GENERAL GC DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09340-TMA-623 (923-E418, Filename B09340.GC)

94132F.164

MEMORANDUM

MAR 1994
RECEIVED
TQD

TO: 200-UP-2 Project QA Record

March 21, 1994

FR: Susan Winter, Golder Associates Inc.

RE: GENERAL GC DATA VALIDATION SUMMARY FOR DATA PACKAGE: B09340-TMA-623 (923-E418, Filename B09340.GC)

INTRODUCTION

This memo presents the results of data validation on data package B09340-TMA-623 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
B09337	09/15/93	SOIL	SEE NOTE 1
B09339	09/13/93	SOIL	
B09340	09/15/93	SOIL	
B09341	09/13/93	SOIL	
B09344	09/15/93	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

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.

Completeness. The data package was complete for all requested analyses. A total of five samples were validated in this data package with a total of 5 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets normal work plan objectives of 90%.

001

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.

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.

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

9417225.167

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.

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

9413225.1169

DATA QUALIFICATION SUMMARY

SDG: B09340-TMA-623	VALIDATOR: [illegible]	DATE: March 21, 1994	PAGE 1 OF 1
COMMENTS: GENERAL GC FOR KEROSENE			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
NO QUALIFICATIONS REQUIRED			

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

9417225.17

Validated Data Summary, Data Package: B09340-TNA-623

	Samp#	B09337		B09339		B09340		B09341		B09344	
	Date	9-15-93		9-13-93		9-15-93		9-13-93		9-15-93	
	Location	299-W19-95		299-W19-97		299-W19-95		299-W19-97		299-W19-95	
	Depth	90.25 - 92.25		70.00 - 72.50		105.00 - 107.50		101.00 - 103.30		120.00 - 122.50	
	Type	---		---		---		---		---	
	Comments	---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
KEROSENE	MG/KG	5.000	U	5.000	U	5.000	U	5.000	U	5.000	U

Verified

3/21/94

TMA Inc. REPORT Work Order # A3-09-045

Received: 09/17/93

Results by Sample

~~000463~~

SAMPLE ID B09337 FRACTION 03D TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 09/13/93 Category

299-W19-95
90.25-92.25'

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 10/09/93
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL	Q
Kerosene Range	ND	5	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
3/07/94

9413225.1173

TMA Inc. REPORT Work Order # A3-09-045

Received: 09/17/93

Results by Sample

SAMPLE ID B09339 FRACTION 04D TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 09/13/93 Category

299-W19-97
70-72.5'

~~000465~~

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 10/09/93
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL	Q
Kerosene Range	ND	5	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
3/07/94

TMA Inc. REPORT Work Order # A3-09-045

Received: 09/17/93

Results by Sample

SAMPLE ID B09340 FRACTION 01G TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 09/15/93 Category

299-W19-95
105-107.5'

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

~~000467~~

Matrix: SOIL
Date Analyzed: 10/09/93
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL	Q
Kerosene Range	ND	5	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
3/07/94

TMA Inc. REPORT Work Order # A3-09-045

Received: 09/17/93 Results by Sample

SAMPLE ID B09341 FRACTION 05D TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 09/15/93 Category

299-W19-97
101-103.3'

~~000469~~

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 10/10/93
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL	Q
Kerosene Range	ND	5	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

3/07/94

9413225.176

TMA Inc. REPORT Work Order # A3-09-045

Received: 09/17/93

Results by Sample

SAMPLE ID 809344 FRACTION OZG TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 09/15/93 Category

299-W19-95
120-122.5'

~~000471~~

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 10/09/93
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL	Q
Kerosene Range	ND	5	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
3/07/94

9413225.1177

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

9407225.1178

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 09-045

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : September 17, 1993

1.0 DESCRIPTION OF CASE :

Six 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
B09340	A3-09-045-01A	V	SOIL
B09340	A3-09-045-01B	SV	SOIL
B09340 MS	A3-09-045-01C	SV	SOIL
B09340 MSD	A3-09-045-01D	SV	SOIL
B09340	A3-09-045-01G	K	SOIL
B09344	A3-09-045-02A	V	SOIL
B09344 MS	A3-09-045-02B	V	SOIL
B09344 MSD	A3-09-045-02C	V	SOIL
B09344	A3-09-045-02D	SV	SOIL
B09344	A3-09-045-02G	K	SOIL
B09337	A3-09-045-03A	V	SOIL
B09337	A3-09-045-03B	SV	SOIL
B09337	A3-09-045-03D	K	SOIL
B09337 MS	A3-09-045-03E	K	SOIL
B09337 MSD	A3-09-045-03F	K	SOIL
B09339	A3-09-045-04A	V	SOIL
B09339	A3-09-045-04B	SV	SOIL
B09339	A3-09-045-04D	K	SOIL
B09341	A3-09-045-05A	V	SOIL
B09341	A3-09-045-05B	SV	SOIL
B09341	A3-09-045-05D	K	SOIL
B09347	A3-09-045-06A	V	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.

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

TUNES :

All BFB tunes were injected directly into the GC/MS instrument.

3.2.2 SEMIVOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the CLP SOW holding times.

Sample B09340 had low surrogate recoveries. However, the following surrogate recoveries were below the QC limits: Nitrobenzene-d5 and 2-Fluorophenol, as well as the advisory surrogate, 1,2-Dichlorobenzene-d4. In accordance with CLP protocol, no reanaylsis was required if one base/neutral surrogate recovery and one acid surrogate recovery was outside of the QC limits. Sample B09340 was also spiked with the matrix spike compounds and analyzed accordingly. The MS and the MSD samples exhibited very good surrogate recoveries, and in accordance with the protocol, were treated as the reextract of sample B09340.

