GENERAL GC DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09DT4-TMA-690 (923-E418, Filename B09DT4.BNA)

9/13/2016

MEMORANDUM

APR 1994
RECEIVED
TQO

TO: 200-UP-2 Project QA Record April 11, 1994

FR: Susan Winter, Golder Associates Inc.

RE: GENERAL GC DATA VALIDATION SUMMARY FOR DATA PACKAGE: B09DT4-TMA-690 (923-E418, Filename B09DT4.BNA)

INTRODUCTION

This memo presents the results of data validation on data package B09DT4-TMA-690 prepared by the Thermo Analytical (TMA) laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09DT4	01/11/94	SOIL	SEE NOTE 1
B09DT5	01/11/94	SOIL	
B09DT7	01/11/94	SOIL	
B09DT9	01/13/94	SOIL	
B09WF3	01/13/94	SOIL	
B09WF5	01/13/94	SOIL	
B09WF6	01/13/94	SOIL	

Note 1. All samples were analyzed for kerosene according to the 8015 Modified method.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

001

Completeness. The data package was complete for all requested analyses. A total of seven samples were validated in this data package with a total of 7 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

No minor deficiencies were identified during data validation which required qualification of data as estimated.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

9413225.2018

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

9113225.2019

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected in the associated laboratory blank. This qualifier is applied by the laboratory. During the process of data validation this qualifier may be replaced by other appropriate qualifiers as defined by the validation procedures. The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample quantitation limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration reported may not accurately reflect the sample quantitation limit. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. This qualifier may be applied by the laboratory to indicate a concentration which is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). During data validation this qualifier may be applied to indicate a minor quality control deficiency. However in either case, the associated data should be considered usable for decision making purposes.

NJ - Indicates presumptive evidence of a constituent at an estimated value. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

N - Indicates presumptive evidence of a constituent. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

JN - Indicates a tentatively identified compound (TIC) whose concentration and identification have been determined to be valid as a result of data validation. The associated data should be considered usable for decision making purposes.

UJN - Indicates a tentatively identified compound (TIC) that has been determined to be presumptive and valid (JN) in terms of identification and quantitation and has been qualified as undetected (U) due to associated blank contamination.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9414225.2021

DATA QUALIFICATION SUMMARY

SDG: B09DQ6-TMA-681	VALIDATOR: [illegible]	DATE: April 11, 1994	PAGE 1 OF 1
COMMENTS: GENERAL GC AS KEROSENE			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
NO QUALIFICATION IS REQUIRED			

9413225.2022

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

9/17/2025 2023

Validated Data Summary, Data Package: B09DT4-TMA-690

	Samp#	B09DT4		B09DT5		B09DT7		B09DT9		B09WF3		B09WF5	
	Date	1-11-94		1-11-94		1-11-94		1-13-94		1-13-94		1-13-94	
	Location	---		---		---		---		---		---	
	Depth	---		---		---		---		---		---	
	Type	---		---		---		---		---		---	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
KEROSENE	UG/KG	5.000	U	5.000	U	5.000	U	5.000	U	5.000	U	5.000	U

Verified

4/12/94

Validated Data Summary, Data Package: B09DT4-TMA-690

	Samp#	B09WF6	
	Date	1-13-94	
	Location	---	
	Depth	---	
	Type	---	
	Comments	---	
Parameter	Units	Result	Q
KEROSENE	UG/KG	5.000	U

Verified

4/12/94

~~000633~~

TMA Inc. REPORT Work Order # A4-01-025

Received: 01/18/94

Results by Sample

SAMPLE ID B09DT4 FRACTION 06D TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 01/11/94 Category

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 01/27/94
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL	Q
Kerosene Range	ND	5.0	U
C10 - C16 Jet Fuel Range	NA	NA	
C9 - C22 Diesel Range	NA	NA	
Hydraulic Range	NA	NA	

ND = Not detected at the specified limits

Form I

Verified
4/11/94

BW 322E 2026

~~000635~~ SP 3/21/97

TMA Inc. REPORT Work Order #~~AW-015025~~ ~~000635~~ #A4-01-025

Received: 01/18/94 Results by Sample

SAMPLE ID B09DT5 FRACTION 07D TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 01/11/94 Category

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 01/27/94
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL	Q
Kerosene Range	ND	5.0	U
C10 - C16 Jet Fuel Range	NA	NA	
C9 - C22 Diesel Range	NA	NA	
Hydraulic Range	NA	NA	

ND = Not detected at the specified limits

Form I

Verified

4/11/94

0014225.2027

TMA Inc. REPORT Work Order # A4-01-025

Received: 01/18/94 Results by Sample

SAMPLE ID B09DT7 FRACTION 08D TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 01/11/94 Category

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 01/27/94
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL	Q
Kerosene Range	ND	5.0	U
C10 - C16 Jet Fuel Range	NA	NA	
C9 - C22 Diesel Range	NA	NA	
Hydraulic Range	NA	NA	

ND = Not detected at the specified limits

Form I

Verified
4/11/94

94 425 2028

TMA Inc. REPORT Work Order # A4-01-025

Received: 01/18/94

Results by Sample

SAMPLE ID B09DT9 FRACTION 01G TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 01/13/94 Category

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 01/27/94
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL	Q
Kerosene Range	ND	5.0	U
C10 - C16 Jet Fuel Range	NA	NA	
C9 - C22 Diesel Range	NA	NA	
Hydraulic Range	NA	NA	

ND = Not detected at the specified limits

Form I

Verified

4/11/94

FH 3225 2029

TMA Inc. REPORT Work Order # A4-01-025

Received: 01/18/94

Results by Sample

SAMPLE ID B09WF3 FRACTION 02E TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 01/13/94 Category

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 01/27/94
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL	Q
Kerosene Range	ND	5.0	U
C10 - C16 Jet Fuel Range	NA	NA	
C9 - C22 Diesel Range	NA	NA	
Hydraulic Range	NA	NA	

ND = Not detected at the specified limits

Form I

Verified

4/11/94

94 1322 2030

TMA Inc. REPORT Work Order # A4-01-025

Received: 01/18/94 Results by Sample

SAMPLE ID B09WF5 FRACTION 03D TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 01/13/94 Category

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 01/27/94
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL	Q
Kerosene Range	ND	5.0	u
C10 - C16 Jet Fuel Range	NA	NA	
C9 - C22 Diesel Range	NA	NA	
Hydraulic Range	NA	NA	

ND = Not detected at the specified limits

Form I Verified

4/11/94

94 3225.203

TMA Inc. REPORT Work Order # A4-01-025

Received: 01/18/94 Results by Sample

SAMPLE ID B09WF6 FRACTION 04D TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 01/13/94 Category

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 01/27/94
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL	Q
Kerosene Range	ND	5.0	U
C10 - C16 Jet Fuel Range	NA	NA	
C9 - C22 Diesel Range	NA	NA	
Hydraulic Range	NA	NA	

ND = Not detected at the specified limits

Form I

Verified

4/11/94

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

94132E.2033

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CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 01-025

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : January 18, 1994

1.0 DESCRIPTION OF CASE :

Eight soil samples were analyzed for TCL Organics- Volatiles and Semivolatiles according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision OLM01.8. The Extractable Hydrocarbons for Kerosene (K) were analyzed according to the SW-846 Method 8015M.

9413225.2034

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX
B09DT9	A4-01-025-01A	V	SOIL
B09DT9	A4-01-025-01B	SV	SOIL
B09DT9 MS	A4-01-025-01C	SV	SOIL
B09DT9 MSD	A4-01-025-01D	SV	SOIL
B09DT9	A4-01-025-01G	K	SOIL
B09WF3	A4-01-025-02A	V	SOIL
B09WF3	A4-01-025-02B	SV	SOIL
B09WF3	A4-01-025-02E	K	SOIL
B09WF3 MS	A4-01-025-02F	K	SOIL
B09WF3 MSD	A4-01-025-02G	K	SOIL
B09WF5	A4-01-025-03A	V	SOIL
B09WF5	A4-01-025-03B	SV	SOIL
B09WF5	A4-01-025-03D	K	SOIL
B09WF6	A4-01-025-04A	V	SOIL
B09WF6	A4-01-025-04B	SV	SOIL
B09WF6	A4-01-025-04D	K	SOIL
B09DT6	A4-01-025-05A	V	SOIL
B09DT6 MS	A4-01-025-05B	V	SOIL
B09DT6 MSD	A4-01-025-05C	V	SOIL
B09DT4	A4-01-025-06A	V	SOIL
B09DT4	A4-01-025-06B	SV	SOIL
B09DT4	A4-01-025-06D	K	SOIL
B09DT5	A4-01-025-07A	V	SOIL
B09DT5	A4-01-025-07B	SV	SOIL
B09DT5	A4-01-025-07D	K	SOIL
B09DT7	A4-01-025-08A	V	SOIL
B09DT7	A4-01-025-08B	SV	SOIL
B09DT7	A4-01-025-08D	K	SOIL

000086

3.0 COMMENTS :

3.1 SHIPPING AND DOCUMENTATION :

All of the samples were received intact and properly documented.

3.2 ANALYSIS

3.2.1 VOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were analyzed by heated purge within the CLP SOW holding times. The samples were analyzed during a period from 01/19/94 through 01/27/94, on the instrument "ROCKY". On 01/19/94, the operator inadvertently entered the wrong year during the instrument system boot-up, and therefore, all of the sample data incorrectly documented the year as "1993". Since it was not possible to change the date of analysis within the system the work order data was processed as is, and the appropriate manual corrections were made on the raw data by the laboratory. In addition, the report forms were changed to reflect the correct year of analysis (1994).

The analyte Acetone was detected at concentrations above the CRQL in samples B09DT4, B09DT5, B09DT6, B09WF6, B09DT6MS, and the blanks, VBLK0124R and VBLK0125R. In all of the other samples, Acetone was detected at concentrations either at or below the CRQL. Other TCL analytes detected in some of the samples included Methylene Chloride, 4-Methyl-2-pentanone, and Toluene, all at concentrations below the CRQL.

All of the QC results were within the limits specified by the EPA CLP SOW.

3.2.2 SEMIVOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the contract required holding times.

In all of the samples Di-n-butylphthalate was detected at concentrations less than the CRQL. In addition, sample B09WF5 had bis(2-Ethylhexyl)phthalate detected at a concentration below the CRQL.

Both the MS and the MSD sample had matrix spike recoveries above the QC limits for 2,4-Dinitrotoluene, while the MSD sample also had a high recovery for 4-Nitrophenol. In accordance with the protocol, no further action was required.

All of the other QC results were within the limits specified

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by the EPA CLP SOW.

3.2.3 EXTRACTABLE HYDROCARBONS "KEROSENE RANGE" COMMENTS :

SEQUENCE NOTES :

The sequence was started on 01/19/94 and was analyzed according to the SW-846 Method 8015M. The initial calibration consisted of 5 different levels of the Kerosene standard that ranged from approximately 200ppm to 2000ppm. The continuing calibration at approximately 1000ppm was injected amongst the samples, in order to verify the instrument stability. The %RSD in the initial calibration and the %D in the continuing calibration were below their 20% and 15% limits, respectively.

SAMPLE NOTES :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the required holding times. Approximately 20 g of each sample was extracted and concentrated to 5 mL.

There was no Kerosene detected in any of the samples. Sample B09WF3 was spiked with Kerosene, and the matrix spike recoveries were 51% for the MS, and 54% for the MSD. The blank spike was prepared at the same time and had a 52% recovery, and the data was included in the "Additional Raw Data" portion of the package.

All of the QC results were within the limits specified by the SW-846 Method 8015M.

We 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 in this hardcopy data package and in the computer-readable data submitted on diskette is authorized by the Laboratory Manager or his designees, as verified by the following signatures.

Nicole Roth 3/3/94
Nicole Roth
Program Manager

Maureen Parrish 3/2/94
Maureen Parrish
Project Manager

94/4225.2036

~~CCCC2A~~

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS / W.V. SETZER

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 1-11-94

Ice Chest No.: SML-342 — Field Logbook No.: ~~EFL-1091~~ EFL-115 JPR 1-13-94

Bill of Lading/Airbill No.: 2519008360 — Offsite Property No.: W94-0-026-1

Method of Shipment: AIR

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL)

Sample Identification

1) B09BT4
- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09BT5
- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3) B09BT7
- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

[] Field Transfer of Custody — Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
W.V. Setzer	Kermit Blum K. Blum	1-18-94 1330
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

~~100026~~

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 1-13-94

Ice Chest No.: SML-311

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

Offsite Property No.: 0gr-17394

Method of Shipment: AIR

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) RADIOACTIVE

Sample Identification

1) B09D19

1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09WF3

1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3)

1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

1-17-94

[] Field Transfer of Custody — Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
1-17-94 0930	W.V. SETZER	1-17-94 0930
W.V. Setzer		1-18-94 10:35

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

·022

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 1-13-94

Ice Chest No.: SML-335 — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 2519008448 — Offsite Property No.: W94-0-0216-3

Method of Shipment: AIR

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09WF5

4,250ml P:CLP;TAL Metals,Hg,Ti
4,250ml Gs:VOA CLP
4,250ml aG:Semi-VOA CLP
4,125ml G:Anions F,Cl,SO4 (EPA 300.0)
4,125ml P/G:Anions NO2,NO3 (EPA 353.2)
4,125ml G:Cyanide CLP
4,125ml Gw:Kerosene (8015M)
4,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09WF6

4,250ml P:CLP;TAL Metals,Hg,Ti
4,250ml Gs:VOA CLP
4,250ml aG:Semi-VOA CLP
4,125ml G:Anions F,Cl,SO4 (EPA 300.0)
4,125ml P/G:Anions NO2,NO3 (EPA 353.2)
4,125ml G:Cyanide CLP
4,125ml Gw:Kerosene (8015M)
4,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3)

~~4,250ml P:CLP;TAL Metals,Hg,Ti~~
~~1,250ml Gs:VOA CLP~~
~~1,250ml aG:Semi-VOA CLP~~
~~1,125ml G:Anions F,Cl,SO4 (EPA 300.0)~~
~~1,125ml P/G:Anions NO2,NO3 (EPA 353.2)~~
~~1,125ml G:Cyanide CLP~~
~~1,125ml Gw:Kerosene (8015M)~~
~~1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79~~

1-17-94

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
0940 Laurie E. Rogers 1-17-94	W.V. Letzen	1-17-94 0940
Relinquished by: W.V. Letzen	Received by: Kermit Blum K. Blum	Date/Time: 1-18-94 1330
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

023

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

9413225.2049

GENERAL GC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200-UP-2			DATA PACKAGE: B-9DT4-TMA-690		
VALIDATOR: [illegible]		LAB: TMA		DATE: 04/11/94	
CASE:			SDG: B-9DT4-TMA-690		

ANALYSES PERFORMED

☐ 8010	☒ 8015 as [illegible]	☐ 8020	☐ 8021	8140	8141
☐ 8150	☐ 8151	☐ WTPH-HCID	☐ WTPH-G	☐ WTPH-D	☐
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX: Soils

B-9DT4	~~B-9DF5~~
B-9DT5	B-9WF3
B-9DT7	B-9WF5
B-9DT9	B-9WF6
~~B-9DF3~~	

9413225.2041

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . Yes No N/A

Is a case narrative present? . . . . . Yes No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . Yes No N/A

Comments:

025

GENERAL GC DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION

3.1 INITIAL CALIBRATION

Was an initial calibration performed? . . . . . Yes No N/A

Are %RSD values for calibration or response factors acceptable? . . . . . Yes No N/A

Comments:

3.2 CONTINUING CALIBRATION

Was a continuing calibration check performed? . . . . . Yes No N/A

Are %D values for calibration or response factors acceptable? . Yes No N/A

Comments:

4. BLANKS

Were laboratory blanks analyzed? . . . . . Yes No N/A

Are laboratory blank results acceptable? . . . . . Yes No N/A

Were field/trip blanks analyzed? . . . . . Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments: Sample locations are not currently available. Field QC will be evaluated in the final summary report.

