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS:
JANUARY 2, 1976

REFERENCE NO. 23

AVAILABILITY OF GROUND WATER IN MORRIS COUNTY, NEW JERSEY

By

HAROLD E. GILL

and

JOHN VECCHIOLI

Geologists, U. S. Geological Survey

SPECIAL REPORT No. 25

Prepared by the U. S. Geological Survey
in cooperation with the
State of New Jersey

1965

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CHICAGO, ILL. 60617

E 7.- ORDS ELEC RILL ELLS NG VARIOUS AQUIFERS IN MORRIS COUNTY, N. J. (contin

Shown on Figure 1.

Owner or tenant	N. J. Grid No.	Driller	Year drilled	Altitude above mean sea level (feet)	Total depth drilled below land surface (feet)	Diameter of well (inches)	Depth to which well is cased (feet)	Screen Setting (feet)	Aquifer	Static level below land surface at time of completion (feet)	Yield (gpm)
			PARSIPPANY-TROY HILLS TOWNSHIP								
y State Hospital	25.3.8.9.7	Wm. Stothoff Co.	7- 1-16	520	303	8	50	none	Precambrian	18	37
e Park											
p.	25.4.8.5.4	Wm. Stothoff Co.	8-26-57	270	95	10	75	75-95	Quaternary	10	100
p.	25.4.8.5.4	Wm. Stothoff Co.	9-28-57	270	81	10	51	51-81	Quaternary	+1.5	300
ential Oil & Chemical Co.	25.4.5.2.4	- - - - - - - - - - - - - -	--------	420	385	---	---	none	Precambrian	----	220
ential Oil & Chemical Co.	25.4.5.2.4	Parkhurst Well & Pump Co.	11-15-46	420	822	8	290	none	Precambrian	76	38
pany Property Association	25.4.7.6.3	Wm. Beatty	2- 5-54	300	50	8	---	-----	Quaternary	+4	50
Morristown	25.4.7.7.7	Kelly Well Co.	1927	319	60	24	45	45-60	Quaternary	+1	600
-Troy Hills Township	25.4.5.7.9	Layne, N. Y.	11- 2-31	310	151	16	107	107-137	Quaternary	16	745
-Troy Hills Township	25.4.5.7.9	Artesian Well & Equipment Co.	9- -58	316	138	8	102	102-138	Quaternary	26	600
-Troy Hills Township	25.4.6.7.7	Parsippany-Troy Hills Township	11- -44	300	80	16	49	49-75	Quaternary	30	600
-Troy Hills Township	25.4.5.8.8	Parsippany-Troy Hills Township	3- -51	295	82	16	52	52-79	Quaternary	13	500
-Troy Hills Township	25.4.5.8.8	Wm. Beatty	5- -58	300	150	10	120	120-150	Quaternary	----	800
-Troy Hills Township	25.3.9.6.1	L. O. Gould	7-25-53	520	150	8	52	none	Precambrian	----	150
-Troy Hills Township	25.3.9.6.1	Wm. Stothoff Co.	3-27-54	520	195	8	38	none	Precambrian	7	263
-Troy Hills Township	25.3.9.6.1	Wm. Stothoff Co.	4-19-54	520	150	8	40	none	Precambrian	8	402
-Troy Hills Township	25.3.9.6.1	Wm. Stothoff Co.	4-10-54	520	150	8	32	none	Precambrian	10	195
-Troy Hills Township	25.5.7.2.5	Artesian Well & Equipment Co.	1956	180	90	17	54	54-90	Quaternary	----	350
-Troy Hills Township	25.4.5.7.8	- - - - - - - - - - - - - -	1938	310	134	16	---	-----	Quaternary	----	300
-Troy Hills Township	25.4.8.5.4	Artesian Well & Equipment Co.	12-18-58	260	66	16	55	55-65	Quaternary	7	715

closest wells to the site.

25.4.8.5.4	25.4.5.7.8	Artesian Well & Equipment Co.	1956	180	90	17	54	54-90	Quaternary	----	350
			1938	310	134	16	---	-----	Quaternary	----	300
			12-18-58	260	66	16	55	55-65	Quaternary	7	715

REFERENCE NO. 24

WESTON

Chris Agnew
Originator

PHONE CONVERSATION RECORD

Conversation with:

Name Carl Danser

Company Mountain Lakes Water Co.

Address Mountain Lakes NJ

Phone 201 334 1577

Subject GW Supply

Date 4 / 12 / 93

Time 4:16 AM/PM

☐ Originator Placed Call

☒ Originator Received Call

W.O. NO. 4200-016-081-0011

Notes: Was informed by Mr. Danser that Mountain Lakes uses 1 well to supply GW to it residents. It has 2 Backup wells if needed, However only 1 is currently being used

☐ **File**

☐ **Tickle File** / /

☐ **Follow-Up By:**

☐ **Copy/Route To:**

Follow-Up-Action:

Originator's Initials

RFW 110-4-83

REFERENCE NO. 25

WESTON

T. Warner
Originator

PHONE CONVERSATION RECORD

Conversation with:

Name Clerk

Company Parsippany Tax Assessor's Office

Address

Phone (201) 263-4272

Date 08 / 11 / 93

Time 1535 AM/PM

☐ Originator Placed Call

☐ Originator Received Call

W.O. NO. 04200-016-081-0011

Subject

Notes: Block 739, Lot 2 is owned by 700 Parsippany Associates, and covers 7.43 acres.

☑ **File** Matson Corp.

☐ **Tickle File** / /

☐ **Follow-Up By:**

☐ **Copy/Route To:**

Follow-Up-Action:

Originator's Initials TAV

RFW 110-4-83

REFERENCE NO. 26

THE LATEST TRIASSIC AND EARLY JURASSIC FORMATIONS OF THE NEWARK BASIN (EASTERN NORTH AMERICA, NEWARK SUPERGROUP): STRATIGRAPHY, STRUCTURE, AND CORRELATION

PAUL E. OLSEN

Bingham Laboratories, Department of Biology
Yale University
New Haven, Connecticut 06520

ABSTRACT. *Newark Supergroup deposits of the Newark Basin (New York, New Jersey, and Pennsylvania) are here divided into nine formations called (from the bottom up): Stockton Formation (maximum 1800 m); Lockatong Formation (maximum 1150 m); Passaic Formation (maximum 6000 m); Orange Mountain Basalt (maximum 200 m); Feltville Formation (maximum 600 m); Preakness Basalt (maximum +300 m); Towaco Formation (maximum 340 m); Hook Mountain Basalt (maximum 110 m); and Boonton Formation (maximum +500 m). The latter seven formations are new and result from subdividing the Brunswick Formation and Watchung Basalt of Kümmel and Darton. Each formation is characterized by its own suite of lithologies, the differences being especially obvious in the number, thickness, and nature of their gray and black sedimentary cycles (or lack thereof).*

Newark Basin structure still escapes comprehensive understanding, although it is clear that faults (predominantly normal) and onlaps bound both the eastern and western edges of the basin. The cumulative thickness of formations and the apparent movement of the faults is greater on the western than the eastern side, however.