The matrix spike recoveries of 2,4-Dinitrotoluene for samples B09340MS and B09340MSD were slightly above the QC limits. Sample B09340MS also had a matrix spike recovery of Phenol that was slightly above the QC limit. Although the MS and MSD samples had 4-Nitrophenol spike recoveries within the QC limits, the actual concentration detected in the samples exceeded the calibration of the instrument. Hence, the results for 4-Nitrophenol have been "E" qualified. In accordance with CLP protocol, no further action was required for any of the aforementioned occurrences.

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

94/325.188

3.2.3 EXTRACTABLE HYDROCARBONS "KEROSENE RANGE" COMMENTS :

SEQUENCE NOTES :

The sequence was started on 10/05/93 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 200ppm to 2000ppm. The continuing calibration at the 1000ppm level was injected amongst a series of 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 for extractable hydrocarbons in the Kerosene range within the required holding times. Approximately 20 g of each sample was extracted and concentrated to 5 mL.

There were no hydrocarbons in the Kerosene range detected in any of the samples. Sample B09337 was spiked with Kerosene and the matrix spike recoveries were between 90% and 101%. The blank spike was prepared at the same time, and had a 92% recovery.

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 designee, as verified by the following signatures.

Nicole Roth 12/10/93
Nicole Roth
CLP Program Manager

Maureen Parrish 12/10/93
Maureen Parrish
Project Manager

~~DDDDDDA~~

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: 9-15-93

Ice Chest No.: SML 319 — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 253695 6191 — Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09340

- 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) B09344

- 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) 9-16-93 B09337

- ~~1,250ml~~ ~~1,250ml~~ P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP * 2,12cmL
- 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:
1050 [signature] 9-16-93	[signature] TMA/NORTHWEST	9-17-93 1130
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: NOTE: TMA/NORTHWEST received the 1,250 ml TAL METALS, Hg Ti bottle also

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

0002020

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: 9-13-93

Ice Chest No.: SML 365 — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 253 695 6191 — Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09339

- 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) B09341

- 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

JGR 9-16-93

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

Relinquished by:	Received by:	Date/Time:
1050 9-16-93	H. NAGELISEN TMA/NUCLEAR	9/17/93 11:30
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

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

0020

GENERAL GC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200-UP-2			DATA PACKAGE: B09340-TMA-623		
VALIDATOR: [illegible]		LAB: TMA		DATE: 03/07/94	
CASE:			SDG: B09340-TMA-623		

ANALYSES PERFORMED

☐ 8010	☒ 8015 (Mod)	☐ 8020	☐ 8021	8140	8141
☐ 8150	☐ 8151	☐ WTPH-HCID	☐ WTPH-G	☐ WTPH-D	☐
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX: Soils

B09337
B09339
B09340
~~B09~~ B09341
B09344

9413225.1185

3/7/94

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: There is a discrepancy for samples B09337 and B09341 between the collection date on the chain of custody and the sample analysis request forms. The collection dates recorded on the chain of custody forms were used for validation

021

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:

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? See note below . . . . Yes No N/A

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

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

GENERAL GC DATA VALIDATION CHECKLIST

Comments: The control limits for the MS/MSD %R are not currently available, but have been requested. The MS/MSD %R are 90% and 101%, respectively. Therefore, no qualification was required since the recoveries are considered 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:

9413225.187

HOLDING TIME SUMMARY

B09340-TMA-623

SDG:	VALIDATOR: [illegible]	DATE: 3/21/94	PAGE 1 OF 1
COMMENTS: General GC for Kerosene			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09337	GC	09/15/93	9/23/93	10/06/93	8	16	None
B09339	↓	09/13/93	↓	10/09/93	10	↓	↓
B09340	↓	9/15/93	↓	10/09/93	8	↓	↓
B09341	↓	09/13/93	↓	10/10/93	10	↓	↓
B09344	↓	09/15/93	↓	10/09/93	8	↓	↓

GENERAL CHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09340-TMA-623 (923-E418, Filename B09340.GCH)

9413225.1189

MEMORANDUM

MAR 1994
RECEIVED
TQO

TO: 200-UP-2 Project QA Record March 21, 1994

FR: Susan Winter, Golder Associates Inc.

RE: GENERAL CHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE: B09340-TMA-623 (923-E418, Filename B09340.GCH)

INTRODUCTION

This memo presents the results of data validation on data package B09340-TMA-623 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
B09337	09/15/93	SOIL	SEE NOTE 1
B09339	09/13/93	SOIL	
B09340	09/15/93	SOIL	
B09341	09/13/93	SOIL	
B09344	09/15/93	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

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.

Completeness. The data package was complete for all requested analyses. A total of five samples were validated in this data package with a total of 20 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets normal work plan objectives of 90%.

001

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.

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.

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

94/327E.192

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.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9412325 1104

DATA QUALIFICATION SUMMARY

SDG: B09340-TMA-623	VALIDATOR:	DATE: March 21, 1994	PAGE 1 OF 1
COMMENTS: GENERAL CHEMISTRY			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
NO QUALIFICATIONS REQUIRED			

9413225.1195

006

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

9413225.196

9413225.1197

Validated Data Summary, Data Package: B09340-TMA-623

	Samp#	B09337		B09339		B09340		B09341		B09344	
	Date	9-15-93		9-13-93		9-15-93		9-13-93		9-15-93	
	Location	299-W19-95		299-W19-97		299-W19-95		299-W19-97		299-W19-95	
	Depth	90.25 - 92.25		70.00 - 72.50		105.00 - 107.50		101.00 - 103.30		120.00 - 122.50	
	Type	---		---		---		---		---	
	Comments	---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLORIDE	MG/KG	9.700		5.000		5.800		5.500		5.900	
FLUORIDE	MG/KG	1.000		0.700		0.900		0.900		1.500	
SULFATE	MG/KG	18.000		12.000		10.000		9.000		15.000	
NITRATE+NITRITE-N	MG-N/KG	2.430	U	2.480	U	2.500	U	2.460	U	2.500	U

verified

3/21/94

008

TMA Inc. REPORT

Received: 09/17/93 Results by Sample

Work Order # A3-09-045

~~000012~~

SAMPLE ID B09337 FRACTION 03C TEST CODE UCCLPS NAME Anions in Solids

299-W19-95
90.25 - 92.25'