5. ACCURACY

Were surrogates analyzed? . . . . . Yes No N/A

Are surrogate recoveries acceptable? . . . . . Yes No N/A

Were MS/MSD samples analyzed? . . . . . Yes No N/A

Are MS/MSD recoveries acceptable? . . . . . Yes No N/A

Were LCS samples analyzed? . . . . . Yes No N/A

Are LCS recoveries acceptable? . . . . . Yes No N/A

9413225.2042

GENERAL GC DATA VALIDATION CHECKLIST

Comments: The MS/MSD %R are 51% and 54%, respectively. No qualification was required since specific lab control limits were not provided. Generally limits of 50% to 150% for GC parameters is acceptable.

6. PRECISION

Are MS/MSD sample RPD values acceptable? . . . . . (Yes) No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No (N/A)

Are field split RPD values acceptable? . . . . . Yes No (N/A)

Comments:

7. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? . . . . . (Yes) No N/A

Is compound quantitation acceptable? . . . . . (Yes) No N/A

Comments:

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . (Yes) No N/A

Are all results supported in the raw data? . . . . . (Yes) No N/A

Do results meet the CRQLs? . . . . . (Yes) No N/A

Comments:

9413225.2043

9413225.2044

HOLDING TIME SUMMARY

B09DT4-TMA-1910

SDG:	VALIDATOR: [signature]	DATE: 4/11/94	PAGE 1 OF 1

COMMENTS: GC as Kerosene (Method 8015 Modified)

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09DT4	GC as Kerosene	01/11/94	01/20/94	01/27/94	9	7	None
B09DT5	↓	01/11/94	↓	↓	9	7	↓
B09DT7	↓	01/11/94	↓	↓	9	7	↓
B09DT9	↓	01/13/94	↓	↓	7	7	↓
B09WF3	↓	01/13/94	↓	↓	7	7	↓
B09WF5	↓	01/13/94	↓	↓	7	7	↓
B09WF6	↓	01/13/94	↓	↓	7	7	↓

GENERAL CHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09DT4-TMA-690 (923-E418, Filename B09DT4.GCH)

9413225.2045

MEMORANDUM

APR 1994
RECEIVED
TQO

TO: 200-UP-2 Project QA Record

April 7, 1994

FR: Susan Winter, Golder Associates Inc.

RE: GENERAL CHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE: B09DT4-TMA-690 (923-E418, Filename B09DT4.GCH)

INTRODUCTION

This memo presents the results of data validation on data package B09DT4-TMA-690 prepared by the Thermo Analytical (TMA) laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09DT4	01/11/94	SOIL	SEE NOTE 1
B09DT5	01/11/94	SOIL	
B09DT7	01/11/94	SOIL	
B09DT9	01/13/94	SOIL	
B09WF3	01/13/94	SOIL	
B09WF5	01/13/94	SOIL	
B09WF6	01/13/94	SOIL	

Note 1. All samples were analyzed for anions (chloride, fluoride, and sulfate) and nitrate+nitrite-N.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met with the exception of the deficiencies identified below.

Sample Result Verification. All sample results were supported in the raw data.

001

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. A total of seven samples were validated in this data package with a total of 28 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data as estimated.

Matrix Spike

- The matrix spike percent recovery (MS %R) for fluoride was unacceptable. Attachments 2 and 5 provide a summary of the samples affected, data qualification applied and supporting documentation.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

9413225.2047

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

9417275.2048

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.

BJ - Indicates the constituent was analyzed for and detected at a concentration less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

94/325-2049

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9117225.2050

DATA QUALIFICATION SUMMARY

SDG: B09DT4-TMA-690	VALIDATOR:	DATE: April 7, 1994	PAGE 1 OF 1
COMMENTS: GENERAL CHEMISTRY			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
FLUORIDE	J - DETECTS UJ - NONDETECTS	B09DT4 B09DT5 B09DT7 B09DT9 B09WF3 B09WF5 B09WF6	MS %R < 75% BUT > 30%

9413225.2051

006

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

9913225.2052

Validated Data Summary, Data Package: B09DT4-TMA-690

	Samp#	B09DT4		B09DT5		B09DT7		B09DT9		B09WF3		B09WF5	
	Date	1-11-94		1-11-94		1-11-94		1-13-94		1-13-94		1-13-94	
	Location	---		---		---		---		---		---	
	Depth	---		---		---		---		---		---	
	Type	---		---		---		---		---		---	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLORIDE	MG/KG	7.100		6.500		5.000		7.800		6.900		7.600	
FLUORIDE	MG/KG	0.500	UJ	0.500	UJ	0.900	J	1.500	J	4.400	J	1.400	J
SULFATE	MG/KG	8.000		7.000		10.000		23.000		10.000		8.000	
NITRATE+NITRITE	MG-N/KG	18.500		2.480	U	2.480	U	236.000		3.980		2.490	U

Verified
[illegible] 4/7/94

9413225.2054

Validated Data Summary, Data Package: B09DT4-TMA-690

	Samp#	B09WF6	
	Date	1-13-94	
	Location	---	
	Depth	---	
	Type	---	
	Comments	---	
Parameter	Units	Result	Q
CHLORIDE	MG/KG	6.500	
FLUORIDE	MG/KG	0.500	UJ
SULFATE	MG/KG	7.000	
NITRATE+NITRITE	MG-N/K	2.470	U

Verified

4/7/94

003

TMA Inc. REPORT Work Order # A4-01-025

Received: 01/18/94

Results by Sample

SAMPLE ID B09DT4 FRACTION 06C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 01/11/94 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	7.1	mg/kg	1.0
Fluoride	300.0	<0.5	mg/kg	0.5
Sulfate	300.0	8	mg/kg	5

FORM I

Verified

4/7/94

9414225.2055

TMA Inc. REPORT Work Order # A4-01-025

Received: 01/18/94

Results by Sample

SAMPLE ID B09DT5 FRACTION 07C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 01/11/94 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Q
Chloride	300.0	6.5	mg/kg	1.0	
Fluoride	300.0	<0.5	mg/kg	0.5	U5
Sulfate	300.0	7	mg/kg	5	

FORM I

94 1225 2056

Verified

4/7/94

TMA Inc. REPORT Work Order # A4-01-025

Received: 01/18/94

Results by Sample

SAMPLE ID B09DT7 FRACTION 08C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 01/11/94 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	5.0	mg/kg	1.0
Fluoride	300.0	0.9	mg/kg	0.5
Sulfate	300.0	10	mg/kg	5

FORM I

Verified

1/7/94

94 1225 2057

TMA Inc. REPORT Work Order # A4-01-025

Received: 01/18/94 Results by Sample ~~000011~~

SAMPLE ID B09DT9 FRACTION 01E TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 01/13/94 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Q
Chloride	300.0	7.8	mg/kg	1.0	
Fluoride	300.0	1.5	mg/kg	0.5	
Sulfate	300.0	23	mg/kg	5	

FORM I

Verified

4/7/94

9413225.2058

TMA Inc. REPORT Work Order # A4-01-025

Received: 01/18/94

Results by Sample

SAMPLE ID B09WF3 FRACTION 02C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 01/13/94 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Q
Chloride	300.0	6.9	mg/kg	1.0	
Fluoride	300.0	4.4	mg/kg	0.5	B
Sulfate	300.0	10	mg/kg	5	

FORM I

9413225.2059

4/7/94

TMA Inc. REPORT Work Order # A4-01-025

Received: 01/18/94

Results by Sample

SAMPLE ID B09WP5 FRACTION 03C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 01/13/94 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	7.6	mg/kg	1.0
Fluoride	300.0	1.4	mg/kg	0.5
Sulfate	300.0	8	mg/kg	5

FORM I

Verified

4/7/94

9413225.2060

TMA Inc. REPORT Work Order # A4-01-025

Received: 01/18/94

Results by Sample

SAMPLE ID B09WF6 FRACTION 04C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 01/13/94 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	6.5	mg/kg	1.0
Fluoride	300.0	<0.5	mg/kg	0.5
Sulfate	300.0	7	mg/kg	5

FORM I

Verified

4/7/94

9413225.2061

Received: 01/19/94 Results by Sample

Q

SAMPLE ID B09DT4 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 01/11/94 Category SOIL

NITR_S 18.5
mg N/kg

SAMPLE ID B09DT5 SAMPLE # 02 FRACTIONS: A
Date & Time Collected 01/11/94 Category SOIL

NITR_S <2.48 LL
mg N/kg

SAMPLE ID B09DT7 SAMPLE # 03 FRACTIONS: A
Date & Time Collected 01/11/94 Category SOIL

NITR_S <2.48 LL
mg N/kg

SAMPLE ID B09DT9 SAMPLE # 04 FRACTIONS: A
Date & Time Collected 01/13/94 Category SOIL

NITR_S 236
mg N/kg

SAMPLE ID B09WF3 SAMPLE # 05 FRACTIONS: A
Date & Time Collected 01/13/94 Category SOIL

NITR_S 3.98
mg N/kg

SAMPLE ID B09WF5 SAMPLE # 06 FRACTIONS: A
Date & Time Collected 01/13/94 Category SOIL

NITR_S <2.49 LL
mg N/kg

SAMPLE ID B09WF6 SAMPLE # 07 FRACTIONS: A
Date & Time Collected 01/13/94 Category SOIL

NITR_S <2.47 LL
mg N/kg

Verified 4/7/94

017

TMA
Thermo Analytical Inc.

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc., retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Samples are not analyzed in accordance with New York State protocol unless indicated. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc., will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

Skinner & Sherman Laboratories Inc. 300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

9/1/3225.2063

GENERAL CHEMISTRY RESULTS

CASE NO. 01-025

Solid Sample #:

4/12/94

B09DT4	B09DT5
~~B09DT6~~	B09DT7
B09DT9	B09WF3
B09WF5	B09WF6

CASE NARRATIVE

The Matrix Spike recovery for Fluoride was below the QC requirement for sample B09DT9. A second spike (MSD) was injected with approximately one fourth the sample size that was used on the original matrix spike. The Fluoride recovery indicates that the matrix amount has an effect on the recovery of the Fluoride matrix spike and therefore the low recovery is due to matrix interferences.

Injection number 5 was reprocessed on 02/03/94 only to provide a more legible copy to the client.

No other problems were encountered during sample analysis. All QC results were acceptable.

Maureen Parrish 3/2/94

Maureen Parrish

Received: 01/19/94

Test Methodology

TEST CODE NITR S NAME Nitrate/Nitrite in Soils

The sample was extracted with deionized water and analyzed in accordance with Method for Chemical Analysis of Water and Wastes EPA-600/4-79-020, March 1979, Method 353.2 (modified)

914 3225 2065

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc., retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Samples are not analyzed in accordance with New York State protocol unless indicated. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc., will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc. 300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200

~~CCCC2A~~

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS / W.V. SETZER

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 1-11-94

Ice Chest No.: SML 342 — Field Logbook No.: ~~EFL-1091~~ EFL-1115 1-13-94

Bill of Lading/Airbill No.: 2519008360 — Offsite Property No.: W94-0-026-1

Method of Shipment: AIR

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL)

Sample Identification

1) B09BT4
- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09BT5
- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3) B09BT7
- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
W.V. Setzer	Kermit Blum K. Blum	1-18-94 1330
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: 021

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

~~100020~~

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 1-13-94

Ice Chest No.: SML-311 — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: — Offsite Property No.: OOSR-17394

Method of Shipment: AIR

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) RADIOACTIVE

Sample Identification

1) B09D79

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09WF3

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3)

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

1-17-94

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
1-17-94 0930	W.D. SETZER	1-17-94 0930
W.D. Setzer		1-18-94 10:35

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

D22

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

~~000026~~

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 1-13-94

Ice Chest No.: SML-335 — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 2519008448 — Offsite Property No.: W94-0-0216-3

Method of Shipment: AIR

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09WF5

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09WF6

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3)

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

1-17-94

[] Field Transfer of Custody — Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
0940 Lorene E. Rogers 1-17-94	W.V. Seltzer	1-17-94 0940
W.V. Seltzer	Kermit Blum K. Blum	1-18-94 1330

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

023

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

9H 3275.2069

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200-UP-2			DATA PACKAGE: B-9DT4-TMA-690		
VALIDATOR: [illegible]		LAB: TMA		DATE: 04/07/94	
CASE:			SDG: B-9DT4-TMA-690		

ANALYSES PERFORMED

☒ Anions/IC	☐ TOC	☐ TOX	☐ TPH-418.1	Oil and Grease	Alkalinity
☐ Ammonia	☐ BOD/COD	☐ Chloride	☐ Chromium-VI	☐ pH	☒ NO_3/NO_2
☐ Sulfate	☐ TDS	☐ TKN	☐ Phosphate	☐	☐
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX Soils

B-9DT4 B-9WF5

B-9DT5 B-9WF6

B-9DT7

B-9DT9

B-9WF3

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

-025

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION

Was initial calibration performed for all applicable analyses? Yes No N/A

Are initial calibration results acceptable? . . . . . Yes No N/A

Was a calibration check performed for all applicable analyses? Yes No N/A

Are calibration check results acceptable? . . . . . Yes No N/A

Comments:

4. BLANKS

Were laboratory blanks analyzed? . . . . . Yes No N/A

Are laboratory blank results acceptable? . . . . . Yes No N/A

Were field/trip blanks analyzed? . . . . . Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments: Sample locations are not currently available. Field QC will be evaluated in the final summary report.