Fossils are abundant in the sedimentary formations of the Newark Basin and provide a means of correlating the sequence with other early Mesozoic areas. The Stockton, Lockatong, and most of the Passaic Formation are Late Triassic (?Middle and Late Carnian — Rhaetic) while the uppermost Passaic Formation (at least locally) and younger beds appear to be Early Jurassic (Hettangian and Sinemurian) in age. The distribution of kinds of fossils is intimately related to sequences of lithologies in sedimentary cycles.

Manuscript received 2 Jan 1980.
Manuscript accepted 14 Jan 1980
Revised manuscript received 16 Sep 1980.

INTRODUCTION

Despite well over a century of interest in the early Mesozoic Newark Supergroup of eastern North America, many fundamental aspects of its historical and structural geology remain unexplored. In part, this is due to the complexity of stratigraphic and structural relations in the individual basins, coupled with the rarity of continuous exposures. As a result, much of our accepted understanding of the Newark Supergroup has been based on incomplete observations and opinion. The purpose of this paper is to provide a more thorough observational foundation against which past hypotheses may be assessed and on which future work may be based. Emphasis is placed on the younger beds of the Newark Basin, for they have never been examined in detail, and a new stratigraphic framework is proposed. These younger Newark Basin beds provide us with a key to understanding the entire basin column, which in turn is crucial to the context in which early Mesozoic organic evolution, continental sedimentation, and tectonic development are to be studied.

REGIONAL SETTING

Triassic and Jurassic Newark Supergroup rocks (Figure 1) (Olsen, 1978; Van Houten, 1977) occupy numerous elongate basins in eastern North America and consist of predominantly detrital fill locally more than 10,000 m thick. In most

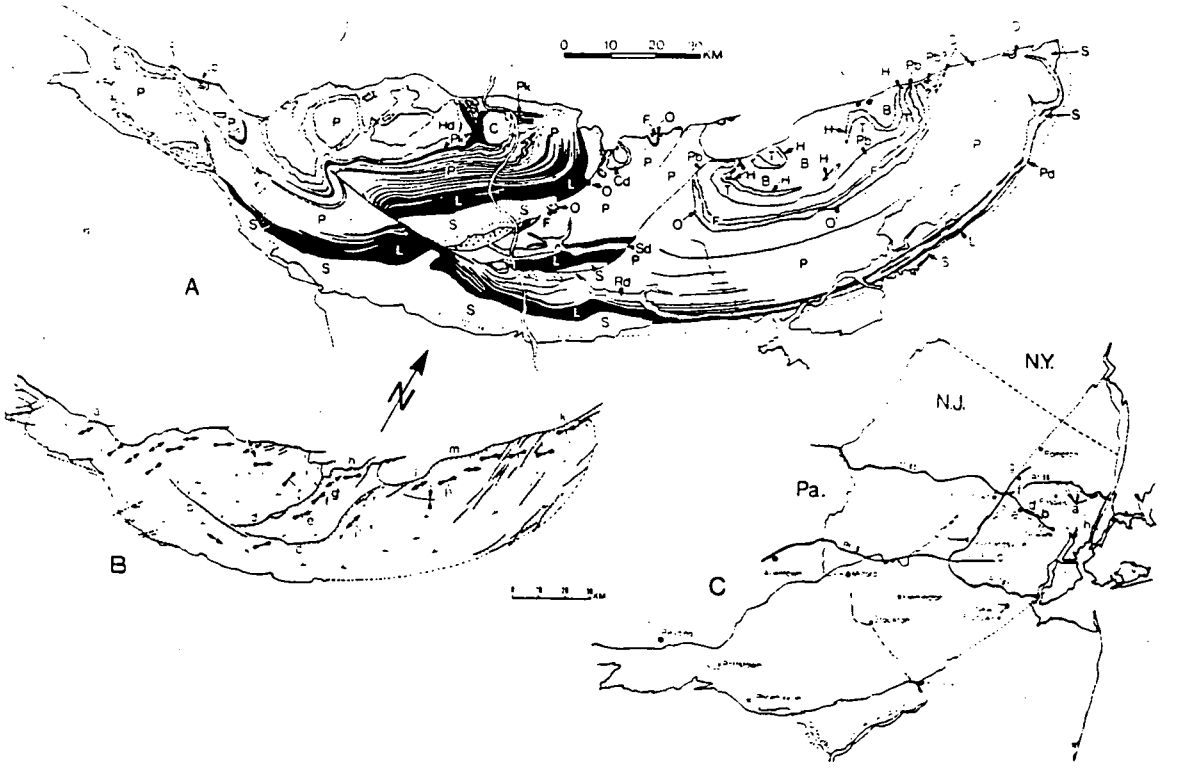

FIG. 2. The Newark Basin. A, geologic map showing distribution of formations, conglomerate facies (irregular stipple), and major clusters of detrital cycles in Passaic Formation (black lines). Abbreviations of formations and intrusive bodies as follows: B, Boonton Formation; C, Coffman Hill Diabase; Cd, Cushetunk Mountain Diabase; F, Feltville Formation; H, Hook Mountain Basalt; Hd, Haycock Mountain Diabase; Jb, Jacksonwald Basalt; L, Lockatong Formation; O, Orange Mountain Basalt; P, Passaic Formation; Pb, Preakness Basalt; Pd, Palisade Diabase; Pk, Perkasie Member of Passaic Formation; Rd, Rocky Hill Diabase; S, Stockton Formation; Sd, Sourland Mountain Diabase; T, Towaco Formation.

B, Structural diagram of Newark Basin (note — parts of basin margin not mapped as faults should be regarded as onlaps, faults with teeth on downthrown side): a, Jacksonwald Syncline; b, Chalfont Fault; c, Hopewell Fault; d, Flemington Fault; e, Sand Brook Syncline; f, Flemington Syncline; g, Cushetunk Mountain Anticline; h, New Germantown Syncline; i, Somerville Anticline; j, New Vernon Anticline; K, Ladentown Syncline; l, Watchung Syncline; m, Ramapo Fault.

C, Geographic map of Newark Basin showing locations of type sections of formations proposed in this paper: a, type section of Passaic Formation; b, type section of Orange Mountain Basalt; c, type section of Feltville Formation; d, type section of Preakness Basalt; e, type section of Towaco Formation in Roseland, New Jersey; f, type section of Hook Mountain Basalt in Pine Brook, New Jersey; g, type section of Boonton Formation in Boonton, New Jersey; h, Lincoln Tunnel, Weehawken, New Jersey.

Data for A, B, and C from original observation and Kümmel, 1897, 1898; Lewis and Kümmel, 1910-1912; Darton, 1890, 1902; Darton *et al.*, 1908; Glaeser, 1963; Sanders, 1962; Van Houten, 1969; McLaughlin, 1941, 1943, 1944, 1945, 1946a, 1946b; Bascom *et al.*, 1909a, 1909b; Bailey *et al.*, 1914; Willard *et al.*, 1959; Manspiezer; pers. comm.

mation consists of a heterogenous mix of major units of differing and distinctive lithology, each as distinct and perhaps originally as widespread as the Stockton or Lockatong; further, each "Watchung Basalt" and the interbedded and overlying sedimentary beds are lithologically distinct from the lower Brunswick. In addition, Cornet, McDonald, and Traverse (1973), Cornet and Traverse (1975), Cornet (1977), and Olsen and Galton (1977) have shown that much of the

compo-
formations
's (1959)
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Guide. In this way, nominal status is given to beds critical to the overall pattern of Newark Basin historical geology.