Date & Time Collected 09/13/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	9.7	mg/kg	1.0
Fluoride	300.0	1.0	mg/kg	0.5
Sulfate	300.0	18	mg/kg	5

FORM I

Verified
3/07/94

Verified
3/07/94

TMA Inc. REPORT

Received: 09/17/93

Results by Sample

Work Order # A3-09-045

~~000013~~

SAMPLE ID B09339 FRACTION 04C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 09/13/93 Category

299-W19-97
70-72.5'

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	5.0	mg/kg	1.0
Fluoride	300.0	0.7	mg/kg	0.5
Sulfate	300.0	12	mg/kg	5

FORM I

Verified

3/07/94

9411225.199

TMA Inc. REPORT

Results by Sample

Received: 09/17/93

Work Order # A3-09-045

~~000010~~

SAMPLE ID B09340 FRACTION 01E TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 09/15/93 Category

299-W19-95
105-107.5'

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	5.8	mg/kg	1.0
Fluoride	300.0	0.9	mg/kg	0.5
Sulfate	300.0	10	mg/kg	5

FORM I

Verified
3/07/94

9413225.200

TMA Inc. REPORT

Results by Sample

Received: 09/17/93

Work Order # A3-09-045

~~000014~~

SAMPLE ID B09341 FRACTION 05C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 09/15/93 Category

299-W19-97
101-103.3'

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	5.5	mg/kg	1.0
Fluoride	300.0	0.9	mg/kg	0.5
Sulfate	300.0	9	mg/kg	5

FORM I

Verified
3/07/94

9413225.2011

TMA Inc. REPORT

Results by Sample

Received: 09/17/93

Work Order # A3-09-045

~~000011~~

SAMPLE ID B09344 FRACTION OZE TEST CODE UCCLPS NAME Anions in Solids

Date & Time Collected 09/15/93 Category

299-W19-95
120 - 122.5'

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	5.9	mg/kg	1.0
Fluoride	300.0	1.5	mg/kg	0.5
Sulfate	300.0	15	mg/kg	5

FORM I

Verified

3/07/94

9413225.202

Received: 09/21/93 Results by Sample

Analyzed for Nitrate + Nitrite-N using Method 353.2 (Modified).

SAMPLE ID 809337 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 09/15/93 Category SOIL

NITR_S <2.43 u
mg N/kg

SAMPLE ID 809339 SAMPLE # 02 FRACTIONS: A
Date & Time Collected 09/13/93 Category SOIL

NITR_S <2.48 u
mg N/kg

SAMPLE ID 809340 SAMPLE # 03 FRACTIONS: A
Date & Time Collected 09/15/93 Category SOIL

NITR_S <2.50 u
mg N/kg

SAMPLE ID 809341 SAMPLE # 04 FRACTIONS: A
Date & Time Collected 09/13/93 Category SOIL

NITR_S <2.46 u
mg N/kg

SAMPLE ID 809344 SAMPLE # 05 FRACTIONS: A
Date & Time Collected 09/15/93 Category SOIL

NITR_S <2.50 u
mg N/kg

SAMPLE ID 809344D SAMPLE # 05 FRACTIONS: B
Date & Time Collected 09/15/93 Category SOIL

NITR_S <2.44 u
mg N/kg

SAMPLE ID 809344S SAMPLE # 05 FRACTIONS: C
Date & Time Collected 09/15/93 Category SOIL

NITR_S 20.8
mg N/kg

Rev. Sized 3/07/94

014

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.

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

9411 3225 1204

9413225.1205

GENERAL CHEMISTRY RESULTS

CASE NO. 09-045

Soil Sample #:

B09337	B09339
B09340	B09341
B09344	

CASE NARRATIVE

The holding time for the pH analysis was exceeded. In addition, the holding time was exceeded for the anion analysis on samples B09337 and B09339. In accordance with ROD-93-0238, the anions were analyzed for information purposes. Careful review of the QC analysis indicates that the data is reliable.

While an effort was made to obtain homogenous aliquots from soil sample B09344, the relative percent difference for Sulfate was 30.8%.

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

Maureen Parrish 12/9/93

Maureen Parrish

Received: 09/21/93

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)

9114225.1206

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

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: 9-15-93

Ice Chest No.: SML 319

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 253695 6191

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09340

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) B09344

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) B09337

~~1,250ml~~ P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP * 2,120 mL
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:
1050 Loren E. Rogers 9-16-93	TMA/NORCAL	9-17-93 11:30
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:
NOTE: TMA/NORCAL received the 1,250 ml TAL METALS, Hg Ti bottle als

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: 9-13-93

Ice Chest No.: SML 365

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 253 695 6191

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09339

- 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) B09341

- 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

RER 9-16-93

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

Relinquished by:	Received by:	Date/Time:
1050 Lorna E. Rogers 9-16-93	H. NARCISO Narciso TMA/NCRCAL	9/17/93 11:30
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

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

9413225.1209

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-2		DATA PACKAGE: B09340-TMA-623
VALIDATOR: [signature]	LAB: TMA	DATE: 03/07/94
CASE:		SDG: B09340-TMA-623

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
B09337
B09339
B09340
B09341
B09344

9413225.210

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: There is a discrepancy for samples B09337 and B09341 between the collection date on the chain of custody and the sample analysis request forms. The collection dates recorded on the chain of custody forms were used for validation.