5. ACCURACY

Were spike samples analyzed at the required frequency? . . . . Yes No N/A

Are spike recoveries acceptable? . . . . . Yes No N/A

Were LCS analyses performed at the required frequency? . . . . Yes No N/A

Are LCS recoveries acceptable? . . . . . Yes No N/A

Comments: MS %R for fluoride is 64%. Qualify assoc. results as estimated (J/UJ).

6. PRECISION

Were laboratory duplicate samples analyzed at the required frequency? . . . . . Yes No N/A

Are laboratory duplicate sample RPD values acceptable? . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

Comments:

7. ANALYTE QUANTITATION

Was analyte quantitation performed properly? . . . . . Yes No N/A

Comments:

9413225.2072

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are results supported in the raw data? . . . . . Yes No N/A

Are results calculated properly? . . . . . Yes No N/A

Do results meet the CRDLs? . . . . . Yes No N/A

Comments:

4/7/94 The Nitrate+nitrite-N LCS %R was ~~miscalculated by the lab~~ corrected from 109% to ~~[illegible]~~ 102%. No qualification is required.

027

HOLDING TIME SUMMARY

B09DT4-TMA-690

SDG:	VALIDATOR: [illegible]	DATE: 4/7/94	PAGE 1 OF 1
COMMENTS: General Chemistry			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09DT4	Anions	1/11/94	2/3/94	2/02/94	20	2	None
B09DT5		1/11/94					
B09DT7		1/11/94					
B09DT9		1/13/94			18		
B09WF3		1/13/94			18		
B09WF5		1/13/94			18		
B09WF6		1/13/94			18		
					4/7/94		
B09DT4	NO_2/NO_3	1/11/94	01/25/94	01/27/94	14	2	None
B09DT5					14		
B09DT7					14		
B09DT9		1/13/94			12		
B09WF3							
B09WF5							
B09WF6							

TMA Inc. REPORT Work Order # A4-01-025

Received: 01/18/94 Results by Sample

SAMPLE ID B09DT9 MS FRACTION 01F TEST CODE WCQCS NAME Quality Control Summary

Date & Time Collected 01/13/94 Category

SPIKE QC SUMMARY

ANALYSIS	SAMPLE ID	SAMPLE RESULT	SPIKE RESULT	AMOUNT ADDED	% R
Chloride	B09DT9	7.8	62.3	49.9	109
Fluoride	B09DT9	1.5	33.4	49.9	64
Sulfate	B09DT9	23	118	100	95

FORM V

9413225.2074

Qualifiy fluoride results as estimated (J/UJ)

4/7/94

METALS DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09DT4-TMA-690 (923-E418, Filename B09DT4.MET)

9413225.2075

MEMORANDUM

APR 1994
RECEIVED
TQO

TO: 200-UP-2 Project QA Record

April 12, 1994

FR: Susan Winter, Golder Associates Inc.

RE: METALS DATA VALIDATION SUMMARY FOR DATA PACKAGE: B09DT4-TMA-690 (923-E418, Filename B09DT4.MET)

INTRODUCTION

This memo presents the results of data validation on data package B09DT4-TMA-690 prepared by the Thermo Analytical (TMA) laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09DT4	01/11/94	SOIL	SEE NOTE 1
B09DT5	01/11/94	SOIL	
B09DT7	01/11/94	SOIL	
B09DT9	01/13/94	SOIL	
B09WF3	01/13/94	SOIL	
B09WF5	01/13/94	SOIL	
B09WF6	01/13/94	SOIL	

Note 1. All samples were analyzed for CLP TAL metals, cyanide and titanium.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met with the exception of the deficiencies identified below.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

9413225.2076

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. A total of seven samples were validated in this data package with a total of 175 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data as estimated.

Laboratory Blanks

- **Positive Blanks.** Barium, beryllium, chromium, copper, magnesium, manganese, potassium, zinc, titanium, and silver were detected at positive concentrations in the associated calibration and/or preparation blanks. Attachments 2 and 5 provide a summary of the sample affected, data qualification applied and supporting documentation.

- **Negative Blanks.** Antimony and calcium were detected at negative concentrations in the calibration or preparation blanks. Attachments 2 and 5 provide a summary of the sample affected, data qualifications applied and supporting documentation.

Laboratory Duplicate

- The laboratory duplicate relative percent difference (RPD) for iron was unacceptable. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

9413225.2077

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

9417225.2078

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.

BJ - Indicates the constituent was analyzed for and detected at a concentration less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

9117225.2079

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9413275.2080

DATA QUALIFICATION SUMMARY

SDG: B09DT4-TMA-690	VALIDATOR:	DATE: April 12, 1994	PAGE 1 OF 2
COMMENTS: METALS			

COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
BARIUM	U	B09DT4 B09DT5 B09WF5 B09WF6	PRESENT IN CCB AT A POSITIVE CONCENTRATION
BERYLLIUM	U	B09DT4 B09DT7 B09DT9 B09WF3	PRESENT IN ICB AND CCB AT POSITIVE CONCENTRATIONS
CALCIUM	UJ	B09DT4 B09DT5 B09WF5 B09WF6	PRESENT IN ICB AT A NEGATIVE CONCENTRATION
CHROMIUM	U	B09DT4 B09DT5 B09WF5 B09WF6	PRESENT IN CCB AND PREP. BLANK AT POSITIVE CONCENTRATIONS
COPPER	U	B09DT4 B09DT5 B09DT7 B09DT9 B09WF3	PRESENT IN ICB, CCB, AND PREP. BLANK AT POSITIVE CONCENTRATIONS
MAGNESIUM	U	B09DT4 B09DT5 B09WF5 B09WF6	PRESENT IN CCB AT A POSITIVE CONCENTRATION
MANGANESE	U	B09DT4 B09DT5 B09WF5 B09WF6	PRESENT IN CCB AND PREP. BLANK AT POSITIVE CONCENTRATIONS
POTASSIUM	U	B09DT4 B09DT5 B09WF5 B09WF6	PRESENT IN ICB AND PREP. BLANK AT POSITIVE CONCENTRATIONS
ZINC	U	B09DT4	PRESENT IN CCB AT A POSITIVE CONCENTRATION
TITANIUM	U	B09DT4	PRESENT IN CCB AT PREP. BLANK AT POSITIVE CONCENTRATIONS
SILVER	U	B09DT7 B09WF3 B09WF5	PRESENT IN CCB AT A POSITIVE CONCENTRATION
ANTIMONY	UJ	B09DT4 B09DT5 B09DT7 B09DT9 B09WF3 B09WF5 B09WF6	PRESENT IN PREP. BLANK AT A NEGATIVE CONCENTRATION

DATA QUALIFICATION SUMMARY

SDG: B09DT4-TMA-690	VALIDATOR:	DATE: April 12, 1994	PAGE 2 OF 2
COMMENTS: METALS			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
IRON	J	B09DT4 B09DT5 B09DT7 B09DT9 B09WF3 B09WF5 B09WF6	DUPLICATE RPD > 35% AND SAMPLE RESULTS > 5xCRDL

9413225.2082

007

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

9413225.2083

Validated Data Summary, Data Package: B09DT4-TMA-690

	Samp#	B09DT4		B09DT5		B09DT7		B09DT9		B09WF3		B09WF5	
	Date	1-11-94		1-11-94		1-11-94		1-13-94		1-13-94		1-13-94	
	Location	---		---		---		---		---		---	
	Depth	---		---		---		---		---		---	
	Type	---		---		---		---		---		---	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	MG/KG	56.300		65.700		7310.000		7530.000		6270.000		74.400	
ANTIMONY	MG/KG	2.400	UJ	2.200	UJ	2.500	UJ	2.600	UJ	2.500	UJ	2.300	UJ
ARSENIC	MG/KG	0.590	U	0.550	U	3.700		3.700		3.800		0.570	U
BARIUM	MG/KG	0.590	U	0.280	U	45.200		104.000		74.100		0.430	U
BERYLLIUM	MG/KG	0.110	U	0.060	U	0.370	U	0.350	U	0.330	U	0.060	U
CADMIUM	MG/KG	0.330	U	0.310	U	0.340	U	0.410	B	0.520	B	0.320	U
CALCIUM	MG/KG	16.400	UJ	15.300	UJ	2360.000		90600.000		7370.000		15.900	UJ
CHROMIUM	MG/KG	0.880	U	0.830	U	9.300		11.300		15.000		0.860	U
COBALT	MG/KG	0.570	U	0.530	U	6.100	B	8.700	B	11.100		0.550	U
COPPER	MG/KG	0.840	U	0.790	U	10.400	U	12.900	U	16.000	U	0.310	U
IRON	MG/KG	160.000	J	171.000	J	14200.000	J	15100.000	J	19900.000	J	232.000	J
LEAD	MG/KG	0.450	B	0.420	B	5.100		3.900		7.900		0.370	B
MAGNESIUM	MG/KG	7.300	U	7.700	U	5150.000		5130.000		4520.000		11.700	U
MANGANESE	MG/KG	0.330	U	0.340	U	282.000		505.000		340.000		0.620	U
MERCURY	MG/KG	0.050	U	0.050	U	0.050	U	0.060	U	0.720		0.050	U
NICKEL	MG/KG	0.860	U	0.810	U	8.400		11.600		11.000		0.840	U
POTASSIUM	MG/KG	21.300	U	27.000	U	1190.000		923.000	B	1030.000		31.600	U
SELENIUM	MG/KG	0.550	U	0.510	U	0.570	U	0.600	U	0.560	U	0.530	U
SILVER	MG/KG	0.410	U	0.390	U	0.700	U	0.450	U	0.870	U	0.680	U
SODIUM	MG/KG	17.200	B	12.100	B	148.000	B	181.000	B	232.000	B	28.900	B
THALLIUM	MG/KG	0.730	U	0.680	U	0.750	U	0.790	U	0.740	U	0.710	U
VANADIUM	MG/KG	0.470	U	0.440	U	27.500		49.800		46.700		0.460	U
ZINC	MG/KG	1.600	U	0.840	U	35.000		31.300		43.100		0.880	U
CYANIDE	MG/KG	0.490	U	0.480	U	0.520	U	0.540	U	0.510	U	0.490	U
TITANIUM	MG/KG	2.000	U	2.500	B	623.000		1160.000		1550.000		2.900	B

Verified
[illegible] 4/12/94

Validated Data Summary, Data Package: B09DT4-TMA-690

	Samp#	B09WF6	
	Date	1-13-94	
	Location	---	
	Depth	---	
	Type	---	
	Comments	---	
Parameter	Units	Result	Q
ALUMINUM	MG/KG	60.200	
ANTIMONY	MG/KG	2.400	UJ
ARSENIC	MG/KG	0.590	U
BARIUM	MG/KG	0.340	U
BERYLLIUM	MG/KG	0.060	U
CADMIUM	MG/KG	0.330	U
CALCIUM	MG/KG	16.400	UJ
CHROMIUM	MG/KG	0.940	U
COBALT	MG/KG	0.570	U
COPPER	MG/KG	0.310	U
IRON	MG/KG	141.000	J
LEAD	MG/KG	0.540	B
MAGNESIUM	MG/KG	7.000	U
MANGANESE	MG/KG	0.580	U
MERCURY	MG/KG	0.050	U
NICKEL	MG/KG	0.860	U
POTASSIUM	MG/KG	20.000	U
SELENIUM	MG/KG	0.550	U
SILVER	MG/KG	0.410	U
SODIUM	MG/KG	7.800	U
THALLIUM	MG/KG	0.730	U
VANADIUM	MG/KG	0.470	U
ZINC	MG/KG	0.900	U
CYANIDE	MG/KG	0.500	U
TITANIUM	MG/KG	2.100	B

Verified

[illegible] 4/12/94

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B09DT4

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D2-0039

Lab Code: SKINER Case No.: N4-01-049SAS No.: SDG No.: B09DT4

Matrix (soil/water): SOIL Lab Sample ID: S401120-01 S

Level (low/med): LOW Date Received: 01/19/94

% Solids: 99.9

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	56.3			P	
7440-36-0	Antimony	2.4	~~U~~		P	u
7440-38-2	Arsenic	0.59	U		P	
7440-39-3	Barium	0.59	~~B~~		P	u
7440-41-7	Beryllium	0.11	~~B~~		P	u
7440-43-9	Cadmium	0.33	U		P	
7440-70-2	Calcium	16.4	~~U~~		P	u
7440-47-3	Chromium	0.88	~~B~~		P	u
7440-48-4	Cobalt	0.57	U		P	
7440-50-8	Copper	0.84	~~B~~		P	u
7439-89-6	Iron	160		*	P	s
7439-92-1	Lead	0.45	B		P	
7439-95-4	Magnesium	7.3	~~B~~		P	u
7439-96-5	Manganese	0.33	~~B~~		P	u
7439-97-6	Mercury	0.05	U		CV	
7440-02-0	Nickel	0.86	U		P	
7440-09-7	Potassium	21.3	~~B~~		P	u
7782-49-2	Selenium	0.55	U		P	
7440-22-4	Silver	0.41	U		P	
7440-23-5	Sodium	17.2	B		P	
7440-28-0	Thallium	0.73	U		P	
7440-62-2	Vanadium	0.47	U		P	
7440-66-6	Zinc	1.6	~~B~~		P	u
	Cyanide	0.49	U		CA	
7440-32-6	Titanium	2.0	~~B~~		P	u

Color Before: WHITE Clarity Before: Texture: FINE

Color After: WHITE Clarity After: Artifacts:

Comments:

Verified

[illegible] 4/12/94

FORM I - IN ILM02.1

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WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B09DT5