DESCRIPTIVE STRATIGRAPHY OF THE POST-LOCKATONG FORMATIONS

The Passaic Formation

The name Passaic Formation is proposed for the predominantly red siltstone, sandstone, and conglomerate which conformably overlie the Lockatong Formation and which underlie the Orange Mountain and Jacksonwald basalts. It is equivalent to the pre-basalt part of Kümmel's Brunswick Formation (Table 1). The type section (Figure 4) consists of intermittent exposures of red siltstone and sandstone along interstate Route 80 near Passaic, New Jersey (Figure 2 and Appendix).

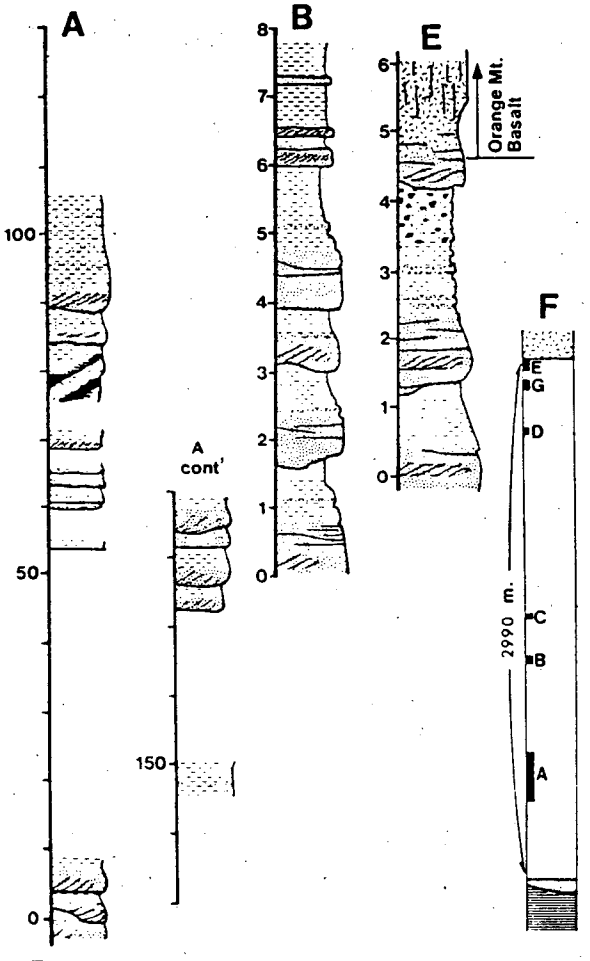

FIG. 4. A - E, type section of Passaic Formation (see Appendix for description); F, diagram showing positions of sections A - E in Passaic Formation.

As is the case for all Newark formations, the estimation of stratigraphic thicknesses in the Passaic Formation is hampered by the presence of a series of faults with variable amounts of dip-slip displacement cutting much of the Newark Basin. The exact distribution of these faults is poorly known and thus many trigonometrically computed thicknesses in the Passaic Formation are probably overestimations. This is especially true in the northern and southern portions of the Newark Basin. The field relationship of mapped gray siltstones in the central Newark Basin, however, shows that in broad areas these smaller faults are missing and the calculated stratigraphic thickness is probably correct (McLaughlin, 1943). Instead of a large number of small faults, the central Newark Basin is cut by several very large faults (Figure 2).

In spite of these mensuration problems, it is clear that the Passaic Formation is the thickest, coherent lithologic unit in the Newark Basin, reaching a maximum calculated stratigraphic thickness of over 6,000 m (Jacksonwald Syncline). The formation outcrops throughout the Newark Basin although its upper beds are preserved only in the Watchung Syncline (Figure 2), in the smaller synclines preserved along the eastern side of the Flemington Fault, and in the Jacksonwald Syncline. In all other areas, the upper Passaic Formation has been removed by post-Newark erosion.

While in most areas the Passaic Formation rests conformably on Lockatong Formation, in several areas on the western margin of the Newark Basin, the Passaic directly onlaps the step-faulted basement without any intervening Stockton or Lockatong. In these areas (see Figure 5), the thickness of upper Passaic Formation present below the Orange Mountain Basalt is comparatively slight. One area where these relationships can be clearly seen is near Cushetunk Mountain (Figure 5) in central New Jersey. In the New Germantown Syncline, the stratigraphic distance from the Palaeozoic basement to the Orange Mountain Basalt is about 800 m. Less than 30 km to the southwest, over 1,000 m of Passaic is

present above 2,000 m of Stockton plus Lockatong, and in the latter area the top of the Passaic Formation is not preserved. In less well exposed areas, or where the strike parallels the basin margin, such onlap and step-faulted relationships cannot be observed without geophysical techniques or analysis of well records (McLaughlin, 1943, 1944; Dunleavy, 1975).

Facies patterns of the Passaic Formation are a modified continuation of those of the Lockatong, and different from all younger Newark Basin deposits. Laterally persistent and periodically spaced clusters of gray and black siltstone cycles characterize both formations, the Lockatong being composed almost entirely of such repetitive units (see Figure 3). According to Van Houten (1962, 1964, 1965, 1969), the great majority of the Lockatong cycles fall into two broad classes which he terms chemical and detrital (Figure 3). The most laterally continuous are detrital and these generally occur in bundles. Each bundle is separated from the next (in vertical succession) by a series of chemical cycles; the distance from the center of one detrital cycle bundle to the next being about 110-125 m in the central Newark Basin (Van Houten, 1969). This figure decreases to the basin margins. Chemical cycles are characterized by the presence of abundant analcime and are for the most part restricted to the center of the basin, giving way in all directions to red clastics. The lateral edges of the Lockatong thus consist of bundles of detrital cycles separated by red siltstone and sandstone. It follows that the boundary between the Passaic Formation and the Lockatong can be operationally defined (both horizontally and vertically) as where the thicknesses of beds of red clastics dominate gray and black. It further follows that where gray and black detrital cycle clusters do not occur, as in Rockland County, New York, the Passaic Formation rests directly on the Stockton.

Bundles of detrital cycles occur through most of the thickness of the Passaic Formation, periodically spaced, as in the Lockatong. The great majority of these cyclic non-red units, however, are not as laterally continuous as those of at least the lower Lockatong, and generally the number of cycles involved in these clusters decrease in frequency through the Passaic Formation. For the lower and middle Passaic, McLaughlin (1933, 1943, 1945, 1946, 1948) has succeeded in mapping out the distribution of these non-red units over most of the central Newark Basin. A detailed stratigraphic framework has developed around these beds, each detrital cycle bundle being designated by a letter (A, B. C. . . . .). The extension of McLaughlin's units outside of the areas he mapped is a principle aim of ongoing research (Figure 2).