021

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: The initial calibration for the IC was performed on 08/28/93 and the samples were analyzed on 10/12/93. However, no qualification was required since a CCV was analyzed and within limits on the day of sample analysis

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:

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:

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: None of the samples in this SDG were identified as field duplicates or field splits.

7. ANALYTE QUANTITATION

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

Comments:

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:

9413225.212

9413225.1213

HOLDING TIME SUMMARY

B09340-TMA-623

SDG:	VALIDATOR: [illegible]	DATE: 3/07/94	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
B09337	IC	~~09/13/93~~ 9/15/93	10/12/93	10/12/93	~~29~~ 27	Ø	None
B09339	↓	09/13/93	↓	↓	29	↓	↓
B09340		09/15/93			27		
B09341		~~09/15/93~~ 9/13/93			~~27~~ 29		
B09344	↓	09/15/93	↓	↓	27	↓	↓
B09337	NO_2/NO_3-N	~~9/13/93~~ 9/15/93	10/18/93	10/19/93	~~35~~ 33	1	None
B09339	↓	9/13/93	↓	↓	35	1	↓
B09340		9/15/93			33	1	
B09341		~~9/15/93~~ 9/13/93			~~33~~ 35	1	
B09344	↓	9/15/93	↓	↓	33	1	↓
		(P) 3/2/94			(P) 3/2/94		

METALS DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09340-TMA-623 (923-E418, Filename B09340.MET)

9413225.1214

MEMORANDUM

MAR 1994
RECEIVED
TQO

TO: 200-UP-2 Project QA Record

March 21, 1994

FR: Susan Winter, Golder Associates Inc.

RE: METALS DATA VALIDATION SUMMARY FOR DATA PACKAGE: B09340-TMA-623 (923-E418, Filename B09340.MET)

INTRODUCTION

This memo presents the results of data validation on data package B09340-TMA-623 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
B09337	09/15/93	SOIL	SEE NOTE 1
B09339	09/13/93	SOIL	
B09340	09/15/93	SOIL	
B09341	09/13/93	SOIL	
B09344	09/15/93	SOIL	
Note 1. All samples were analyzed for CLP TAL metals, titanium and cyanide.			

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

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.

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 five samples were validated in this data package with a total of 125 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.

Holding Times

- The holding times for the mercury and cyanide analyses were exceeded. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

Laboratory Blanks

- **Positive Blanks.** Antimony, beryllium, copper, and sodium were detected at positive concentrations in the calibration and/or preparation blanks. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

- **Negative Blanks.** Thallium was detected at a negative concentration in the calibration blanks. Attachments 2 and 5 provide a summary of the samples affected, data qualification applied and supporting documentation.

Matrix Spike

- The matrix spike percent recovery (MS %R) for antimony 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.

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

9413225.1217

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.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9413225.1219

DATA QUALIFICATION SUMMARY

SDG: B09340-TMA-623	VALIDATOR:	DATE: March 21, 1994	PAGE 1 OF 1
COMMENTS: METALS			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
ANTIMONY	U	B09337 B09339	PRESENT IN CCB AT A POSITIVE CONCENTRATION
BERYLLIUM	U	B09337 B09339 B09340 B09341	PRESENT IN CCB AT A POSITIVE CONCENTRATION
COPPER	U	B09337 B09339 B09340 B09341 B09344	PRESENT IN PREP. BLANK AT A POSITIVE CONCENTRATION
SODIUM	U	B09339 B09340 B09341 B09344	PRESENT IN PREP. BLANK AT A POSITIVE CONCENTRATION
THALLIUM	UJ	B09337 B09339 B09340 B09341 B09344	PRESENT IN ICB AND CCB AT A NEGATIVE CONCENTRATION
ANTIMONY	UJ	B09337 B09339 B09340 B09341 B09344	MS %R < 75% BUT > 30%
MERCURY	UJ	B09339 B09341	ANALYZED OUT OF THE REQUIRED HOLDING TIME
CYANIDE	UJ	B09339 B09341	ANALYZED OUT OF THE REQUIRED HOLDING TIME