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-02-0039

Lab Code: SKINER Case No.: N4-01-049SAS No.: SDG No.: B09DT4

Matrix (soil/water): SOIL Lab Sample ID: S401120-02 S

Level (low/med): LOW Date Received: 01/19/94

% Solids: 99.9

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	65.7			P	
7440-36-0	Antimony	2.2	~~U~~		P	U
7440-38-2	Arsenic	0.55	U		P	
7440-39-3	Barium	0.28	~~B~~		P	U
7440-41-7	Beryllium	0.06	U		P	
7440-43-9	Cadmium	0.31	U		P	
7440-70-2	Calcium	15.3	~~U~~		P	U
7440-47-3	Chromium	0.83	~~B~~		P	U
7440-48-4	Cobalt	0.53	U		P	
7440-50-8	Copper	0.79	~~B~~		P	U
7439-89-6	Iron	171	—	*	P	U
7439-92-1	Lead	0.42	B		P	
7439-95-4	Magnesium	7.7	~~B~~		P	U
7439-96-5	Manganese	0.34	~~B~~		P	U
7439-97-6	Mercury	0.05	U		CV	
7440-02-0	Nickel	0.81	U		P	
7440-09-7	Potassium	27.0	~~B~~		P	U
7782-49-2	Selenium	0.51	U		P	
7440-22-4	Silver	0.39	U		P	
7440-23-5	Sodium	12.1	B		P	
7440-28-0	Thallium	0.68	U		P	
7440-62-2	Vanadium	0.44	U		P	
7440-66-6	Zinc	0.84	U		P	
	Cyanide	0.48	U		CA	
7440-32-6	Titanium	2.5	B		P	

Color Before: WHITE Clarity Before: Texture: FINE

Color After: WHITE Clarity After: Artifacts:

Comments:

Verified
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WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B09DT7

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D2-0039

Lab Code: SKINER Case No.: N4-01-049SAS No.: SDG No.: B09DT4

Matrix (soil/water): SOIL Lab Sample ID: S401120-03 S

Level (low/med): LOW Date Received: 01/19/94

% Solids: 96.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7310			P
7440-36-0	Antimony	2.5	~~U~~		P
7440-38-2	Arsenic	3.7			P
7440-39-3	Barium	45.2			P
7440-41-7	Beryllium	0.37	~~B~~		P
7440-43-9	Cadmium	0.34	U		P
7440-70-2	Calcium	2360			P
7440-47-3	Chromium	9.3			P
7440-48-4	Cobalt	6.1	B		P
7440-50-8	Copper	10.4			P
7439-89-6	Iron	14200		*	P
7439-92-1	Lead	5.1			P
7439-95-4	Magnesium	5150			P
7439-96-5	Manganese	282			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	8.4			P
7440-09-7	Potassium	1190			P
7782-49-2	Selenium	0.57	U		P
7440-22-4	Silver	0.70	~~B~~		P
7440-23-5	Sodium	148	B		P
7440-28-0	Thallium	0.75	U		P
7440-62-2	Vanadium	27.5			P
7440-66-6	Zinc	35.0			P
	Cyanide	0.52	U		CA
7440-32-6	Titanium	623			P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

Verified

4/12/94

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WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B09DT9

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D2-0039

Lab Code: SKINER Case No.: N4-01-049SAS No.: SDG No.: B09DT4

Matrix (soil/water): SOIL Lab Sample ID: S401120-04 S

Level (low/med): LOW Date Received: 01/19/94

% Solids: 89.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7530			P
7440-36-0	Antimony	2.6	~~U~~		P
7440-38-2	Arsenic	3.7			P
7440-39-3	Barium	104			P
7440-41-7	Beryllium	0.35	~~B~~		P
7440-43-9	Cadmium	0.41	B		P
7440-70-2	Calcium	90600			P
7440-47-3	Chromium	11.3			P
7440-48-4	Cobalt	8.7	B		P
7440-50-8	Copper	12.9			P
7439-89-6	Iron	15100		*	P
7439-92-1	Lead	3.9			P
7439-95-4	Magnesium	5130			P
7439-96-5	Manganese	505			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	11.6			P
7440-09-7	Potassium	923	B		P
7782-49-2	Selenium	0.60	U		P
7440-22-4	Silver	0.45	U		P
7440-23-5	Sodium	181	B		P
7440-28-0	Thallium	0.79	U		P
7440-62-2	Vanadium	49.8			P
7440-66-6	Zinc	31.3			P
	Cyanide	0.54	U		CA
7440-32-6	Titanium	1160			P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

Verified
[signature] 4/12/94

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WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

809WF3

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D2-0039

Lab Code: SKINER Case No.: N4-01-049SAS No.: SDG No.: B09DT4

Matrix (soil/water): SOIL Lab Sample ID: S401120-05 S

Level (low/med): LOW Date Received: 01/19/94

% Solids: 92.9

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6270			P
7440-36-0	Antimony	2.5	~~U~~		P
7440-38-2	Arsenic	3.8			P
7440-39-3	Barium	74.1			P
7440-41-7	Beryllium	0.33	~~B~~		P
7440-43-9	Cadmium	0.52	B		P
7440-70-2	Calcium	7370			P
7440-47-3	Chromium	15.0			P
7440-48-4	Cobalt	11.1			P
7440-50-8	Copper	16.0			P
7439-89-6	Iron	19900		*	P
7439-92-1	Lead	7.9			P
7439-95-4	Magnesium	4520			P
7439-96-5	Manganese	340			P
7439-97-6	Mercury	0.72			CV
7440-02-0	Nickel	11.0			P
7440-09-7	Potassium	1030			P
7782-49-2	Selenium	0.56	U		P
7440-22-4	Silver	0.37	~~B~~		P
7440-23-5	Sodium	232	B		P
7440-28-0	Thallium	0.74	U		P
7440-62-2	Vanadium	46.7			P
7440-66-6	Zinc	43.1			P
	Cyanide	0.31	U		CA
7440-32-6	Titanium	1550			P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES

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WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B09WF5

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D2-0039

Lab Code: SKINER Case No.: N4-01-049SAS No.: SDG No.: B09DT4

Matrix (soil/water): SOIL Lab Sample ID: S401120-06 S

Level (low/med): LOW Date Received: 01/19/94

% Solids: 99.9

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	74.4			P	
7440-36-0	Antimony	2.3	~~U~~		P	
7440-38-2	Arsenic	0.57	U		P	
7440-39-3	Barium	0.43	~~B~~		P	
7440-41-7	Beryllium	0.06	U		P	
7440-43-9	Cadmium	0.32	U		P	
7440-70-2	Calcium	15.9	~~U~~		P	
7440-47-3	Chromium	0.86	~~B~~		P	
7440-48-4	Cobalt	0.55	U		P	
7440-50-8	Copper	0.31	U		P	
7439-89-6	Iron	232	—	*	P	
7439-92-1	Lead	0.37	B		P	
7439-95-4	Magnesium	11.7	~~B~~		P	
7439-96-5	Manganese	0.62	~~B~~		P	
7439-97-6	Mercury	0.05	U		CV	
7440-02-0	Nickel	0.84	U		P	
7440-09-7	Potassium	31.6	~~B~~		P	
7782-49-2	Selenium	0.53	U		P	
7440-22-4	Silver	0.68	~~B~~		P	
7440-23-5	Sodium	28.9	B		P	
7440-28-0	Thallium	0.71	U		P	
7440-62-2	Vanadium	0.46	U		P	
7440-66-6	Zinc	0.88	U		P	
	Cyanide	0.49	U		CA	
7440-32-6	Titanium	2.9	B		P	

Color Before: WHITE Clarity Before: Texture: FINE

Color After: WHITE Clarity After: Artifacts:

Comments:

Verified

9/12/94

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WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B09WF6

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D2-0039

Lab Code: SKINER Case No.: N4-01-049SAS No.: SDG No.: B09DT4

Matrix (soil/water): SOIL Lab Sample ID: S401120-07 S

Level (low/med): LOW Date Received: 01/19/94

% Solids: 99.9

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	60.2			P	
7440-36-0	Antimony	2.4	~~U~~		P	U
7440-38-2	Arsenic	0.59	U		P	
7440-39-3	Barium	0.34	~~B~~		P	U
7440-41-7	Beryllium	0.06	U		P	
7440-43-9	Cadmium	0.33	U		P	
7440-70-2	Calcium	16.4	~~U~~		P	U
7440-47-3	Chromium	0.94	~~B~~		P	U
7440-48-4	Cobalt	0.57	U		P	
7440-50-8	Copper	0.31	U		P	
7439-89-6	Iron	141		*	P	N
7439-92-1	Lead	0.54	B		P	
7439-95-4	Magnesium	7.0	~~B~~		P	U
7439-96-5	Manganese	0.58	~~B~~		P	U
7439-97-6	Mercury	0.05	U		CV	
7440-02-0	Nickel	0.86	U		P	
7440-09-7	Potassium	20.0	~~B~~		P	U
7782-49-2	Selenium	0.55	U		P	
7440-22-4	Silver	0.41	U		P	
7440-23-5	Sodium	7.8	U		P	
7440-28-0	Thallium	0.73	U		P	
7440-62-2	Vanadium	0.47	U		P	
7440-66-6	Zinc	0.90	U		P	
	Cyanide	0.50	U		CA	
7440-32-6	Titanium	2.1	B		P	

Color Before: WHITE Clarity Before: Texture: FINE

Color After: WHITE Clarity After: Artifacts:

Comments:

Verified 4/12/94

FORM I - IN ILM02.1

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9413225.2092

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

9412225.2093

TMA
Thermo Analytical Inc.

Skinner & Sherman Labs., Inc.
300 Second Avenue
Post Office Box 521
Waltham, MA 02254-0521
(617) 890-7200
FAX (617) 890-3883

RECORD COPY

MAR 1994
RECEIVED
SDLA

February 18, 1994

TMA/NORCAL
2030 Wright Avenue
Richmond, CA 94804
Attention: Dan Stuermer

91/4225.2094

Quality Control Narrative

Scope
Seven (7) soil samples were submitted to TMA/Skinner & Sherman Laboratories, Inc. on January 19, 1994 from TMA/Norcal. The samples were analyzed for the USEPA CLP Target Analyte List metals, titanium, and cyanide. The analyses were performed under TMA/Skinner and Sherman work order S401120.

Methodology
The samples were prepared, analyzed and reported in accordance with the USEPA Contract Laboratory Program Statement of Work ILM02.

Discussion
All quality control requirements were met for the samples with the following exceptions:

The laboratory duplicate for iron exceeded the control limit requirement.

Please feel free to call if there are any questions concerning this package.

Respectfully submitted,

TMA/SKINNER & SHERMAN LABORATORIES, INC.

Steven Provencal

Steven R. Provencal
Lead Chemist

~~OCCOO2A~~

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS / W.V. SETZER

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 1-11-94

Ice Chest No.: SML-342 — Field Logbook No.: ~~EFL-1091~~ EFL-1115 1-13-94

Bill of Lading/Airbill No.: 2519008360 — Offsite Property No.: W94-0-0216-1

Method of Shipment: AIR

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL)

Sample Identification

1) B09BT4
- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09BT5
- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3) B09BT7
- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
W.V. Setzer	Kermit Blum K. Blum	1-18-94 1330
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

~~(((((02~~

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 1-13-94

Ice Chest No.: SML-311 — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: — Offsite Property No.: 0351-17394

Method of Shipment: AIR

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) RADIOACTIVE

Sample Identification

1) B09D19

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09WF3

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3)

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

1-17-94

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
1-17-94 0930	W.U. SETZER	1-17-94 0930
Relinquished by:	Received by:	Date/Time:
		1-18-94 10:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

-021

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

~~000022~~

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 1-13-94

Ice Chest No.: SML-335 — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 2519008448 — Offsite Property No.: W94-0-0216-3

Method of Shipment: AIR

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09WF5

4,250ml P:CLP;TAL Metals,Hg,Ti
4,250ml Gs:VOA CLP
4,250ml aG:Semi-VOA CLP
4,125ml G:Anions F,Cl,SO4 (EPA 300.0)
4,125ml P/G:Anions NO2,NO3 (EPA 353.2)
4,125ml G:Cyanide CLP
4,125ml Gw:Kerosene (8015M)
4,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09WF6

4,250ml P:CLP;TAL Metals,Hg,Ti
4,250ml Gs:VOA CLP
4,250ml aG:Semi-VOA CLP
4,125ml G:Anions F,Cl,SO4 (EPA 300.0)
4,125ml P/G:Anions NO2,NO3 (EPA 353.2)
4,125ml G:Cyanide CLP
4,125ml Gw:Kerosene (8015M)
4,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3)

1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

1-17-94

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
0940 1-17-94		1-17-94 0940
Relinquished by:	Received by:	Date/Time:
	K. Blum	1-18-94 1330
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

022

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

9413225.2098

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-2	DATA PACKAGE: B09DT4-TMA-690	
VALIDATOR: [illegible]	LAB: TMA	DATE: 04/12/94
CASE:	SDG: B09DT4-TMA-690	

ANALYSES PERFORMED

☒ CLP/ICP	☐ CLP/GFAA	☒ CLP/Hg	☒ CLP/Cyanide	☒ T-barium-Tc99	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846 Cyanide	☐	☐

SAMPLES/MATRIX Soils

B09DT4 B09WF5
B09DT5 B09WF6
B09DT7
B09DT9
B09WF3

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

024

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments? . . . . Yes No N/A
Are initial calibrations acceptable? . . . . . Yes No N/A
Are ICP interference checks acceptable? . . . . . Yes No N/A
Were ICV and CCV checks performed on all instruments? . . . . . Yes No N/A
Are ICV and CCV checks acceptable? . . . . . Yes No N/A
Comments:

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? Yes No N/A
Are ICB and CCB results acceptable? . . . . . Yes No N/A
Were preparation blanks analyzed? . . . . . Yes No N/A
Are preparation blank results acceptable? . . . . . Yes No N/A
Were field/trip blanks analyzed? . . . . . Yes No N/A
Are field/trip blank results acceptable? . . . . . Yes No N/A
Comments: See attached blank Summary Form. See blank adjustments.
- Sample locations are not currently available. Field QC will be evaluated in the Final Summary report.

5. ACCURACY

Were spike samples analyzed? . . . . . Yes No N/A
Are spike sample recoveries acceptable? . . . . . Yes No N/A
Were laboratory control samples (LCS) analyzed? . . . . . Yes No N/A
Are LCS recoveries acceptable? . . . . . Yes No N/A
Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

Were laboratory duplicates analyzed? . . . . . Yes No N/A

Are laboratory duplicate samples RPD values acceptable? . . . . Yes No N/A

Were ICP serial dilution samples analyzed? . . . . . Yes No N/A

Are ICP serial dilution %D values acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Comments: Iron lab RPD RPD 735%, Qualify all iron results as estimated (J).

7. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? . . . . . Yes No N/A

Are duplicate injection %RSD values acceptable? . . . . . Yes No N/A

Were analytical spikes performed as required? . . . . . Yes No N/A

Are analytical spike recoveries acceptable? . . . . . Yes No N/A

Was MSA performed as required? . . . . . Yes No N/A

Are MSA results acceptable? . . . . . Yes No N/A

Comments:

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Are results calculated properly? . . . . . Yes No N/A

Do results meet the CRDLs? . . . . . Yes No N/A

Comments:

9413225L2102

HOLDING TIME SUMMARY

B09DT4-TOAB-690

SDG:	VALIDATOR: [illegible]	DATE: 4/12/94	PAGE 1 OF 2
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09DT4	IRP CLP	1/11/94		2/16/94		36	None
B09DT5		1/11/94				36	
B09DT7		1/11/94				36	
B09DT8 9		1/13/94				34	
B09WF3						34	
B09WF5						34	
B09WF6						34	
B09DT4	Additional Sr, Ba	1/11/94		2/17/94		37	None
B09DT5						37	
B09DT7						37	
B09DT9		1/13/94				35	
B09WF3						35	
B09WF5						35	
B09WF6						35	

4/12/94

4/12/94

027

HOLDING TIME SUMMARY

B-9DT4-TMA-690

SDG:	VALIDATOR:	DATE: 4/12/94	PAGE 2 OF 2
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B-9DT4	CN	1/11/94		01/24/94		13	None
T5						13	
T7						13	
T9		1/13/94				11	
B-9W-F3						11	
F5						11	
F6						11	
B-9DT4	Hg	1/11/94		01/31/94		20	None
T5						20	
T7						20	
T9		1/13/94				18	
B-9W-F3						18	
F5						18	
F6						18	

4/12/94

BLANK AND SAMPLE DATA SUMMARY

B-9DT4-TMB-690

SDG:	VALIDATOR: [illegible]	DATE: 4/12/94	PAGE 1 OF 3
COMMENTS: Metals			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
CCB2	Barium	1.6	B		ug/L	8		B-9DT4	U
								B-9DT5	U
								B-9WF5	U
								B-9WF6	U
CCB1	Beryllium	0.7	B		ug/L	3.5		B-9DT4	U
								B-9DT7	U
								B-9DT9	U
								B-9WF3	U
ICB	Calcium	-112.8	B		ug/L	x2 = -225.6		B-9DT4	UJ
								B-9DT5	UJ
								B-9WF5	UJ
								B-9WF6	UJ
	~~Chromium~~								
CCB1	Chromium	3.8	B		ug/L	19		B-9DT4	U
								B-9DT5	U
								B-9WF5	U
								B-9WF6	U

4/12/94

4/12/94

BLANK AND SAMPLE DATA SUMMARY

B09DT4-TMA-690

SDG:	VALIDATOR: [illegible]	DATE: 4/12/94	PAGE 2 OF 3
COMMENTS: Metals			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
CCB1	Copper	18.6	B		ug/L	93		B09DT4	U
								B09DT5	U
								B09DT7	U
								B09DT9	U
								B09WF3	U
~~3~~ CCB1	Magnesium	32.4	B		ug/L	162		B09DT4	U
								B09DT5	U
								B09WF5	U
								B09WF6	U
CCB2	Manganese	1.5	B		ug/L	7.5		B09DT4	U
								B09DT5	U
								B09WF5	U
								B09WF6	U
ICB	Potassium	87.8	B		ug/L	439		B09DT4	U
								B09DT5	U
								B09WF5	U
								B09WF6	U

4/12/94

BLANK AND SAMPLE DATA SUMMARY

B09DT4-TMA-690

SDG:	VALIDATOR: [illegible]	DATE: 4/12/94	PAGE 3 OF 3
COMMENTS:			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
CCB2	Zinc	14.6	B		ug/L	73		B09DT4	U
CCB1	Titanium	2	B		ug/L	10		B09DT4	U
CCB1	Silver	2.3	B		ug/L	11.5		B09DT7	U
								~~B09DT9~~	~~U~~
								B09WF3	U
								B09WF5	U
PrepBlank	Antimony	-2.774	B		mg/kg		-27.74	B09DT4	UJ
								B09DT5	UJ
								B09DT7	UJ
								B09DT9	UJ
								B09WF3	UJ
								B09WF5	UJ
								B09WF6	UJ

WESTINGHOUSE/HANFORD

3
BLANKS

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D2-0039

Lab Code: SKINER Case No.: N4-01-049SAS No.: SDG No.: B09DT4

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	15.0	U	37.3	B	15.0	U	20.9	B	4.308	B	P
Antimony	12.2	U	12.2	U	12.2	U	-13.0	B	-2.774	B	P
Arsenic	3.0	U	3.0	U	3.0	U	3.0	U	0.600	U	P
Barium	0.8	U	1.5	B	1.6	B	1.7	B	0.160	U	P
Beryllium	0.4	B	0.7	B	0.6	B	0.6	B	0.060	U	P
Cadmium	1.7	U	1.7	U	1.7	U	1.7	U	0.340	U	P
Calcium	-112.8	B	83.4	U	397.0	B	83.4	U	16.680	U	P
Chromium	2.5	U	3.8	B	2.5	U	2.5	U	0.574	B	P
Cobalt	2.9	U	2.9	U	2.9	U	3.3	B	0.580	U	P
Copper	2.8	B	18.6	B	7.7	B	7.3	B	1.182	B	P
Iron	13.4	U	13.6	B	13.4	U	13.4	U	2.680	U	P
Lead	1.8	U	1.8	U	1.8	U	1.8	U	0.360	U	P
Magnesium	32.2	U	32.4	B	32.2	U	32.2	U	6.440	U	P
Manganese	0.8	U	1.3	B	1.5	B	1.6	B	0.244	B	P
Mercury	0.1	U	0.1	U	0.1	U	0.1	U	0.050	U	CV
Nickel	4.4	U	5.0	B	4.4	U	4.4	U	0.880	U	P
Potassium	87.8	B	58.8	U	58.8	U	58.8	U	13.090	B	P
Selenium	2.8	U	2.8	U	2.8	U	2.8	U	0.560	U	P
Silver	2.1	U	2.3	B	2.1	U	2.1	U	0.420	U	P
Sodium	39.6	U	39.6	U	39.6	U	39.6	U	7.920	U	P
Thallium	3.7	U	3.7	U	3.7	U	3.7	U	0.740	U	P
Vanadium	2.4	U	2.4	U	2.4	U	2.4	U	0.480	U	P
Zinc	4.6	U	5.3	B	14.6	B	5.1	B	0.920	U	P
Cyanide	10.0	U	10.0	U	10.0	U	10.0	U	0.500	U	CA
Titanium	1.2	U	2.0	B	1.8	B	1.9	B	0.298	B	P

WESTINGHOUSE/HANFORD

6

DUPLICATES

SAMPLE NUMBER:

B09WF6D

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D2-0039

Lab Code: SKINER Case No.: N4-01-049SAS No.: SDG No.: B09DT4

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 99.9 % Solids for Duplicate: 99.9

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum	39.3	60.2308		64.6724		7.1		P
Antimony		2.3946	U	2.3485	U			P
Arsenic		0.5888	U	0.5775	U			P
Barium		0.3356	B	0.3157	B	6.1		P
Beryllium		0.0589	U	0.0578	U			P
Cadmium		0.3337	U	0.3273	U			P
Calcium		16.3693	U	16.0545	U			P
Chromium		0.9441	B	0.4986	B	61.8		P
Cobalt		0.5692	U	0.5583	U			P
Copper		0.3140	U	0.3080	U			P
Iron		140.9802		230.2687		48.1	*	P
Lead		0.5406	B	0.4314	B	22.5		P
Magnesium		6.9913	B	7.6346	B	8.8		P
Manganese		0.5770	B	0.3427	B	51.0		P
Mercury		0.0501	U	0.0501	U			CV
Nickel		0.8636	U	0.8470	U			P
Potassium		19.9572	B	22.3069	B	11.1		P
Selenium		0.5496	U	0.5390	U			P
Silver		0.4122	U	0.4312	B	200.0		P
Sodium		7.7725	U	9.1091	B	200.0		P
Thallium		0.7262	U	0.7123	U			P
Vanadium		0.4711	U	0.4620	U			P
Zinc		0.9029	U	0.8855	U			P
Cyanide		0.4955	U	0.4907	U			CA
Titanium		2.0628	B	2.0078	B	2.7		P

Qualify all ~~+~~ positive iron results as estimated (J).

4/12/94

SEMIVOLATILE ORGANICS DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09DT4-TMA-690 (923-E418, Filename B09DT4.BNA)

9453549.2109

MEMORANDUM

APR 1994
RECEIVED
TCO

TO: 200-UP-2 Project QA Record

April 18, 1994

FR: Susan Winter, Golder Associates Inc.

RE: SEMIVOLATILE ORGANICS DATA VALIDATION SUMMARY FOR DATA PACKAGE: B09DT4-TMA-690 (923-E418, Filename B09DT4.BNA)

INTRODUCTION

This memo presents the results of data validation on data package B09DT4-TMA-690 prepared by the Thermo Analytical (TMA) laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09DT4	01/11/94	SOIL	SEE NOTE 1
B09DT5	01/11/94	SOIL	
B09DT7	01/11/94	SOIL	
B09DT9	01/13/94	SOIL	
B09WF3	01/13/94	SOIL	
B09WF5	01/13/94	SOIL	
B09WF6	01/13/94	SOIL	

Note 1. All samples were analyzed for CLP TCL semivolatile organics.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

9417225.2110

-001

Completeness. The data package was complete for all requested analyses. A total of seven samples were validated in this data package with a total of 448 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data as estimated.

Laboratory Blanks

- Di-n-butylphthalate, bis(2-ethylhexyl)phthalate, and three tentatively identified compounds (TIC) were detected in the laboratory blank. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

TENTATIVELY IDENTIFIED COMPOUND EVALUATION

Tentatively identified compounds (TICs) reported by the laboratory were evaluated during validation and qualified as follows:

- TICs were detected in the samples and associated laboratory blank and were common laboratory contaminants, resulting in qualification of the TICs as unusable (UR) as shown in Attachment 3.

- TICs were detected in the samples and associated laboratory blank and have been qualified due to associated blank contamination and have been determined to be presumptive and valid (UJN).

- TICs were detected in the samples and identified as common laboratory contaminants, resulting in qualification of the results as unusable (R) as shown in Attachment 3.

- TICs were detected in the samples and determined to be valid, resulting in qualification of the results as presumptive and valid (JN).

- TICs reported by the laboratory as "unknown hydrocarbon" and at retention times of 7.83 and 7.85 minutes have been corrected to "unknown ketone" following review of the spectra. The specified TICs are identified as common laboratory contaminants (aldol condensation products), resulting in qualification of the results as unusable (R) as shown in Attachment 3.

002

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

9413225.2112

003

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

9W4225.2143

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected in the associated laboratory blank. This qualifier is applied by the laboratory. During the process of data validation this qualifier may be replaced by other appropriate qualifiers as defined by the validation procedures. The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample quantitation limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration reported may not accurately reflect the sample quantitation limit. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. This qualifier may be applied by the laboratory to indicate a concentration which is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). During data validation this qualifier may be applied to indicate a minor quality control deficiency. However in either case, the associated data should be considered usable for decision making purposes.

NJ - Indicates presumptive evidence of a constituent at an estimated value. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

N - Indicates presumptive evidence of a constituent. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

JN - Indicates a tentatively identified compound (TIC) whose concentration and identification have been determined to be valid as a result of data validation. The associated data should be considered usable for decision making purposes.

UJN - Indicates a tentatively identified compound (TIC) that has been determined to be presumptive and valid (JN) in terms of identification and quantitation and has been qualified as undetected (U) due to associated blank contamination.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9413225.2115

DATA QUALIFICATION SUMMARY

SDG: B09DT4-TMA-690	VALIDATOR:	DATE: April 18, 1994	PAGE 1 OF 1
COMMENTS: SEMIVOLATILE ORGANICS			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
DI-N-BUTYLPHTHALATE	U	B09DT4 B09DT5 B09DT7 B09DT9 B09WF3 B09WF5 B09WF6	PRESENT IN BLANK
BIS(2-ETHYLHEXYL)PHTHALATE	U	B09WF5	PRESENT IN BLANK

9413225.2116

007

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

91 3225 217

Validated Data Summary, Data Package: B09DT4-TMA-690

	Samp#	B09DT4		B09DT5		B09DT7		B09DT9		B09WF3		B09WF5	
	Date	1-11-94		1-11-94		1-11-94		1-13-94		1-13-94		1-13-94	
	Location	---		---		---		---		---		---	
	Depth	---		---		---		---		---		---	
	Type	---		---		---		---		---		---	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
PHENOL	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
2-CHLOROPHENOL	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
1,3-DICHLOROBENZENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
1,4-DICHLOROBENZENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
1,2-DICHLOROBENZENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
2-METHYLPHENOL	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
4-METHYLPHENOL	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
HEXACHLOROETHANE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
NITROBENZENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
ISOPHORONE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
2-NITROPHENOL	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
2,4-DIMETHYLPHENOL	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
2,4-DICHLOROPHENOL	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
1,2,4-TRICHLOROBENZENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
NAPHTHALENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
4-CHLOROANILINE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
HEXACHLOROBUTADIENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
4-CHLORO-3-METHYLPHENOL	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
2-METHYLNAPHTHALENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
2,4,6-TRICHLOROPHENOL	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
2,4,5-TRICHLOROPHENOL	UG/KG	790.000	U	780.000	U	820.000	U	870.000	U	850.000	U	790.000	U
2-CHLORONAPHTHALENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
2-NITROANILINE	UG/KG	790.000	U	780.000	U	820.000	U	870.000	U	850.000	U	790.000	U
DIMETHYLPHTHALATE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
ACENAPHTHYLENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
3-NITROANILINE	UG/KG	790.000	U	780.000	U	820.000	U	870.000	U	850.000	U	790.000	U
ACENAPHTHENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U