The highest of McLaughlin's mapped units (134 m above members L and M) join with other cycles to the southwest to form a large body of gray and black siltstone called the Perkasie Member (McLaughlin, 1946). Unlike the Lockatong Formation, however, the thickest section of the Perkasie Member is in the southwestern portion of the Newark Basin rather than near its geographic center. Due to repetition by major faults (Figure 2) and changes in strike along folds, the broader aspects of the three-dimensional relationships of most Passaic dark clastic units can be observed. Looking over the bulk of the Passaic Formation (Figure 2), there is no evidence that the rest of the detrital cycle clusters of the Passaic (i.e., other than lateral equivalents of the Lockatong Formation or Perkasie Member) represent the remnants of a large, now eroded, gray and black siltstone body as Glaeser (1963) has suggested.

There are major masses of red-matrix conglomerate at both the northern and southern ends of the Newark Basin (Figure 2). These grade nearly imperceptively into the red clastics of the Passaic Formation and are here considered facies of it. Other much smaller areas of conglomerate occur along the western border of the Newark Basin; these are especially prevalent where Passaic

Diabase: Jd, Jurassic diabase dikes; Jo, Jurassic Orange Mountain Basalt; Jpr, Jurassic Preakness Mountain Basalt; Ju, Jurassic basalt, undefined; E, geographic position and quadrangle maps of Cushetunk Mountain area (a, High Bridge Quadrangle; b, Califon Quadrangle; c, Gladstone Quadrangle; d, Pittstown Quadrangle; e, Flemington Quadrangle; f, Raritan Quadrangle).

Early Jurassic in age, and like other Jurassic beds in the Newark Basin, the main area in which the basalt is preserved is the Watchung Syncline (Figure 2). Smaller synclines preserve portions of the Orange Mountain in several other regions of the Newark Basin (Figure 2). In the New Germantown and Sand Brook synclines, the overlying Feltville Formation is preserved above the basalt; correlation by palynomorph assemblages and fossil fish (Cornet, 1977; Olsen, McCune, and Thomson, in press) demonstrate the identity of the Feltville Formation and by implication the underlying basalt. Between these two synclines is a newly identified very small outlier of basalt, preserved in what can be called the Flemington Syncline (Figure 5). Unfortunately, the remnant is so small that no sedimentary rocks are preserved above it. The simplest hypothesis identifies this remnant as an additional portion of the Orange Mountain Basalt. What has been termed the Jacksonwald Basalt (Wherry, 1910) outcrops in a syncline near the southern terminus of the Newark Basin (Figure 2) over 100 km southwest of the Watchung Syncline. Palynomorph assemblages recovered from the overlying sediments indicate correlation with the Feltville Formation (Cornet, 1977). There is no evidence to contradict the hypothesis that this outlier, too, represents the Orange Mountain Basalt. A possible remnant of Orange Mountain Basalt is present in the Ladentown Syncline in Rockland County, New York (Figure 2). Between this and the northern end of the Watchung Syncline is the Union Hill exposure of basalt. N. M. Ratcliff (pers. Comm.) has recently found exposures which show this unit to be extrusive, and, as such, it is most likely Orange Mountain Basalt. According to Geiger, Puffer, and Lechler (1980) and Geiger (personal communication), the Oldwick, Sand Brook, and Jacksonwald outliers are chemically identical to the Orange Mountain Basalt; while the Ladentown Outlier is chemically most similar to the Preakness Basalt (Second Watchung of Darton, 1890). Taken together, these remnants of Orange Mountain Basalt suggest that originally the basalt covered the almost entire Newark Basin, a minimum of over 7,000 km². This is comparable to the extent of the Holyoke Basalt over the Hartford Basin and the North Mountain Basalt over the Fundy Basin.

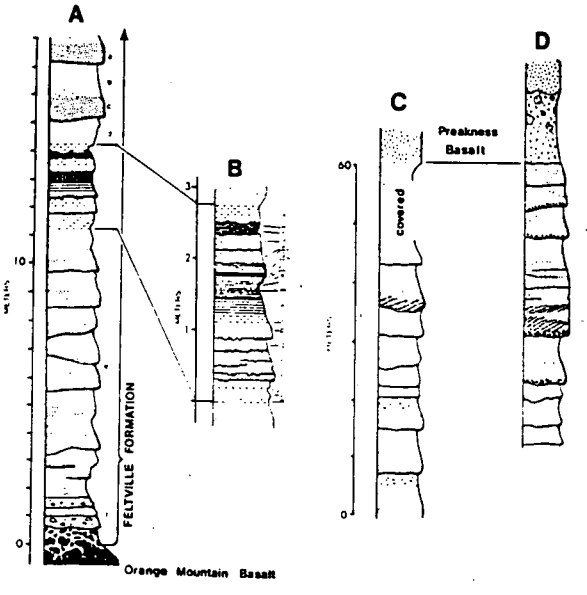

FIG. 7. Type section of the Feltville Formation and sections of the upper Feltville Formation.

A vand B, type section of the Feltville Formation; section exposed along ravine for Blue Brook about 1 km south of Lake Surprise in the Watchung Reservation. For key to individual units, see Appendix.

C and D, sections in the upper Feltville Formation. Dark stipple represents buff sandstone and feldspathic sandstone while the light stipple represents red sandstone and coarse siltstone. The light areas represent red siltstone and the black oblong dots, carbonate concretions. Section C is exposed along a tributary of East Branch, near Dock Watch Hollow, north of Martinsville, New Jersey. Section B is exposed in a cut in back of the Pleasant Valley Nursing Home in West Orange, New Jersey. C and D are 20 km from one another.

The Orange Mountain Basalt appears thickest in the Watchung Syncline, varying between 100 and 200 m. At least 130 and 120 m are present in the New Germantown and Sand Brook synclines, respectively, and greater than 100 m are present in the Jacksonwald Syncline. Existing exposures do not permit estimate of the thickness of the Flemington, or Union Hill.