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

9W7225.122

9413225.1222

Validated Data Summary, Data Package: B09340-TMA-623

	Samp#	B09337		B09339		B09340		B09341		B09344	
	Date	9-15-93		9-13-93		9-15-93		9-13-93		9-15-93	
	Location	299-W19-95		299-W19-97		299-W19-95		299-W19-97		299-W19-95	
	Depth	90.25 - 92.25		70.00 - 72.50		105.00 - 107.50		101.00 - 103.30		120.00 - 122.50	
	Type	---		---		---		---		---	
	Comments	---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	MG/KG	4680.000		5590.000		6210.000		5930.000		7450.000	
ANTIMONY	MG/KG	2.900	UJ	2.900	UJ	2.700	UJ	2.600	UJ	2.600	UJ
ARSENIC	MG/KG	1.500	B	2.100		4.500		3.900		6.200	
BARIUM	MG/KG	49.500		48.700		61.400		76.300		64.300	
BERYLLIUM	MG/KG	0.240	U	0.240	U	0.210	U	0.220	U	0.340	B
CADMIUM	MG/KG	0.260	U	0.270	U	0.270	U	0.260	U	0.260	U
CALCIUM	MG/KG	11200.000		9360.000		10900.000		8540.000		8820.000	
CHROMIUM	MG/KG	6.200		8.100		10.600		9.000		13.900	
COBALT	MG/KG	8.300	B	5.800	B	7.700	B	6.400	B	7.600	B
COPPER	MG/KG	17.100	U	11.300	U	13.400	U	12.000	U	13.200	U
IRON	MG/KG	17100.000		12100.000		14900.000		14200.000		13900.000	
LEAD	MG/KG	2.400		3.400		4.500		4.600		5.300	
MAGNESIUM	MG/KG	3930.000		4280.000		4790.000		4720.000		5410.000	
MANGANESE	MG/KG	208.000		245.000		292.000		345.000		288.000	
MERCURY	MG/KG	0.050	U	0.050	UJ	0.050	U	0.050	UJ	0.050	U
NICKEL	MG/KG	5.700	B	7.900	B	8.600		9.400		13.300	
POTASSIUM	MG/KG	732.000	B	1040.000		1290.000		1210.000		1720.000	
SELENIUM	MG/KG	0.560	U	0.570	U	0.580	U	0.720	B	0.560	U
SILVER	MG/KG	0.630	B	0.970	B	0.540	U	0.530	U	0.520	U
SODIUM	MG/KG	321.000	B	217.000	U	220.000	U	183.000	U	181.000	U
THALLIUM	MG/KG	0.320	UJ	0.330	UJ	0.330	UJ	0.330	UJ	0.320	UJ
VANADIUM	MG/KG	40.400		25.000		29.300		29.100		27.800	
ZINC	MG/KG	31.800		26.200		33.800		30.500		35.100	
CYANIDE	MG/KG	0.480	U	0.480	UJ	0.520	U	0.520	UJ	0.520	U
TITANIUM	MG/KG	1460.000		778.000		907.000		811.000		669.000	

Verified
3/21/94

008

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER: 299-W19-95

INORGANIC ANALYSIS DATA SHEET

B09337 90.25-92.25'

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

Lab Code: SKINER Case No.: N3-09-074SAS No.: SDG No.: B09337

Matrix (soil/water): SOIL Lab Sample ID: 09153-01S

Level (low/med): LOW Date Received: 09/21/93

% Solids: 95.5

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	4680			P	
7440-36-0	Antimony	2.9	~~B~~	N	P	
7440-38-2	Arsenic	1.5	B		P	
7440-39-3	Barium	49.5			P	
7440-41-7	Beryllium	0.24	~~B~~		P	
7440-43-9	Cadmium	0.26	U		P	
7440-70-2	Calcium	11200			P	
7440-47-3	Chromium	6.2			P	
7440-48-4	Cobalt	8.3	B		P	
7440-50-8	Copper	17.1			P	
7439-89-6	Iron	17100			P	
7439-92-1	Lead	2.4			P	
7439-95-4	Magnesium	3930			P	
7439-96-5	Manganese	208			P	
7439-97-6	Mercury	0.05	U		CV	
7440-02-0	Nickel	5.7	B		P	
7440-09-7	Potassium	732	B		P	
7782-49-2	Selenium	0.56	U		P	
7440-22-4	Silver	0.63	B		P	
7440-23-5	Sodium	321	B		P	
7440-28-0	Thallium	0.32	~~U~~		P	
7440-62-2	Vanadium	40.4			P	
7440-66-6	Zinc	31.8			P	
	Cyanide	0.48	U		CA	
7440-32-6	Titanium	1460			P	

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Vess. Sed Artifacts: YES

3/4/94

Comments:
STONES

009

FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: 299-W19-97

B09339 70-72.5'

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

Lab Code: SKINER Case No.: N3-09-074SAS No.: SDG No.: B09337

Matrix (soil/water): SOIL Lab Sample ID: 09153-02S

Level (low/med): LOW Date Received: 09/21/93

% Solids: 96.9

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	5590			P	
7440-36-0	Antimony	2.9	~~B~~	N	P	WS
7440-38-2	Arsenic	2.1			P	
7440-39-3	Barium	48.7			P	
7440-41-7	Beryllium	0.24	~~B~~		P	W
7440-43-9	Cadmium	0.27	U		P	
7440-70-2	Calcium	9360			P	
7440-47-3	Chromium	8.1			P	
7440-48-4	Cobalt	5.8	B		P	
7440-50-8	Copper	11.3			P	W
7439-89-6	Iron	12100			P	
7439-92-1	Lead	3.4			P	
7439-95-4	Magnesium	4280			P	
7439-96-5	Manganese	245			P	
7439-97-6	Mercury	0.05	~~U~~		CV	WS
7440-02-0	Nickel	7.9	B		P	
7440-09-7	Potassium	1040			P	
7782-49-2	Selenium	0.57	U		P	
7440-22-4	Silver	0.97	B		P	
7440-23-5	Sodium	217	~~B~~		P	W
7440-28-0	Thallium	0.33	~~U~~		P	WS
7440-62-2	Vanadium	25.0			P	
7440-66-6	Zinc	26.2			P	
	Cyanide	0.48	~~U~~		CA	WS
7440-32-6	Titanium	778			P	

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Verified Artifacts: YES

3/4/94

Comments:
STONES

010

FORM I - IN ~~003~~ ILM02.1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: 299-W19-95

B09340
105-107.5'