Verified
[illegible] 4/12/94

Validated Data Summary, Data Package: B09DT4-TMA-690

	Samp#	B09DT4		B09DT5		B09DT7		B09DT9		B09WF3		B09WF5	
	Date	1-11-94		1-11-94		1-11-94		1-13-94		1-13-94		1-13-94	
	Location	---		---		---		---		---		---	
	Depth	---		---		---		---		---		---	
	Type	---		---		---		---		---		---	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2,4-DINITROPHENOL	UG/KG	790.000	U	780.000	U	820.000	U	870.000	U	850.000	U	790.000	U
4-NITROPHENOL	UG/KG	790.000	U	780.000	U	820.000	U	870.000	U	850.000	U	790.000	U
DIBENZOFURAN	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
2,4-DINITROTOLUENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
2,6-DINITROTOLUENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
DIETHYLPHTHALATE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
FLUORENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
4-NITROANILINE	UG/KG	790.000	U	780.000	U	820.000	U	870.000	U	850.000	U	790.000	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	790.000	U	780.000	U	820.000	U	870.000	U	850.000	U	790.000	U
N-NITROSODIPHENYLAMINE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
HEXACHLOROBENZENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
PENTACHLOROPHENOL	UG/KG	790.000	U	780.000	U	820.000	U	870.000	U	850.000	U	790.000	U
PHENANTHRENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
ANTHRACENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
CARBAZOLE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
DI-N-BUTYLPHTHALATE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
FLUORANTHENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
PYRENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
BUTYLBENZYLPHTHALATE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
3,3'-DICHLOROBENZIDINE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
BENZO(A)ANTHRACENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
CHRYSENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
DI-N-OCTYLPHTHALATE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
BENZO(B)FLUORANTHENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
BENZO(K)FLUORANTHENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
BENZO(A)PYRENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
INDENO(1,2,3-CD)PYRENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
DIBENZ(A,H)ANTHRACENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U
BENZO(G,H,I)PERYLENE	UG/KG	330.000	U	320.000	U	340.000	U	360.000	U	350.000	U	330.000	U

Verified
[illegible] 4/12/94

Validated Data Summary, Data Package: B09DT4-TMA-690

	Samp#	B09WF6	
	Date	1-13-94	
	Location	---	
	Depth	---	
	Type	---	
	Comments	---	
Parameter	Units	Result	Q
PHENOL	UG/KG	330.000	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	330.000	U
2-CHLOROPHENOL	UG/KG	330.000	U
1,3-DICHLOROBENZENE	UG/KG	330.000	U
1,4-DICHLOROBENZENE	UG/KG	330.000	U
1,2-DICHLOROBENZENE	UG/KG	330.000	U
2-METHYLPHENOL	UG/KG	330.000	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	330.000	U
4-METHYLPHENOL	UG/KG	330.000	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	330.000	U
HEXACHLOROETHANE	UG/KG	330.000	U
NITROBENZENE	UG/KG	330.000	U
ISOPHORONE	UG/KG	330.000	U
2-NITROPHENOL	UG/KG	330.000	U
2,4-DIMETHYLPHENOL	UG/KG	330.000	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	330.000	U
2,4-DICHLOROPHENOL	UG/KG	330.000	U
1,2,4-TRICHLOROBENZENE	UG/KG	330.000	U
NAPHTHALENE	UG/KG	330.000	U
4-CHLOROANILINE	UG/KG	330.000	U
HEXACHLOROBUTADIENE	UG/KG	330.000	U
4-CHLORO-3-METHYLPHENOL	UG/KG	330.000	U
2-METHYLNAPHTHALENE	UG/KG	330.000	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	330.000	U
2,4,6-TRICHLOROPHENOL	UG/KG	330.000	U
2,4,5-TRICHLOROPHENOL	UG/KG	790.000	U
2-CHLORONAPHTHALENE	UG/KG	330.000	U
2-NITROANILINE	UG/KG	790.000	U
DIMETHYLPHTHALATE	UG/KG	330.000	U
ACENAPHTHYLENE	UG/KG	330.000	U
3-NITROANILINE	UG/KG	790.000	U
ACENAPHTHENE	UG/KG	330.000	U

Verified
[illegible] 4/12/94

Validated Data Summary, Data Package: B09DT4-TMA-690

	Samp#	B09WF6	
	Date	1-13-94	
	Location	---	
	Depth	---	
	Type	---	
	Comments	---	
Parameter	Units	Result	Q
2,4-DINITROPHENOL	UG/KG	790.000	U
4-NITROPHENOL	UG/KG	790.000	U
DIBENZOFURAN	UG/KG	330.000	U
2,4-DINITROTOLUENE	UG/KG	330.000	U
2,6-DINITROTOLUENE	UG/KG	330.000	U
DIETHYLPHTHALATE	UG/KG	330.000	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	330.000	U
FLUORENE	UG/KG	330.000	U
4-NITROANILINE	UG/KG	790.000	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	790.000	U
N-NITROSODIPHENYLAMINE	UG/KG	330.000	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	330.000	U
HEXACHLOROBENZENE	UG/KG	330.000	U
PENTACHLOROPHENOL	UG/KG	790.000	U
PHENANTHRENE	UG/KG	330.000	U
ANTHRACENE	UG/KG	330.000	U
CARBAZOLE	UG/KG	330.000	U
DI-N-BUTYLPHTHALATE	UG/KG	330.000	U
FLUORANTHENE	UG/KG	330.000	U
PYRENE	UG/KG	330.000	U
BUTYLBENZYLPHTHALATE	UG/KG	330.000	U
3,3'-DICHLOROBENZIDINE	UG/KG	330.000	U
BENZO(A)ANTHRACENE	UG/KG	330.000	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	330.000	U
CHRYSENE	UG/KG	330.000	U
DI-N-OCTYLPHTHALATE	UG/KG	330.000	U
BENZO(B)FLUORANTHENE	UG/KG	330.000	U
BENZO(K)FLUORANTHENE	UG/KG	330.000	U
BENZO(A)PYRENE	UG/KG	330.000	U
INDENO(1,2,3-CD)PYRENE	UG/KG	330.000	U
DIBENZ(A,H)ANTHRACENE	UG/KG	330.000	U
BENZO(G,H,I)PERYLENE	UG/KG	330.000	U

Verified
[illegible] 4/12/94

~~000350~~

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09DT4

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-06B

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 40202S06

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

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

CAS NO.	COMPOUND		Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	790	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	790	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
99-09-2	3-Nitroaniline	790	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	790	U

Verified 4/8/94

94/4225.2122

~~000351~~

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09DT4

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-06B

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 40202S06

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

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

CAS NO.	COMPOUND		Q
100-02-7	4-Nitrophenol	790	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	790	U
534-52-1	4,6-Dinitro-2-methylphenol	790	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	790	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330 ~~190~~	~~BJ~~ U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
218-01-9	Chrysene	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

Verified 4/8/94

FORM I SV-2 3/90

9417225 2123

~~000352~~

IF

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09DT4

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-06B

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 40202S06

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN COMPOUND	5.52	1600	~~BJ~~
2.	UNKNOWN KETONE	6.48	660	~~BJ~~
3.	UNKNOWN KETONE	7.02	130	~~BJ~~
4.	UNKNOWN ~~HYDROCARBON~~ Ketone	7.83	200	~~J~~
5.	HEXANEDIOIC ACID ESTER ISOME	25.28	66	~~J~~

4/12/94

Verified 4/1/94

015

FORM I SV-TIC

3/90

~~000371~~

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09DT5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-07B

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 40202S07

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

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

CAS NO.	COMPOUND		Q
108-95-2	Phenol	320	U
111-44-4	bis(2-Chloroethyl)Ether	320	U
95-57-8	2-Chlorophenol	320	U
541-73-1	1,3-Dichlorobenzene	320	U
106-46-7	1,4-Dichlorobenzene	320	U
95-50-1	1,2-Dichlorobenzene	320	U
95-48-7	2-Methylphenol	320	U
108-60-1	2,2'-oxybis(1-Chloropropane)	320	U
106-44-5	4-Methylphenol	320	U
621-64-7	N-Nitroso-Di-n-Propylamine	320	U
67-72-1	Hexachloroethane	320	U
98-95-3	Nitrobenzene	320	U
78-59-1	Isophorone	320	U
88-75-5	2-Nitrophenol	320	U
105-67-9	2,4-Dimethylphenol	320	U
111-91-1	bis(2-Chloroethoxy)Methane	320	U
120-83-2	2,4-Dichlorophenol	320	U
120-82-1	1,2,4-Trichlorobenzene	320	U
91-20-3	Naphthalene	320	U
106-47-8	4-Chloroaniline	320	U
87-68-3	Hexachlorobutadiene	320	U
59-50-7	4-Chloro-3-Methylphenol	320	U
91-57-6	2-Methylnaphthalene	320	U
77-47-4	Hexachlorocyclopentadiene	320	U
88-06-2	2,4,6-Trichlorophenol	320	U
95-95-4	2,4,5-Trichlorophenol	780	U
91-58-7	2-Chloronaphthalene	320	U
88-74-4	2-Nitroaniline	780	U
131-11-3	Dimethylphthalate	320	U
208-96-8	Acenaphthylene	320	U
99-09-2	3-Nitroaniline	780	U
83-32-9	Acenaphthene	320	U
51-28-5	2,4-Dinitrophenol	780	U

Verified 4/11/94

016

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09DT5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-07B

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 40202S07

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

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

CAS NO.	COMPOUND		Q
100-02-7	4-Nitrophenol	780	U
132-64-9	Dibenzofuran	320	U
121-14-2	2,4-Dinitrotoluene	320	U
606-20-2	2,6-Dinitrotoluene	320	U
84-66-2	Diethylphthalate	320	U
7005-72-3	4-Chlorophenyl-phenylether	320	U
86-73-7	Fluorene	320	U
100-01-6	4-Nitroaniline	780	U
534-52-1	4,6-Dinitro-2-methylphenol	780	U
86-30-6	N-Nitrosodiphenylamine (1)	320	U
101-55-3	4-Bromophenyl-phenylether	320	U
118-74-1	Hexachlorobenzene	320	U
87-86-5	Pentachlorophenol	780	U
85-01-8	Phenanthrene	320	U
120-12-7	Anthracene	320	U
86-74-8	Carbazole	320	U
84-74-2	Di-n-Butylphthalate	320 ~~170~~	~~BJ~~
206-44-0	Fluoranthene	320	U
129-00-0	Pyrene	320	U
85-68-7	Butylbenzylphthalate	320	U
91-94-1	3,3'-Dichlorobenzidine	320	U
56-55-3	Benzo(a)Anthracene	320	U
117-81-7	bis(2-Ethylhexyl)Phthalate	320	U
218-01-9	Chrysene	320	U
117-84-0	Di-n-Octyl Phthalate	320	U
205-99-2	Benzo(b)Fluoranthene	320	U
207-08-9	Benzo(k)Fluoranthene	320	U
50-32-8	Benzo(a)Pyrene	320	U
193-39-5	Indeno(1,2,3-cd)Pyrene	320	U
53-70-3	Dibenz(a,h)Anthracene	320	U
191-24-2	Benzo(g,h,i)Perylene	320	U

(1) - Cannot be separated from Diphenylamine

Verified 4/11/94

~~000373~~

EPA SAMPLE NO.

B09DT5

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-07B

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 40202S07

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

Number TICs found: 8

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN COMPOUND	5.52	1700	~~BJ~~
2.	UNKNOWN KETONE	6.50	750	~~BJ~~
3.	UNKNOWN KETONE	7.03	130	~~BJ~~
4.	UNKNOWN ~~HYDROCARBON~~ Ketone	7.85	200	~~J~~
5.	UNKNOWN HYDROCARBON	21.65	65	~~J~~
6.	HEXANEDIOIC ACID ESTER ISOME	25.30	98	~~J~~
7.	UNKNOWN CARBOXYLIC ACID ESTE	26.52	65	~~J~~
8.	UNKNOWN HYDROCARBON	29.22	98	~~J~~

4/13/94

Verified 4/11/94

FORM I SV-TIC 3/90

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09DT7

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-08B

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 40202S08

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 4 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

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

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	820	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	820	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
99-09-2	3-Nitroaniline	820	U
83-32-9	Acenaphthene	340	U
51-28-5	2,4-Dinitrophenol	820	U

Verified 4/11/94

94/3225.2128

01

~~000396~~

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09DT7

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-08B

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 40202S08

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 4 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

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

CAS NO.	COMPOUND		Q	Q
100-02-7	4-Nitrophenol	820	U	
132-64-9	Dibenzofuran	340	U	
121-14-2	2,4-Dinitrotoluene	340	U	
606-20-2	2,6-Dinitrotoluene	340	U	
84-66-2	Diethylphthalate	340	U	
7005-72-3	4-Chlorophenyl-phenylether	340	U	
86-73-7	Fluorene	340	U	
100-01-6	4-Nitroaniline	820	U	
534-52-1	4,6-Dinitro-2-methylphenol	820	U	
86-30-6	N-Nitrosodiphenylamine (1)	340	U	
101-55-3	4-Bromophenyl-phenylether	340	U	
118-74-1	Hexachlorobenzene	340	U	
87-86-5	Pentachlorophenol	820	U	
85-01-8	Phenanthrene	340	U	
120-12-7	Anthracene	340	U	
86-74-8	Carbazole	340	U	
84-74-2	Di-n-Butylphthalate	340 ~~270~~	~~BU~~	U
206-44-0	Fluoranthene	340	U	
129-00-0	Pyrene	340	U	
85-68-7	Butylbenzylphthalate	340	U	
91-94-1	3,3'-Dichlorobenzidine	340	U	
56-55-3	Benzo(a)Anthracene	340	U	
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U	
218-01-9	Chrysene	340	U	
117-84-0	Di-n-Octyl Phthalate	340	U	
205-99-2	Benzo(b)Fluoranthene	340	U	
207-08-9	Benzo(k)Fluoranthene	340	U	
50-32-8	Benzo(a)Pyrene	340	U	
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U	
53-70-3	Dibenz(a,h)Anthracene	340	U	
191-24-2	Benzo(g,h,i)Perylene	340	U	

(1) - Cannot be separated from Diphenylamine

Verified 4/11/94

~~000397~~

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09DT7

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-08B

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 40202S08

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 4 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

Number TICs found: 6

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN COMPOUND	5.52	1600	~~BJ~~
2.	UNKNOWN HYDROCARBON	5.90	68	~~J~~
3.	UNKNOWN KETONE	6.48	720	~~BJ~~
4.	UNKNOWN KETONE	7.02	210	~~BJ~~
5.	UNKNOWN ~~HYDROCARBON~~ Ketone	7.83	210	~~J~~
6.	HEXANEDIOIC ACID ESTER ISOME	25.30	68	~~J~~

4/18/94

021

Verified

FORM I SV-TIC 4/11/94

3/90

000417

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09DT9

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-01B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 40202S09

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 9 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.1