Individual flows of the Orange Mountain Basalt (like other Newark Basin extrusives) are identified by recognition of the following criteria: glassy, dense, or discolored contacts at a flow boundary; thin volcanoclastic beds between flows; or a sequence of massive, columnar, and vesicular basalt identifying a single cooling unit as in a

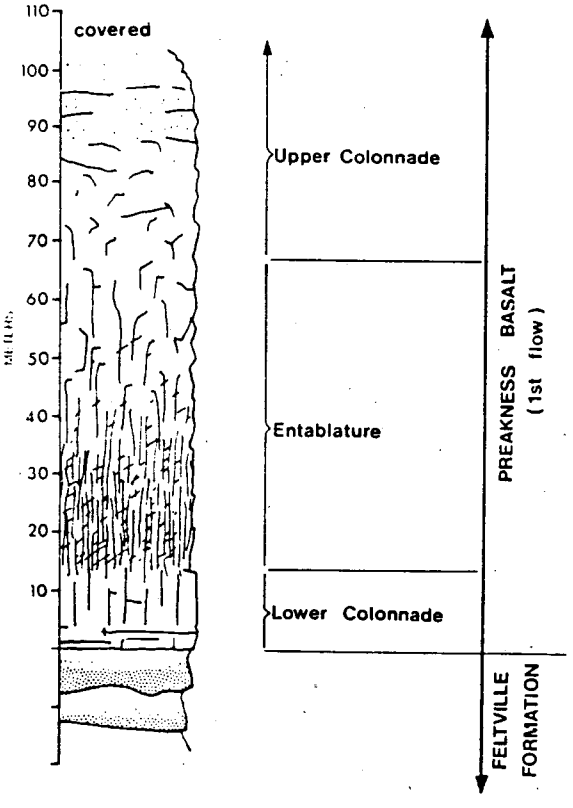

FIG. 8. Type section of the Preakness Basalt. Section located along Interstate Route 280, 2.25 km west of type section of the Orange Mountain Basalt. Symbols for Feltville Formation, as for Passaic Formation (Figure 6).

maximum figure is questionable since in the latter area the strike of the formation nearly parallels the trend of small faults cutting this region. That a figure of more than 300 m may be near the truth is suggested by the persistence of a large outcrop width around the southern curve of the Watchung Syncline. In contrast to the underlying units, the Preakness Basalt is not definitely preserved outside the Watchung Syncline. There are small masses of basalt at the northwestern edge of the New Germantown and Sand Brook synclines but the exposures are not good enough to tell whether these are beds lying stratigraphically above the Feltville or merely an upthrown fault slice of the Orange Mountain Basalt. However, on the basis of trace element geochemistry Geiger, Puffer, and Lechler (1980) have concluded that these small masses are Preakness Basalt. Likewise, according to the latter authors, the Ladentown flows are also Preakness Basalt.

At its base, the Preakness Basalt is much more variable than the Orange Mountain Basalt. Locally, there are thick (20 m, see Figure 9) sequences of multiple flows of highly vesicular basalt flows, possibly making up basalt forset beds (Manspiezer, pers. comm.) with intercalcated volcanoclastic beds; in other areas there are thick beds of angular, vesicular basalt breccia (aa). The latter tends to be very weathered and porous at the surface. In still other areas, the thick main basalt flow lies directly on unaltered (megasopically) sediments of the Feltville Formation.

At least two or perhaps three thick individual flows make up the bulk of the Preakness Basalt. The lowest flow is the thickest (about 100 m) and is exposed throughout the Watchung Syncline, usually showing a complete (although modified) Tomkeiff structural sequence. In most outcrops, the entabulature is coarse-grained and densely jointed, forming high, irregularly angular columns 0.1 m to 1.0 m in width, in marked contrast to those of the Orange Mountain Basalt. The first flow is separated from the second by a thin red siltstone, the distribution of which was mapped by Kümmel (1897) and Lewis (1907b)

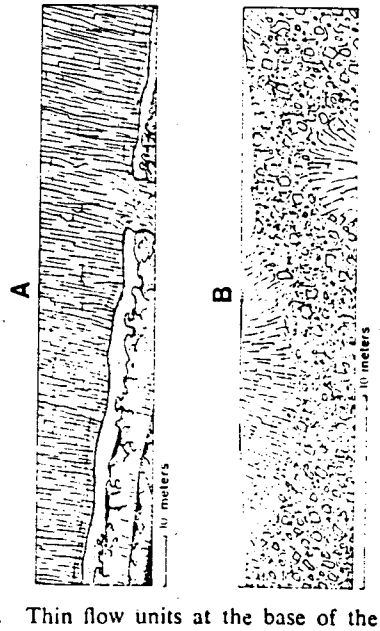

FIG. 9. Thin flow units at the base of the Preakness Basalt; A, thin pahoehoe flows and possible feeder dike along Interstate Route 78 in Pluckemin, New Jersey; B, possible aa flows exposed along the Passaic River at Little Falls, New Jersey (adapted from Darton, 1890).

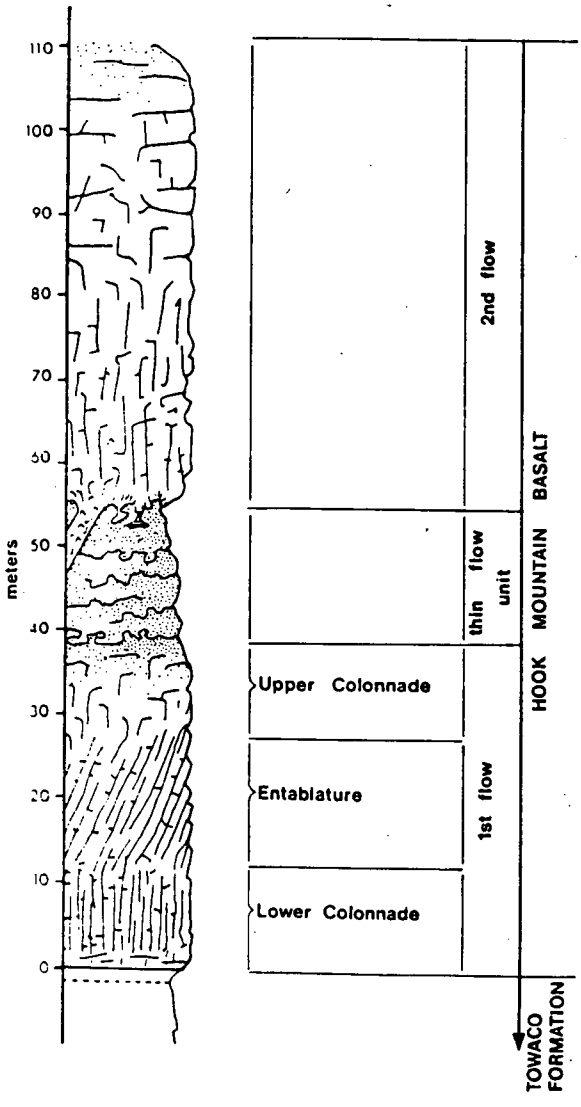

FIG. 11. Type section of the Hook Mountain Basalt. Note two major flow units and interbedded thin pahoehoe flows and possible feeder dike. Section exposed along Interstate Route 80 near Pine Brook, New Jersey.

The uppermost cycle is well exposed in the Roseland Quarry. Formerly another cycle was exposed in an adjacent area (Olsen, 1975), and yet another was located in a nearby well boring. In total, six successive cycles have been identified in the upper half of the Towaco Formation, and most of these have been traced throughout the Watchung Syncline.

There is a thin brown volcanoclastic unit at the top of the Towaco Formation. It is about 1 m thick and occurs at most exposures of the upper Towaco Formation from at least Pompton to Roseland. It is especially well exposed at the Towaco type exposure. Lewis (1908) described unweathered samples of this unit and noted that it consists of altered volcanic glass with inclusions of feldspar and augite and pseudomorphs after olivine in a matrix of brown radial natrolite. Small blocks of vesicular basalt are occasionally present and at Pompton very thin vesicular "flow breccias" are included in the unit (Faust, 1978).