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

Lab Code: SKINER Case No.: N3-09-074SAS No.: SDG No.: B09337

Matrix (soil/water): SOIL Lab Sample ID: 09153-03S

Level (low/med): LOW Date Received: 09/21/93

% Solids: 96.0

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	6210			P	
7440-36-0	Antimony	2.7	~~U~~	N	P	W5
7440-38-2	Arsenic	4.5			P	
7440-39-3	Barium	61.4			P	
7440-41-7	Beryllium	0.21	~~B~~		P	W
7440-43-9	Cadmium	0.27	U		P	
7440-70-2	Calcium	10900			P	
7440-47-3	Chromium	10.6			P	
7440-48-4	Cobalt	7.7	B		P	
7440-50-8	Copper	13.4	—		P	W
7439-89-6	Iron	14900			P	
7439-92-1	Lead	4.5			P	
7439-95-4	Magnesium	4790			P	
7439-96-5	Manganese	292			P	
7439-97-6	Mercury	0.05	U		CV	
7440-02-0	Nickel	8.6			P	
7440-09-7	Potassium	1290			P	
7782-49-2	Selenium	0.58	U		P	
7440-22-4	Silver	0.54	U		P	
7440-23-5	Sodium	220	~~B~~		P	W
7440-28-0	Thallium	0.33	~~U~~		P	W5
7440-62-2	Vanadium	29.3			P	
7440-66-6	Zinc	33.8			P	
	Cyanide	0.52	U		CA	
7440-32-6	Titanium	907			P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Verified Artifacts: YES

3/4/94

Comments:
STONES

-011

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: 299-W19-97

B09341
101-103.3'

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

Lab Code: SKINER Case No.: N3-09-074SAS No.: SDG No.: B09337

Matrix (soil/water): SOIL Lab Sample ID: 09153-04S

Level (low/med): LOW Date Received: 09/21/93

% Solids: 93.7

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	5930			P	
7440-36-0	Antimony	2.6	~~U~~	N	P	
7440-38-2	Arsenic	3.9			P	
7440-39-3	Barium	76.3			P	
7440-41-7	Beryllium	0.22	~~B~~		P	
7440-43-9	Cadmium	0.26	U		P	
7440-70-2	Calcium	8540			P	
7440-47-3	Chromium	9.0			P	
7440-48-4	Cobalt	6.4	B		P	
7440-50-8	Copper	12.0	—		P	
7439-89-6	Iron	14200			P	
7439-92-1	Lead	4.6			P	
7439-95-4	Magnesium	4720			P	
7439-96-5	Manganese	345			P	
7439-97-6	Mercury	0.05	~~U~~		CV	
7440-02-0	Nickel	9.4			P	
7440-09-7	Potassium	1210			P	
7782-49-2	Selenium	0.72	B		P	
7440-22-4	Silver	0.53	U		P	
7440-23-5	Sodium	183	~~B~~		P	
7440-28-0	Thallium	0.33	~~U~~		P	
7440-62-2	Vanadium	29.1			P	
7440-66-6	Zinc	30.5			P	
	Cyanide	0.52	~~U~~		CA	
7440-32-6	Titanium	811			P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Verified Artifacts: YES

3/4/94

Comments:
STONES

012

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: 299-W19-95

B09344
120-122.5'

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

Lab Code: SKINER Case No.: N3-09-074SAS No.: SDG No.: B09337

Matrix (soil/water): SOIL Lab Sample ID: 09153-05S

Level (low/med): LOW Date Received: 09/21/93

% Solids: 93.7

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	7450			P	
7440-36-0	Antimony	2.6	~~U~~	N	P	
7440-38-2	Arsenic	6.2			P	
7440-39-3	Barium	64.3			P	
7440-41-7	Beryllium	0.34	B		P	
7440-43-9	Cadmium	0.26	U		P	
7440-70-2	Calcium	8820			P	
7440-47-3	Chromium	13.9			P	
7440-48-4	Cobalt	7.6	B		P	
7440-50-8	Copper	13.2			P	
7439-89-6	Iron	13900			P	
7439-92-1	Lead	5.3			P	
7439-95-4	Magnesium	5410			P	
7439-96-5	Manganese	288			P	
7439-97-6	Mercury	0.05	U		CV	
7440-02-0	Nickel	13.3			P	
7440-09-7	Potassium	1720			P	
7782-49-2	Selenium	0.56	U		P	
7440-22-4	Silver	0.52	U		P	
7440-23-5	Sodium	181	~~B~~		P	
7440-28-0	Thallium	0.32	~~U~~		P	
7440-62-2	Vanadium	27.8			P	
7440-66-6	Zinc	35.1			P	
	Cyanide	0.52	U		CA	
7440-32-6	Titanium	669			P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Verified Artifacts: YES

3/4/94

Comments:
STONES

013

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

9117225.1228

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

DEC 1993
RECEIVED
SDLA

October 29, 1993

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

Quality Control Narrative

Scope
Five (5) soil samples were submitted to TMA/Skinner & Sherman Laboratories, Inc. on September 21, 1993 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 S309153.

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 digestion spike recovery for antimony exceeded control limit requirements.

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

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: 9-15-93

Ice Chest No.: SML 319

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 253695 6191

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09340

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

B09344

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) 9-16-93 B09337

~~1,250ml~~ 1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP * 2,12cmL
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:
1050 L E Rogers 9-16-93	TMA/NORCAL	9-17-93 11:30
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: NOTE: TMA/NORCAL received the 1,250 ml TAL METALS, Hg Ti bottle also

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

~~0000026~~

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: 9-13-93

Ice Chest No.: SML 365

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 253 695 6191

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09339

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml nG: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) B09341

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml nG: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 nG: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

JAR 9-16-93

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

Relinquished by:	Received by:	Date/Time:
1050 9-16-93	H. NARCISO TMA/NERCAL	9/17/93 11:30
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

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

9413225.1232

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-2		DATA PACKAGE: B09340-TMA-623
VALIDATOR: [signature]	LAB: TMA	DATE: 03/04/94
CASE:		SDG: B09340-TMA-623

ANALYSES PERFORMED

☒ CLP/ICP	☐ CLP/GFAA	☒ CLP/Hg	☒ CLP/Cyanide	☐	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846 Cyanide	☐	☐

SAMPLES/MATRIX Soils
B09337
B09339
B09340
B09341
B09344

9413225.1233

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: There is a discrepancy for samples B09337 and B09341 between the collection date on the chain of custody and the sample analysis request forms. The collection dates recorded on the chain of custody forms were used for validation.