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

CAS NO.	COMPOUND		Q
108-95-2	Phenol	360	U
111-44-4	bis(2-Chloroethyl)Ether	360	U
95-57-8	2-Chlorophenol	360	U
541-73-1	1,3-Dichlorobenzene	360	U
106-46-7	1,4-Dichlorobenzene	360	U
95-50-1	1,2-Dichlorobenzene	360	U
95-48-7	2-Methylphenol	360	U
108-60-1	2,2'-oxybis(1-Chloropropane)	360	U
106-44-5	4-Methylphenol	360	U
621-64-7	N-Nitroso-Di-n-Propylamine	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
88-75-5	2-Nitrophenol	360	U
105-67-9	2,4-Dimethylphenol	360	U
111-91-1	bis(2-Chloroethoxy)Methane	360	U
120-83-2	2,4-Dichlorophenol	360	U
120-82-1	1,2,4-Trichlorobenzene	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
87-68-3	Hexachlorobutadiene	360	U
59-50-7	4-Chloro-3-Methylphenol	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U
88-06-2	2,4,6-Trichlorophenol	360	U
95-95-4	2,4,5-Trichlorophenol	870	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	870	U
131-11-3	Dimethylphthalate	360	U
208-96-8	Acenaphthylene	360	U
99-09-2	3-Nitroaniline	870	U
83-32-9	Acenaphthene	360	U
51-28-5	2,4-Dinitrophenol	870	U

Verified 4/11/94

9413225.2131

022

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09DT9

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-01B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 40202S09

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 9 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.1

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

CAS NO.	COMPOUND			Q	Q
100-02-7	4-Nitrophenol		870	U	
132-64-9	Dibenzofuran		360	U	
121-14-2	2,4-Dinitrotoluene		360	U	
606-20-2	2,6-Dinitrotoluene		360	U	
84-66-2	Diethylphthalate		360	U	
7005-72-3	4-Chlorophenyl-phenylether		360	U	
86-73-7	Fluorene		360	U	
100-01-6	4-Nitroaniline		870	U	
534-52-1	4,6-Dinitro-2-methylphenol		870	U	
86-30-6	N-Nitrosodiphenylamine (1)		360	U	
101-55-3	4-Bromophenyl-phenylether		360	U	
118-74-1	Hexachlorobenzene		360	U	
87-86-5	Pentachlorophenol		870	U	
85-01-8	Phenanthrene		360	U	
120-12-7	Anthracene		360	U	
86-74-8	Carbazole		360	U	
84-74-2	Di-n-Butylphthalate	36C	~~310~~	~~BC~~	U
206-44-0	Fluoranthene		360	U	
129-00-0	Pyrene		360	U	
85-68-7	Butylbenzylphthalate		360	U	
91-94-1	3,3'-Dichlorobenzidine		360	U	
56-55-3	Benzo(a)Anthracene		360	U	
117-81-7	bis(2-Ethylhexyl)Phthalate		360	U	
218-01-9	Chrysene		360	U	
117-84-0	Di-n-Octyl Phthalate		360	U	
205-99-2	Benzo(b)Fluoranthene		360	U	
207-08-9	Benzo(k)Fluoranthene		360	U	
50-32-8	Benzo(a)Pyrene		360	U	
193-39-5	Indeno(1,2,3-cd)Pyrene		360	U	
53-70-3	Dibenz(a,h)Anthracene		360	U	
191-24-2	Benzo(g,h,i)Perylene		360	U	

(1) - Cannot be separated from Diphenylamine

Verified 4/11/94

FORM I SV-2 3/90

000419

~~000419~~ 3/2/94

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09DT9

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-01B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 40202S09

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 9 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.1

Number TICs found: 18

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN COMPOUND	5.52	2200	~~BJ~~
2.	UNKNOWN KETONE	6.50	800	~~BJ~~
3.	UNKNOWN HYDROCARBON	6.80	1100	~~J~~
4.	UNKNOWN KETONE	7.03	330	~~BJ~~
5.	UNKNOWN ~~HYDROCARBON~~ Ketone	7.85	470	~~J~~
6.	UNKNOWN HYDROCARBON	8.28	220	~~J~~
7.	UNKNOWN ALKANE	18.55	180	~~J~~
8.	UNKNOWN ALKANE	19.67	110	~~J~~
9.	UNKNOWN ALKANE	20.75	150	~~J~~
10.	UNKNOWN ALKANE	21.78	180	~~J~~
11.	UNKNOWN ALKANE	22.75	150	~~J~~
12.	UNKNOWN ALKANE	23.67	150	~~J~~
13.	UNKNOWN ALKANE	24.55	110	~~J~~
14.	HEXANEDIOIC ACID ESTER ISOME	25.30	73	~~J~~
15.	UNKNOWN ALKANE	25.38	110	~~J~~
16.	UNKNOWN ALKANE	26.22	73	~~J~~
17.	UNKNOWN HYDROCARBON	27.93	110	~~J~~
18.	UNKNOWN ALKANE	30.23	220	~~J~~

4/12/94

9412275.2133

6024

Verified 4/11/94

FORM I SV-TIC 3/90

~~000453~~

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09WF3

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-02B

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 40202S03

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 7 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)Ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	2,2'-oxybis(1-Chloropropane)	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-Di-n-Propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
111-91-1	bis(2-Chloroethoxy)Methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-Methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	850	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	850	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
99-09-2	3-Nitroaniline	850	U
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	850	U

Q

9417225.2131

6025

FORM I SV-1 3/90

Verified 4/11/94

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09WF3

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-02B

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 40202S03

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 7 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

9413225.2135

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Q
100-02-7	4-Nitrophenol	850	U	
132-64-9	Dibenzofuran	350	U	
121-14-2	2,4-Dinitrotoluene	350	U	
606-20-2	2,6-Dinitrotoluene	350	U	
84-66-2	Diethylphthalate	350	U	
7005-72-3	4-Chlorophenyl-phenylether	350	U	
86-73-7	Fluorene	350	U	
100-01-6	4-Nitroaniline	850	U	
534-52-1	4,6-Dinitro-2-methylphenol	850	U	
86-30-6	N-Nitrosodiphenylamine (1)	350	U	
101-55-3	4-Bromophenyl-phenylether	350	U	
118-74-1	Hexachlorobenzene	350	U	
87-86-5	Pentachlorophenol	850	U	
85-01-8	Phenanthrene	350	U	
120-12-7	Anthracene	350	U	
86-74-8	Carbazole	350	U	
84-74-2	Di-n-Butylphthalate	350 ~~190~~	~~BJ~~	UL
206-44-0	Fluoranthene	350	U	
129-00-0	Pyrene	350	U	
85-68-7	Butylbenzylphthalate	350	U	
91-94-1	3,3'-Dichlorobenzidine	350	U	
56-55-3	Benzo(a)Anthracene	350	U	
117-81-7	bis(2-Ethylhexyl)Phthalate	350	U	
218-01-9	Chrysene	350	U	
117-84-0	Di-n-Octyl Phthalate	350	U	
205-99-2	Benzo(b)Fluoranthene	350	U	
207-08-9	Benzo(k)Fluoranthene	350	U	
50-32-8	Benzo(a)Pyrene	350	U	
193-39-5	Indeno(1,2,3-cd)Pyrene	350	U	
53-70-3	Dibenz(a,h)Anthracene	350	U	
191-24-2	Benzo(g,h,i)Perylene	350	U	

(1) - Cannot be separated from Diphenylamine

Verified 4/11/94

028

~~000455~~

1F

~~SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET~~

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09WF3

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-02B

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 40202S03

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 7 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

Number TICs found: 10 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN COMPOUND	5.52	1500	~~BJ~~
2.	UNKNOWN KETONE	6.48	670	~~BJ~~
3.	UNKNOWN HYDROCARBON	6.77	140	~~J~~
4.	UNKNOWN KETONE	7.00	280	~~BJ~~
5.	UNKNOWN ~~HYDROCARBON~~ Ketone	7.83	280	~~J~~
6.	UNKNOWN HYDROCARBON	8.27	140	~~J~~
7.	HEXANEDIOIC ACID ESTER ISOME	25.27	71	~~J~~
8.	UNKNOWN ALKANE	27.92	71	~~J~~
9.	UNKNOWN ALKANE	30.22	280	~~J~~
10.	UNKNOWN ALKANE	33.53	110	~~J~~

Q: 1 BJ, 2 BJ, 3 J, 4 BJ, 5 J, 6 J, 7 J, 8 J, 9 J, 10 J

4/11/94

94/3225.2136

027

Verified

FORM I SV-TIC 4/11/94

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09WF5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-03B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 40202S04

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	790	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	790	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
99-09-2	3-Nitroaniline	790	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	790	U

Verified 4/11/94

~~000430~~

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09WF5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-03B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 40202S04

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

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

CAS NO.	COMPOUND		Q	Q
100-02-7	4-Nitrophenol	790	U	
132-64-9	Dibenzofuran	330	U	
121-14-2	2,4-Dinitrotoluene	330	U	
606-20-2	2,6-Dinitrotoluene	330	U	
84-66-2	Diethylphthalate	330	U	
7005-72-3	4-Chlorophenyl-phenylether	330	U	
86-73-7	Fluorene	330	U	
100-01-6	4-Nitroaniline	790	U	
534-52-1	4,6-Dinitro-2-methylphenol	790	U	
86-30-6	N-Nitrosodiphenylamine (1)	330	U	
101-55-3	4-Bromophenyl-phenylether	330	U	
118-74-1	Hexachlorobenzene	330	U	
87-86-5	Pentachlorophenol	790	U	
85-01-8	Phenanthrene	330	U	
120-12-7	Anthracene	330	U	
86-74-8	Carbazole	330	U	
84-74-2	Di-n-Butylphthalate	330 ~~240~~	~~BJ~~	u
206-44-0	Fluoranthene	330	U	
129-00-0	Pyrene	330	U	
85-68-7	Butylbenzylphthalate	330	U	
91-94-1	3,3'-Dichlorobenzidine	330	U	
56-55-3	Benzo(a)Anthracene	330	U	
117-81-7	bis(2-Ethylhexyl)Phthalate	330 ~~57~~	~~J~~	u
218-01-9	Chrysene	330	U	
117-84-0	Di-n-Octyl Phthalate	330	U	
205-99-2	Benzo(b)Fluoranthene	330	U	
207-08-9	Benzo(k)Fluoranthene	330	U	
50-32-8	Benzo(a)Pyrene	330	U	
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U	
53-70-3	Dibenz(a,h)Anthracene	330	U	
191-24-2	Benzo(g,h,i)Perylene	330	U	

(1) - Cannot be separated from Diphenylamine

Verified 4/11/94

L023

~~000481~~

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09WF5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-03B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 40202S04

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

Number TICs found: 6

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN COMPOUND	5.52	1100	~~BJ~~
2.	UNKNOWN KETONE	6.47	660	~~BJ~~
3.	UNKNOWN HYDROCARBON	6.75	160	~~J~~
4.	UNKNOWN KETONE	7.00	130	~~BJ~~
5.	PROPANOIC ACID ESTER ISOMER	17.15	99	~~J~~
6.	HEXANEDIOIC ACID ESTER ISOME	25.27	66	~~J~~

Verified

FORM I SV-TIC 4/11/94

3/90

~~000503~~

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09WF6

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-04B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 40202S05

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

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

CAS NO.	COMPOUND		Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	790	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	790	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
99-09-2	3-Nitroaniline	790	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	790	U

9413225.2140

Q

603.

Verified 4/11/94

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09WF6

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-04B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 40202S05

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	790	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	790	U
534-52-1	4,6-Dinitro-2-methylphenol	790	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	790	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330 ~~230~~	~~BJ~~ U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
218-01-9	Chrysene	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

Verified 4/11/94

FORM I SV-2 3/90

L032

~~000505~~

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09WF6

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-04B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 40202S05

Level: (low/med) LOW Date Received: 01/18/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

Number TICs found: 10

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN COMPOUND	5.52	1700	~~BJ~~
2.	UNKNOWN HYDROCARBON	5.90	66	~~J~~
3.	UNKNOWN KETONE	6.48	660	~~J~~
4.	UNKNOWN ~~HYDROCARBON~~ Ketone	6.78	99	~~J~~
5.	UNKNOWN KETONE	7.02	170	~~BJ~~
6.	UNKNOWN ~~HYDROCARBON~~ Ketone	7.83	230	~~J~~
7.	UNKNOWN HYDROCARBON 5/1/94	8.27	99	~~J~~
8.	PROPANOIC ACID ESTER ISOMER	17.15	66	~~J~~
9.	UNKNOWN HYDROCARBON	21.63	66	~~J~~
10.	HEXANEDIOIC ACID ESTER ISOME	25.28	66	~~J~~

4/13/94

UNVERIFIED

Verified 4/11/94

L033

FORM I SV-TIC 3/90

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

94 7225 7 NR

~~000085~~

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 01-025

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : January 18, 1994

1.0 DESCRIPTION OF CASE :

Eight soil samples were analyzed for TCL Organics- Volatiles and Semivolatiles according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision OLM01.8. The Extractable Hydrocarbons for Kerosene (K) were analyzed according to the SW-846 Method 8015M.

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX
B09DT9	A4-01-025-01A	V	SOIL
B09DT9	A4-01-025-01B	SV	SOIL
B09DT9 MS	A4-01-025-01C	SV	SOIL
B09DT9 MSD	A4-01-025-01D	SV	SOIL
B09DT9	A4-01-025-01G	K	SOIL
B09WF3	A4-01-025-02A	V	SOIL
B09WF3	A4-01-025-02B	SV	SOIL
B09WF3	A4-01-025-02E	K	SOIL
B09WF3 MS	A4-01-025-02F	K	SOIL
B09WF3 MSD	A4-01-025-02G	K	SOIL
B09WF5	A4-01-025-03A	V	SOIL
B09WF5	A4-01-025-03B	SV	SOIL
B09WF5	A4-01-025-03D	K	SOIL
B09WF6	A4-01-025-04A	V	SOIL
B09WF6	A4-01-025-04B	SV	SOIL
B09WF6	A4-01-025-04D	K	SOIL
B09DT6	A4-01-025-05A	V	SOIL
B09DT6 MS	A4-01-025-05B	V	SOIL
B09DT6 MSD	A4-01-025-05C	V	SOIL
B09DT4	A4-01-025-06A	V	SOIL
B09DT4	A4-01-025-06B	SV	SOIL
B09DT4	A4-01-025-06D	K	SOIL
B09DT5	A4-01-025-07A	V	SOIL
B09DT5	A4-01-025-07B	SV	SOIL
B09DT5	A4-01-025-07D	K	SOIL
B09DT7	A4-01-025-08A	V	SOIL
B09DT7	A4-01-025-08B	SV	SOIL
B09DT7	A4-01-025-08D	K	SOIL

3.0 COMMENTS :

3.1 SHIPPING AND DOCUMENTATION :

All of the samples were received intact and properly documented.

3.2 ANALYSIS

3.2.1 VOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were analyzed by heated purge within the CLP SOW holding times. The samples were analyzed during a period from 01/19/94 through 01/27/94, on the instrument "ROCKY". On 01/19/94, the operator inadvertently entered the wrong year during the instrument system boot-up, and therefore, all of the sample data incorrectly documented the year as "1993". Since it was not possible to change the date of analysis within the system the work order data was processed as is, and the appropriate manual corrections were made on the raw data by the laboratory. In addition, the report forms were changed to reflect the correct year of analysis (1994).