The Hook Mountain Basalt

The uppermost extrusive volcanic unit in the Watchung Syncline is here formally designated the Hook Mountain Basalt (Baird and Take,

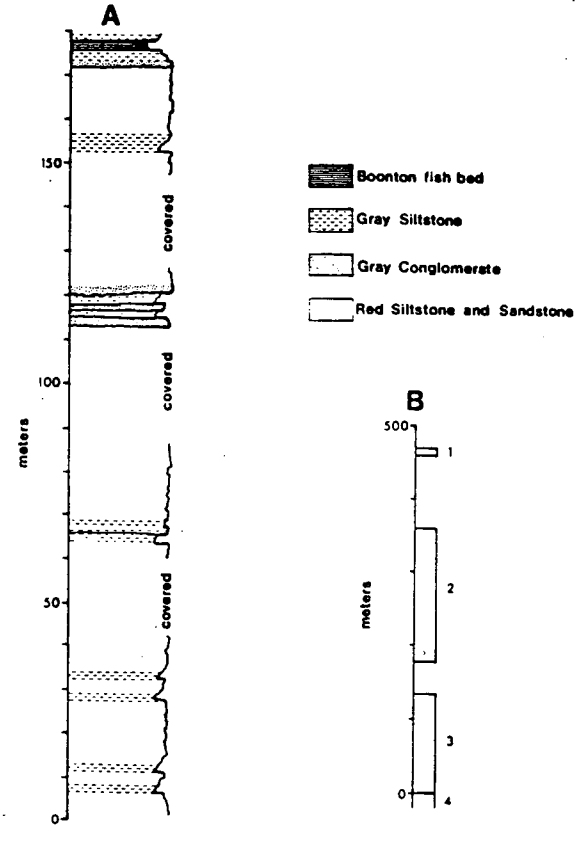

FIG. 12. Type section of the Boonton Formation; A, section exposed along Rockaway River in Boonton, New Jersey; B, composite section of entire preserved Boonton Formation — 1, red matrix conglomerate exposed at Chestnut Hill, Morristown, New Jersey, 2 beds making up the type section, 3, gray, black, brown and red siltstones exposed near Bernardsville, New Jersey, 4, Hook Mountain Basalt.

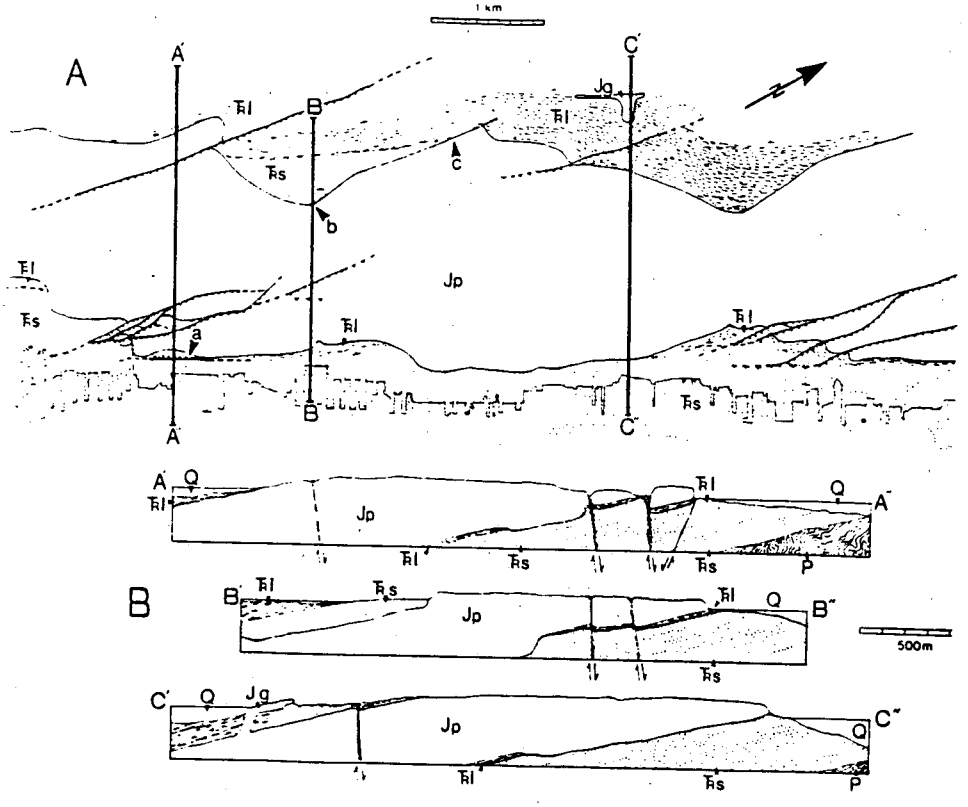

FIG. 13. Lincoln Tunnel area, Weehawken and Central Park Quadrangles. A, map of major lithologic units and structural features; B, sections through the Palisades Ridge. No vertical exaggeration. Abbreviations of lithologic units as follows: 1, Triassic Lockatong Formation; s, Triassic Stockton Formation; Jp, Jurassic Palisade Sill; Jg, Jurassic Granton Sill; P, metamorphic basement rocks of the New York City Group. a, b, and c refer to areas discussed in text. Faults with teeth on down dropped side.

blocks; and 7, beds on the east side of the same blocks tend not to be folded. The relationships of Newark Basin sediments to basin margins (i.e., faults or onlaps), the thicknesses of Newark strata, the number, distribution, and direction of smaller faults, the sense of motion of the major and minor faults (normal or oblique or strike-slip), and the physical relationships of joints to faults and folds have never been satisfactorily resolved, although research toward this goal is underway (Ratcliff, 1979). Obviously, all questions involving these features cannot be discussed in this paper, both because of lack of space and a lack of data. Enough observations have been made, however, to show some aspects of local structural style (Figures 5, 13, 14). There is no doubt, however, that Newark Basin structure is complex, and that further observation will change the results extracted even from the limited areas discussed here.

The Lincoln Tunnel area (Figure 13) of the Palisades Ridge forms part of the eastern edge of the Newark Basin and is cut by a series of putatively normal faults striking N 5-10° E, dipping vertically to 40° east, and with displacements of from 1 to 100 m (Fluur, 1941; Van Houten, 1969). Crush zones vary from a few centimeters to several meters (Fluur, 1941). There is also at least one major northwest-dipping normal fault on the east face of the Palisades (Kings Bluff) similar to those inferred to exist in the southern part of the Newark Basin by Sumner (1979) on the basis of geophysical data. This fault (a in Figure 14) was encountered during the construc-

Lockatong is lifted the thickness of the sill on the west side of the Palisade ridge, while on the east side the diabase rests above the stratigraphically equivalent portion of the Stockton and Lockatong (Figure 13).