Mercury and CN analyses were performed out of holding time for samples B09339 and B09341. The assoc results have been qualified as estimated (UJ)

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:

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: The MS% for antimony was less than 75% but greater than 30%. Therefore all antimony results ~~may~~ have been qualified as estimated (UJ).

9413225.1234

020

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:_____

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:_____

9413225.1235

HOLDING TIME SUMMARY

B09340-TMA-623

SDG:	VALIDATOR:	DATE: 3/04/94	PAGE 1 OF 2
COMMENTS: Metals			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09337	ICP	09/15/93	10/20/93	10/22/93	~~35~~	~~2~~ 37	None
B09339	↓	09/13/93	↓	↓	~~37~~	~~2~~ 39	↓
B09340	↓	09/15/93	↓	↓	~~35~~	~~2~~ 37	↓
B09341	↓	09/13/93	↓	↓	~~37~~	~~2~~ 39	↓
B09344	↓	09/15/93	↓	↓	~~35~~	~~2~~ 37	↓
					3/21/94	3/21/94	
B09337	As, Se, Pb, Tl	09/15/93	10/20/93	10/29/93		44	None
B09339	↓	09/13/93	↓	↓		46	↓
B09340	↓	09/15/93	↓	↓		44	↓
B09341	↓	09/13/93	↓	↓		46	↓
B09344	↓	09/15/93	↓	↓		44	↓
B09337	Hg	09/15/93	10/11/93	10/12/93		27	None
B09339	↓	09/13/93	↓	↓		29	UJ
B09340	↓	09/15/93	↓	↓		27	None
B09341	↓	09/13/93	↓	↓		29	UJ
B09344	↓	09/15/93	↓	↓		27	None

HOLDING TIME SUMMARY

B09340 TMA-623

SDG:	VALIDATOR: [illegible]	DATE: 3/04/94	PAGE 2 OF 2
COMMENTS: Metals			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09337	CN	09/15/93	9/28/93	9/29/93		14	None
B09339	↓	09/13/93	↓	↓		16	UJ
B09340		09/15/93				14	None
B09341		09/13/93				16	UJ
B09344	↓	09/15/93	↓	↓		14	None

WESTINGHOUSE/HANFORD

3
BLANKS

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

Lab Code: SKINER Case No.: N3-09-074SAS No.: SDG No.: B09337

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
			5x						5x		
Aluminum	10.6	U	52.6	B	39.8	B	27.6	B	3.606	B	P
Antimony	12.9	U	87.5 17.5	B	12.9	U	13.9	B	2.580	U	P
Arsenic	2.1	U	2.1	U	2.1	U	2.1	U	0.420	U	P
Barium	1.2	U	2.9	B	3.4	B	2.6	B	0.240	U	P
Beryllium	0.2	U	1.5 0.3	B	0.5	B	0.5	B	0.040	U	P
Cadmium	1.3	U	3.7	B	3.7	B	3.2	B	0.260	U	P
Calcium	-71.2	B	59.0	U	-59.6	B	59.0	U	-24.730	B	P
Chromium	-3.6	B	2.1	U	2.1	U	2.1	U	0.420	U	P
Cobalt	2.6	U	2.6	U	2.7	B	3.2	B	0.520	U	P
Copper	7.5	B	9.6	B	3.6	B	4.2	B	17.2 3.446	B	P
Iron	7.8	B	28.9	B	39.2	B	28.0	B	5.928	B	P
Lead	2.9	U	2.9	U	2.9	U	2.9	U	0.580	U	P
Magnesium	22.9	U	60.2	B	35.6	B	29.8	B	7.834	B	P
Manganese	0.8	U	2.3	B	2.8	B	2.4	B	0.160	U	P
Mercury	0.1	U	0.1	U	0.1	U	0.1	U	0.050	U	CV
Nickel	3.4	U	3.4	U	3.4	U	3.4	U	0.680	U	P
Potassium	68.5	U	68.5	U	68.5	U	68.5	U	13.700	U	P
Selenium	2.8	U	2.8	U	2.8	U	2.8	U	0.560	U	P
Silver	2.6	U	2.6	U	2.6	U	2.6	U	0.520	U	P
Sodium	114.4	U	114.4	U	114.4	U	114.4	U	251.7 51.942	B	P
Thallium	3.8 =DK -1.9	B	-5.4 =DK -2.7	B	1.6	U	1.6	U	0.320	U	P
Vanadium	5.5	U	5.5	U	5.5	U	5.5	U	1.100	U	P
Zinc	4.9	B	4.4	U	4.4	U	4.4	U	0.880	U	P
Cyanide	10.0	U	10.0	U	10.0	U	10.0	U	0.500	U	CA
Titanium	1.3	B	3.0	B	3.8	B	3.4	B	0.384	B	P