The analyte Acetone was detected at concentrations above the CRQL in samples B09DT4, B09DT5, B09DT6, B09WF6, B09DT6MS, and the blanks, VBLK0124R and VBLK0125R. In all of the other samples, Acetone was detected at concentrations either at or below the CRQL. Other TCL analytes detected in some of the samples included Methylene Chloride, 4-Methyl-2-pentanone, and Toluene, all at concentrations below the CRQL.

All of the QC results were within the limits specified by the EPA CLP SOW.

3.2.2 SEMIVOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the contract required holding times.

In all of the samples Di-n-butylphthalate was detected at concentrations less than the CRQL. In addition, sample B09WF5 had bis(2-Ethylhexyl)phthalate detected at a concentration below the CRQL.

Both the MS and the MSD sample had matrix spike recoveries above the QC limits for 2,4-Dinitrotoluene, while the MSD sample also had a high recovery for 4-Nitrophenol. In accordance with the protocol, no further action was required.

All of the other QC results were within the limits specified

000087

by the EPA CLP SOW.

3.2.3 EXTRACTABLE HYDROCARBONS "KEROSENE RANGE" COMMENTS :

SEQUENCE NOTES :

The sequence was started on 01/19/94 and was analyzed according to the SW-846 Method 8015M. The initial calibration consisted of 5 different levels of the Kerosene standard that ranged from approximately 200ppm to 2000ppm. The continuing calibration at approximately 1000ppm was injected amongst the samples, in order to verify the instrument stability. The %RSD in the initial calibration and the %D in the continuing calibration were below their 20% and 15% limits, respectively.

SAMPLE NOTES :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the required holding times. Approximately 20 g of each sample was extracted and concentrated to 5 mL.

There was no Kerosene detected in any of the samples. Sample B09WF3 was spiked with Kerosene, and the matrix spike recoveries were 51% for the MS, and 54% for the MSD. The blank spike was prepared at the same time and had a 52% recovery, and the data was included in the "Additional Raw Data" portion of the package.

All of the QC results were within the limits specified by the SW-846 Method 8015M.

We 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 in this hardcopy data package and in the computer-readable data submitted on diskette is authorized by the Laboratory Manager or his designees, as verified by the following signatures.

Nicole Roth 3/3/94
Nicole Roth
Program Manager

Maureen Parrish 3/2/94
Maureen Parrish
Project Manager

~~CCCOC2A~~

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS / W.U. SETZER

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 1-11-94

Ice Chest No.: SML 342 — Field Logbook No.: ~~EFL 1091~~ EFL-115 1-13-94

Bill of Lading/Airbill No.: 2519008360 — Offsite Property No.: W94-0-026-1

Method of Shipment: AIR

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL)

Sample Identification

1) B09BT4
- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09BT5
- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3) B09BT7
- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
W.U. Setzer	Kermit Blum K. Blum	1-18,94 1330
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

~~000020~~

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 1-13-94

Ice Chest No.: SML-311

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

Offsite Property No.: OSR-17394

Method of Shipment: AIR

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) RADIOACTIVE

Sample Identification

1) B09D19

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09WF3

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3)

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

1-17-94

[] Field Transfer of Custody — Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
1-17-94 L E ROGERS 0930	W.V. SETZER	1-17-94 0930
W.V. Setzer	[illegible]	1-18-94 10:35

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

039

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

~~000022~~

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 1-13-94

Ice Chest No.: SML-335 — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 2519000 8448 — Offsite Property No.: W94-0-0216-3

Method of Shipment: AIR

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09WF5

4,250ml P:CLP;TAL Metals,Hg,Ti
4,250ml Gs:VOA CLP
4,250ml aG:Semi-VOA CLP
4,125ml G:Anions F,Cl,SO4 (EPA 300.0)
4,125ml P/G:Anions NO2,NO3 (EPA 353.2)
4,125ml G:Cyanide CLP
4,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09WF6

4,250ml P:CLP;TAL Metals,Hg,Ti
4,250ml Gs:VOA CLP
4,250ml aG:Semi-VOA CLP
4,125ml G:Anions F,Cl,SO4 (EPA 300.0)
4,125ml P/G:Anions NO2,NO3 (EPA 353.2)
4,125ml G:Cyanide CLP
4,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

9412225.2149

3) ~~1,250ml P:CLP;TAL Metals,Hg,Ti~~
~~1,250ml Gs:VOA CLP~~
1,250ml aG:Semi-VOA CLP
~~1,125ml G:Anions F,Cl,SO4 (EPA 300.0)~~
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

1-17-94

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
0940 Loren E. Rogers 1-17-94	W. V. Seltzer	1-17-94 0940
Relinquished by: W. V. Seltzer	Received by: Kermit Blum K. Blum	Date/Time: 1-18-94 1330
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: 1040

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

9417322F.2150

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UR-2		DATA PACKAGE: B09DT4-TMA-190
VALIDATOR: [illegible]	LAB: TMA	DATE: 04/08/94
CASE:		SDG: B09DT4-TMA-190

ANALYSES PERFORMED

☐ CLP Volatiles	☐ SW-846 8240 (cap column)	☐ SW-846 8260 (packed column)	☒ CLP Semivolatiles	☐ SW-846 8270 (cap column)	☐ SW-846 (packed column)
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX Soils

B09DT4	B09WF5
B09DT5	B09WF6
B09DT7	
B09DT9	
B09WF3	

9413225.2151

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

042

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. INSTRUMENT TUNING AND CALIBRATION

Is the GC/MS tuning/performance check acceptable? . . . . . Yes No N/A

Are initial calibrations acceptable? . . . . . Yes No N/A

Are continuing calibrations acceptable? . . . . . Yes No N/A

Comments: Continuing calibration 2.0 for the surrogate 2-fluorophenol was >25% at 35.6%. However, no qualification is required since none of the TCL compounds are affected.

4. BLANKS

Were laboratory blanks analyzed? . . . . . Yes No N/A

Are laboratory blank results acceptable? . . . . . Yes No N/A

Were field/trip blanks analyzed? . . . . . Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments: D-n-butylphthalate, bis-(2-ethylhexyl) phthalate, and 3 TICs were detected in the lab blank. Assoc. sample results <10 or <5 x blank concentration have been qualified as undetected (U). See blank summary attached for specific concentrations in blank.

5. ACCURACY

Were surrogates/System Monitoring Compounds analyzed? . . . . . Yes No N/A

Are surrogate/System Monitoring Compound recoveries acceptable? Yes No N/A

Were MS/MSD samples analyzed? . . . . . Yes No N/A

Are MS/MSD results acceptable? . . . . . Yes No N/A

Comments:

MS/MSD %R for 2,4-dinitrotoluene are 97% and 107%, respectively, >UCL. The MSD %R for 4-nitrophenol is >UCL at 117%. No qualification is required since all associated results are non-detects and all surrogate recoveries are acceptable.

9413225.2152

0043

GC/MS ORGANIC DATA VALIDATION CHECKLIST

6. PRECISION

Are MS/MSD RPD values acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Comments: Sample locations are not currently available. Field QC ~~data~~ will be evaluated in the final summary report.

7. SYSTEM PERFORMANCE

Were internal standards analyzed? . . . . . Yes No N/A

Are internal standard areas acceptable? . . . . . Yes No N/A

Are internal standard retention times acceptable? . . . . . Yes No N/A

Comments:

8. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? . . . . . Yes No N/A

Is compound quantitation acceptable? . . . . . Yes No N/A

Comments:

9. REPORTED RESULTS AND QUANTITATION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Do results meet the CRQLs? . . . . . Yes No N/A

Has the laboratory properly identified and coded all TIC? . . Yes No N/A

Comments:

9413225.2153

9413225.2154

HOLDING TIME SUMMARY

B09DT4-TMA-690

SDG:	VALIDATOR: [illegible]	DATE: 4/8/94	PAGE 1 OF 1
COMMENTS: Semivolatile Organics			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09DT4	BNAs	1/11/94	01/20/94	2/02/94	9	13	None
B09DT5		1/11/94		2/02/94	9		
B09DT7		1/11/94			9		
B09DT9		1/13/94			7		
B09WF3		1/13/94			7		
B09WF5		1/13/94			7		
B09WF6		1/13/94			7		

BLANK AND SAMPLE DATA SUMMARY

B09DT4-TM4-690

SDG:	VALIDATOR:	DATE: 4/11/94	PAGE 1 OF 1
COMMENTS: Semivolatile Organics Soil TCL.			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
SBLF01205	Di-n-butylphthalate	130	J		ug/kg		1300	B09DT4	U
								B09DT5	U
								B09DT7	U
								B09DT9	U
								B09WF3	U
								B09WF5	U
								B09WF6	U
SBLF01205	Bis(2-ethylhexyl)phthalate	15	J		ug/kg		150	B09WF5	U

~~000584~~

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK0120S

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-BLK

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 40202S02

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND		Q
100-02-7	4-Nitrophenol	780	U
132-64-9	Dibenzofuran	320	U
121-14-2	2,4-Dinitrotoluene	320	U
606-20-2	2,6-Dinitrotoluene	320	U
84-66-2	Diethylphthalate	320	U
7005-72-3	4-Chlorophenyl-phenylether	320	U
86-73-7	Fluorene	320	U
100-01-6	4-Nitroaniline	780	U
534-52-1	4,6-Dinitro-2-methylphenol	780	U
86-30-6	N-Nitrosodiphenylamine (1)	320	U
101-55-3	4-Bromophenyl-phenylether	320	U
118-74-1	Hexachlorobenzene	320	U
87-86-5	Pentachlorophenol	780	U
85-01-8	Phenanthrene	320	U
120-12-7	Anthracene	320	U
86-74-8	Carbazole	320	U
84-74-2	Di-n-Butylphthalate	130	J
206-44-0	Fluoranthene	320	U
129-00-0	Pyrene	320	U
85-68-7	Butylbenzylphthalate	320	U
91-94-1	3,3'-Dichlorobenzidine	320	U
56-55-3	Benzo(a)Anthracene	320	U
117-81-7	bis(2-Ethylhexyl)Phthalate	15 ~~320~~	~~U~~
218-01-9	Chrysene	320	U
117-84-0	Di-n-Octyl Phthalate	320	U
205-99-2	Benzo(b)Fluoranthene	320	U
207-08-9	Benzo(k)Fluoranthene	320	U
50-32-8	Benzo(a)Pyrene	320	U
193-39-5	Indeno(1,2,3-cd)Pyrene	320	U
53-70-3	Dibenz(a,h)Anthracene	320	U
191-24-2	Benzo(g,h,i)Perylene	320	U

(1) - Cannot be separated from Diphenylamine

4/8/94

FORM I SV-2

3/90

047

~~000585~~

EPA SAMPLE NO.

SBLK0120S

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 01025 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A401025-BLK

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 40202S02

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N) N Date Extracted: 01/20/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 02/02/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

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

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN COMPOUND	5.52	1400	~~J~~
2.	UNKNOWN KETONE	6.52	620	~~J~~
3.	UNKNOWN KETONE	7.05	130	~~J~~

4/11/94

SBLK01205

~~000594~~

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
64	NOT FOUND								
65	~~167~~	~~1618~~	~~20:26~~	~~4~~	~~1.031~~	~~A BB~~	~~546.~~	~~0.118 NG/UL~~	~~0.02~~
66	149	1693	21:22	4	1.079	A BB	29024.	4.140 NG/UL	0.75
67	NOT FOUND								
68	NOT FOUND								
69	NOT FOUND								
70	NOT FOUND								
71	~~228~~	~~2089~~	~~26:22~~	~~5~~	~~0.979~~	~~A BB~~	~~730.~~	~~0.207 NG/UL~~	~~0.04~~
72	~~228~~	~~2096~~	~~26:28~~	~~5~~	~~1.002~~	~~A BB~~	~~570.~~	~~0.175 NG/UL~~	~~0.04~~
73	~~149~~	~~2098~~	~~26:29~~	~~5~~	~~1.003~~	~~A BB~~	~~1652.~~	~~0.461 NG/UL~~	~~0.08~~
74	NOT FOUND								
75	~~252~~	~~2325~~	~~29:29~~	~~6~~	~~0.953~~	~~A BV~~	~~766.~~	~~0.309 NG/UL~~	~~0.06~~
76	~~252~~	~~2343~~	~~29:35~~	~~6~~	~~0.956~~	~~A VB~~	~~776.~~	~~0.360 NG/UL~~	~~0.06~~
77	~~252~~	~~2431~~	~~30:41~~	~~6~~	~~0.992~~	~~A BB~~	~~640.~~	~~0.321 NG/UL~~	~~0.06~~
78	NOT FOUND								
79	NOT FOUND								
80	NOT FOUND								

bis(2-ethylhexyl) phthalate

$0.461 \frac{ng}{ul} \times 10 = 4.61 \frac{ng}{ul}$ F.H. 2/7/94

No	Ret(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R.Fac	R.Fac(L)	Ratio
51	16:29		1.033						
52	15:27		0.968						
53	17:10	1.00	1.076	1.00	0.12	25.00	0.007	1.572	0.00
54	16:29		1.033						
55	17:23		1.089						
56	17:25		1.092						
57	17:27		1.093						
58	17:32		0.886						
59	17:43		0.895						
60	18:40		0.943						
61	18:48		0.950						
62	19:19		0.976						
63	19:52		1.003						
64	19:59		1.010						
65	20:24	1.00	1.031	1.00	0.12	25.00	0.005	1.148	0.00
66	21:22	1.00	1.079	1.00	4.14	25.00	0.288	1.738	0.17
67	22:50		1.154						
68	23:24		0.887						
69	25:04		0.950						
70	26:19		0.998						
71	26:22	1.00	1.000	1.00	0.21	25.00	0.012	1.404	0.01
72	26:27	1.00	1.002	1.00	0.19	25.00	0.009	1.217	0.01
73	26:28	1.00	1.003	1.00	0.46	25.00	0.027	1.440	0.02
74	28:16		0.914						
75	29:29	1.00	0.953	1.00	0.31	25.00	0.021	1.691	0.01
76	29:35	1.00	0.957	1.00	0.36	25.00	0.021	1.468	0.01
77	30:41	1.00	0.993	1.00	0.32	25.00	0.017	1.358	0.01
78	36:14		1.172						
79	36:25		1.178						
80	37:53		1.225						

4/8/94

02/08/94