The west edge of the northern part of the Newark Basin near Oakland, New Jersey (Figure 14) is like the east wall of the Hartford Basin in having served as a model for interpreting other Newark Supergroup Basins (Russell, 1892; Russell, 1922; Barrell, 1915; Sanders, 1963 — but see Faill, 1973). The nearly straight truncation of all Newark deposits and associated structures along a line striking N 45° E, local drag folding, and direct observation by borings (Ratcliff, 1979) indicate that a major fault, the Ramapo Fault, forms the northwestern edge of the Newark Basin, from at least Morristown, New Jersey to Theills, New York (60 km). Locally, at least, the fault dips 60° southeast (Ratcliff, 1979). At Morristown there is an offset to the east in the Ramapo Fault, and southwest of Bernardsville, New Jersey, the Ramapo Fault appears to join the braided northern continuation of the Hopewell Fault as suggested by Sanders (1962) and Manspiezer (pers. comm.). The northern portion of the Ramapo Fault is offset again at Theills, probably continuing northeast into Westchester County, New York (Ratcliff, 1973). As illustrated in the preceding discussion of the Cushetunk area and the structural map in Figure 2, such a long, linear fault as the Ramapo is, in truth, atypical for the western margin of the Newark Basin (as noted by Faill, 1973).

Newark Basin strata are warped into a series of anticlines and synclines along the Ramapo Fault, much as they are along the Flemington and Hopewell faults (Wheeler, 1939). These folds are oriented with their long axes more or less normal to the strike of the fault. These folds are, in turn, cut by a series of smaller faults (most of which probably have a large dip-slip component) downdropping to the east and striking, like those of the Lincoln Tunnel region (Figure 13) N 5° - 10° E (Figure 14). While apparent map offsets due to these faults are most obvious close to the Ramapo Fault (Figure 2), some of this series make it as far south as Newark, New Jersey; in fact, both the type section of the Orange Mountain and Preakness Mountain Basalts are cut by a series of faults. It is not clear if any of these faults completely cross the basin, however. Like the folds along the basin edge, these faults terminate to the north along the Ramapo Fault.

Along the northwest border of the Newark Basin, in the Cushetunk Mountain area (previously mentioned, Figure 5), Newark strata onlap onto a step-faulted basement. To the west of Bernardsville, the border of the Newark Basin consists of a series of faults trending N 35° - 50° E and N 5° -10° E, the latter being truncated by the former, and a series of onlaps of Stockton through Passaic Formation on basement. As is evident from Figure 5, the pre-Newark floor must have been some 5,000 m deeper near Clinton than at Potterstown during the deposition of the Orange Mountain Basalt. These rather complex relationships are best explained by a hypothesis of "piano-key" fault blocks bound by faults with a major normal component striking N 35° -50° E. During deposition of the younger Newark Basin beds, these blocks formed ramps which dipped southwest into the basin along their long axes at about 13° and thus resemble the right echelon relay faults and ramps described by Kelly (1979) for the Rio Grande Rift. Near Jutland, New Jersey, basal Passaic Formation apparently laps over one of the N 40° E faults, presumably indicating that the fault ceased movement prior to the deposition of these Passaic beds, an interpretation implied by McLaughlin (1946).

Thus, on the basis of these three areas it is possible to conclude that Newark Basin strata are cut by at least three sets of faults, most probably normal; one set striking N 30° - 50° E, dipping southeast on the west edge of the basin; another, as yet poorly known set with the same strike as the latter but dipping northwest, dropping beds down to the northwest; and a third set striking N 5° - 10° E. The southeast dipping northeast striking faults truncate the major folds in Newark strata as well as the other faults, while the more northerly striking faults cut but do not terminate folds and are responsible for the difficulty in making reliable thickness estimates of Newark Basin beds. There are definitely more faults present and of more varied nature than mentioned above. Kümmel (1897) and Darton (1890) show the

will serve as a reference standard for comparison with other early Mesozoic areas.

The basic biostratigraphic framework for Newark Basin deposits has been outlined by Olsen and Galton (1977) and Cornet (1977) and the details of this correlation will be given elsewhere (Olsen, McCune, and Thomson, in press; Olsen, Baird, and Salvia, MS; and Colbert and Olsen, MS). At this time it is necessary to present the distribution of taxa within the Passaic through Boonton formations and tie these in with the regional correlation (Figure 15).

For regional correlation, relatively strong emphasis has been placed on the distribution of palynomorph taxa (Cornet, 1977, and pers. comm.). This reliance has been especially strong for correlation between the upper Newark and the European Early Jurassic (see Figure 15). Tetrapod data, both in the form of skeletal remains and footprints, parallel the palynomorph data, and have been essential in correlating regions from which floral data is not available (such as the upper Stormberg — J. M. Anderson, pers. comm.). For fine internal correlation of the Early Jurassic portions of the Newark, however, the biostratigraphic subdivisions based on pollen and spores have proved too broad (Cornet, 1977). In these areas, fossil fish have provided a means of correlation (Olsen, McCune, and Thomson, in press).

The broad aspects of this biostratigraphic correlation are in agreement with most geophysical data, significantly the paleomagnetic work of McIntosh (1976) and Reeve and Helsley (1972) on the Newark Basin section and the Chinle Formation (southwestern United States), as well as with the paleomagnetic work of DeBoer (1968). In addition, radiometric dates available for Newark Basin basalts are in agreement with a Jurassic age for these units (Armstrong and Besancon, 1970; Dallmeyer, 1975; Sutter and Smith, 1979; W. D. Masterson and K. K. Turekian, pers. comm.). It must be noted, however, that the geophysical techniques used to date may be too inconsistent for the data to be used in fine scale correlation among the various individual formations of the Newark Supergroup.

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Thickness (m)	Description
.9	red cross-bedded sandstone and siltstone, fining-upwards
.8	red planer, thin-bedded sandstone
4.0	covered
4.6	red interbedded siltstone and sandstone
2.0	covered
1.2	red burrowed sandstone and siltstone
48.0	covered
.8	red blocky siltstone
1.5	red feldspathic sandstone, strongly downcutting, fining-upwards
3.4	red blocky siltstone
.7	red feldspathic sandstone, fining-upwards, deeply downcutting
.3	red blocky siltstone, covered in places
+1	red fine feldspathic sandstone
Section B	Base of exposure 488 m above and 3.4 km west of top of section A, along Rt. 80 (section measured from top down).
.61	red fissile siltstone
.15	yellow-orange planer-bedded coarse siltstone
.91	red blocky siltstone
.15	yellow-orange cross-bedded base, planer-bedded top, fine sandstone
.20	red blocky siltstone
.30	yellow-orange cross-bedded base, planer-bedded top, fine sandstone
.90	red fissile siltstone
.93	red blocky siltstone, fining-upwards
.32	red fissile siltstone
.60	red siltstone
.76	red fissile siltstone
.60	red coarse feldspathic sandstone, fining-upwards
.30	red blocky siltstone
1.32	red very fine sandstone, fining-upwards
+1.52	red blocky siltstone
Section C	Base of exposure 244 m above and 1.8 km west of top of section B, along Rt. 80 (sections measured from top down).
1.5	red, very irregular, trough cross-bedded sandstone grading upwards into siltstones, laminated carbonate-rich oblong chips and concentric accretions at base
1.5	same as above
Section D	Base of exposure 1320 m above and 6.9 km west of top of section C (section measured from top down).
3.0	red massive, cross-bedded sandstone
Section E	Base of exposure 554 m above and 2.9 km west of top of section D (section measured from top down).
+10.0	massive basalt — base of Orange Mountain Basalt
.9	brown massive sandstone welded to basalt
1.8	red siltstone with numerous small carbonate nodules
.93	red siltstone
1.5	red sandstone, fining-upwards

Type Section of the Towaco Formation
(measured from top down)
(see Figure 11)

Basal Hook Mountain Basalt and cycle A of Towaco Formation exposed in the "Dinosaur Tract" of the Essex County Park Commission adjacent to the "Nob Hill" condominium project, where cycle B and the upper part of cycle C were exposed prior to 1977 (Olsen, 1975). All these exposures were part of the Roseland Quarry, Roseland, New Jersey.

Unit letter from Figure 16	Thickness	Description
Hook Mountain Basalt, 1st flow	35.0	Tholeiitic Basalt. Massive at base, columnar jointed in middle, vesicular at top.
Towaco Formation Volcanoclastic bed		
a	.9	Brown, badly weathered palagonitic unit consisting of shards of altered glass in a matrix of brown ?radial natrolite when fresh.
Upper Cycle (A)		
b	.5	Light gray and lavender siltstone, locally laminated with small scale crossbedding. May contain volcanoclastic component.
c	1.2	Dark lavender and maroon siltstone with small scale crossbedding. Small orange crystals (weathered) along fracture planes.
d	1.8	Deep red, hard siltstone grading into units above and below. Contains one fining-upwards cycle with reptile footprints common.
e	29.3	10 red fining-upwards cycles, each a mean of 2.9 m thick and composed of thick beds of red sandstone or coarse siltstone with prominent slip-off surfaces grading up into beds of ripple-bedded siltstone and blocky siltstone. Lowest cycle contains buff intraformational breccia with coprolites, reptile bone fragments, and fish scales. Lower cycles contain numerous calcareous lenticular concretions most common in coarse parts of cycles. Fine parts of middle cycles contain numerous small dolomitic concretions and deep mud cracks. Reptile footprints common in lower and upper cycles, as are root casts.
f	3.4	Gray and buff fining-upwards cycles consisting of a lower, cross-bedded sandstone grading up into lavender and gray siltstone. Reptile footprints and carbonized plants common.
g	1.1	Gray-green fine siltstone massive and indistinctly bedded. Small bits of carbonized stems and leafy twigs common. Palyniferous (Cornet, 1977).
h	.6	Dark to light gray, very fine and fine siltstone with massive to fine bedding and local load casts and ?gypsum crystal impressions. Good plant fragments including several conifer species, *Semionotus* scales and bones, and a single beetle elytron.
i	.4	Black, slickensided very fine siltstone with common chert nodules with a globular fabric.
j	.2	Black laminate. Black carbonaceous siltstone and white carbonate couplets .42 mm thick. Upper part of unit has several 5 mm thick graded, black siltstone layers. Grades into unit i.
k	.3	Light gray clayey siltstone, soft with black laminae becoming common upwards. Grades into unit j.
l	2.5	Gray fining-upward cycle composed of a lower cross-bedded sandstone containing numerous tree limbs, branches and roots grading upwards into a fine, well-bedded siltstone, locally ripple-bedded with numerous reptile footprints. Uppermost portion contains gray-green massive siltstone.
m	.9	Gray-buff, well bedded siltstone with dinosaur footprints and plant roots preserved both as carbonized impressions and natural casts.
Cycle B		
n	4.2	Red, thick fining-upward cycle. Lower part consists of thick beds of red sandstone with slip-off surfaces, local intraformational conglomerates and natural casts of large tree limbs or roots and a possible large reptile jaw. Middle part composed of 5 cm ± fine graded beds with very rare bone fragments and ?dinosaur teeth and exceptionally good reptile footprints. Plant fragments common and preserved as impressions or natural casts. Upper part is fine siltstone and plant remains present either as natural casts or carbonized compressions surrounded by gray-green halos. Grades upward into unit m.

Thickness (m)	Description
+5	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding common (mostly covered).
1.1	Gray fine sandstone to fine conglomerate. Cross-bedded (tongue of Morristown facies).
2.6	Gray clayey siltstone with carbonized plant fragments.
1.4	Gray fine sandstone to conglomerate, cross-bedded with fine siltstone interbeds and carbonized plant fragments (tongue of Morristown facies).
1.6	Gray clayey siltstone with groove casts. Carbonized plant remains present.
+1.5	Gray sandstone and conglomerate, cross-bedded (tongue of Morristown facies).
ca.30	covered
+17.0	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding common. Dolomitic concretions and reptile footprints present.
.9	Red and gray fine siltstone.
.9	Gray fine siltstone.
1.4	Gray fine sandstone and coarse siltstone: small-scale cross-bedding and carbonized plant fragments present.
+.9	Gray fine siltstone with carbonized plant fragments.
ca.20	covered
+7.9	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding common. Dolomitic concretions and reptile footprints present.
1.5	Gray fine siltstone with carbonized plant fragments.
3.1	Red siltstone with dolomitic concretions and small-scale cross-bedding.
ca.1	Gray fine siltstone (poorly exposed).
13.8	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding common. Dolomitic concretions present.
ca.1	Gray fine siltstone (poorly exposed).
1.5	Red siltstone with small-scale cross-bedding.
.8	Gray coarsening upwards siltstone.
6.1	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding and dolomitic concretions common.

REFERENCE NO. 27

WESTON

Originator

PHONE CONVERSATION RECORD

Conversation with:

Name Jack Ferraro

Company Parsippany H2O Dept

Address Parsippany NJ

Phone 201 263 7099

Subject

Date 8 / 24 / 93

Time 1600 AM/PM

☒ Originator Placed Call

☐ Originator Received Call

W.O. NO. 4000 016 081 0011 05

Notes: Called Mr Ferraro and asked him if he could find out the exact depth of well # 12, which is the closest well to Metro loop. He called back and said it was 100 feet deep.

☐ **File**

☐ **Tickle File** / /

☐ **Follow-Up By:**

☐ **Copy/Route To:**

Follow-Up-Action:

Originator's Initials

RFW 110-4-83

REFERENCE NO. 28

WESTON

C. [signature]
Originator

PHONE CONVERSATION RECORD

Conversation with:

Name Pete Eustachio

Company SMCMUA

Address Morristown, NJ

Phone 201 326 7230

Date 8 / 25 / 93

Time 14 00 AM/PM

☒ Originator Placed Call

☐ Originator Received Call

W.O. NO. 4200 016 081 0011 05

Subject

Notes: Called Mr Eustachio to find out if the H2O it (SMCMUA) gets from the Clyde potts reservoir is blended w/ groundwater obtained from Public Supply wells - he said it was.

[signature]

☒ **File** Mature Site File

☐ **Tickle File** / /

☐ **Follow-Up By:**

☐ **Copy/Route To:**

Follow-Up-Action:

Originator's Initials

RFW 110-4-83