3/21/94

024

FORM III - IN ILM02.1

011

WESTINGHOUSE/HANFORD

5A

SPIKE SAMPLE RECOVERY

SAMPLE NUMBER: B09344S

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

Lab Code: SKINER Case No.: N3-09-074SAS No.: SDG No.: B09337

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

% Solids for Sample: 93.7

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	59.7673		2.5733	U	104.63	57.1	N	P
Arsenic	75-125	423.2532		6.2221		418.52	99.6		P
Barium	75-125	472.4088		64.3074		418.52	97.5		P
Beryllium	75-125	10.0048		0.3371	B	10.46	92.4		P
Cadmium	75-125	9.1950		0.2593	U	10.46	87.9		P
Calcium									NR
Chromium	75-125	52.8345		13.8621		41.85	93.1		P
Cobalt	75-125	102.9883		7.5584	B	104.63	91.2		P
Copper	75-125	62.3705		13.1958		52.32	94.0		P
Iron									NR
Lead	75-125	103.3022		5.3292		104.63	93.6		P
Magnesium									NR
Manganese	75-125	395.7352		288.3332		104.63	102.6		P
Mercury	75-125	0.4931		0.0508	U	0.49	100.6		CV
Nickel	75-125	109.5319		13.2736		104.63	92.0		P
Potassium									NR
Selenium	75-125	398.0580		0.5586	U	418.52	95.1		P
Silver	75-125	10.4045		0.5187	U	10.46	99.5		P
Sodium									NR
Thallium	75-125	394.0821		0.3192	U	418.52	94.2		P
Vanadium	75-125	126.4737		27.7741		104.63	94.3		P
Zinc	75-125	131.6446		35.0712		104.63	92.3		P
Cyanide	75-125	24.7067		0.5181	U	24.48	100.9		CA
Titanium		890.5560		669.2467		104.63	211.5		P

Comments: No qualification is required for titanium since the ~~amount~~ sample result is greater than 4x amount of spike added.

3/21/94

SEMIVOLATILE ORGANIC DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09340-TMA-623 (923-E418, Filename B09340.BNA)

9103225.2410

MEMORANDUM

TO: 200-UP-2 Project QA Record April 20, 1994

FR: Susan Winter, Golder Associates Inc.

RE: SEMIVOLATILE ORGANIC DATA VALIDATION SUMMARY FOR DATA PACKAGE: B09340-TMA-623 (923-E418, Filename B09340.BNA)

INTRODUCTION

This memo presents the results of data validation on data package B09340-TMA-623 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
B09337	09/15/93	SOIL	SEE NOTE 1
B09339	09/13/93	SOIL	
B09340	09/15/93	SOIL	
B09341	09/13/93	SOIL	
B09344	09/15/93	SOIL	
Note 1. All samples were analyzed for CLP TCL Semivolatile Organic Constituents.			

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.

Revised 4/20/94

·001

Completeness. The data package was complete for all requested analyses. A total of five samples were validated in this data package with a total of 320 determinations reported, of which 310 were deemed valid. This results in a completeness of 97 percent, which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

The following major deficiencies were identified during data validation which required qualification of data as unusable.

- Two recoveries for two base/neutral surrogates for sample B09340 were unacceptable. The recovery for the surrogate 1,2-dichlorobenzene-d4 was less than 10% and therefore, the associated compounds have been qualified as unusable (UR). Attachments 2 and 5 provide a summary of the associated compounds and supporting documentation.

9413225.1242

MINOR DEFICIENCIES

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

Laboratory Blanks

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

Surrogate Recovery

- The recoveries for two base/neutral surrogates for sample B09340 were unacceptable. The recovery for the surrogate nitrobenzene-d5 was less than the lower control limit but greater than 10%. Attachments 2 and 5 provide a summary of the associated compounds, 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).

Revised
4/20/94

- TICs were detected in the blank and identified as common laboratory contaminants, resulting in qualification of the results as unusable (R) as shown in Attachment 5.

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

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.

9413225.1243

Revised 4/20/94

-003

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

9413225.1244

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.

Revised
[illegible] 4/20/94

94 3225.1245

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9413225.1246

Revised. 4/20/94

DATA QUALIFICATION SUMMARY

SDG: B09340-TMA-623	VALIDATOR:	DATE: April 20, 1994	PAGE 1 OF 1
COMMENTS: SEMIVOLATILE ORGANICS			

COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
DI-N-BUTYLPHTHALATE	U	B09337 B09339 B09340 B09344	PRESENT IN LABORATORY BLANK
BIS(2-ETHYLHEXYL)PHTHALATE	U	B09339 B09340 B09341	PRESENT IN LABORATORY BLANK
N-NITROSO-DI-N-PROPYLAMINE NITROBENZENE 2-NITROPHENOL 4-CHLOROANILINE 2-NITROANILINE 3-NITROANILINE 2,4-DINITROPHENOL 4-NITROPHENOL 2,4-DINITROTOLUENE 2,6-DINITROTOLUENE 4-NITROANILINE	UJ	B09340	NITROBENZENE-D5 SURROGATE %R < LOWER CONTROL LIMIT BUT > 10%
1,3-DICHLOROBENZENE 1,4-DICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2,4-TRICHLOROBENZENE 2-CHLORONAPHTHALENE HEXACHLOROBENZENE HEXACHLOROETHANE HEXACHLOROBUTADIENE HEXACHLOROCYCLOPENTADIENE 3,3'-DICHLOROBENZIDINE	UR	B09340	1,2-DICHLOROBENZENE-D4 SURROGATE %R < 10%

Revised 4/20/94

9413225.1247

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

9413225.1249

Validated Data Summary, Data Package: B09340-TMA-623

	Samp#	B09337		B09339		B09340		B09341		B09344	
	Date	9-15-93		9-13-93		9-15-93		9-13-93		9-15-93	
	Location	299-W19-95		299-W19-97		299-W19-95		299-W19-97		299-W19-95	
	Depth	90.25 - 92.25		70.00 - 72.50		105.00 - 107.50		101.00 - 103.30		120.00 - 122.50	
	Type	---		---		---		---		---	
	Comments	---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
PHENOL	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
2-CHLOROPHENOL	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
1,3-DICHLOROBENZENE	UG/KG	350.000	U	360.000	U	340.000	UR	350.000	U	350.000	U
1,4-DICHLOROBENZENE	UG/KG	350.000	U	360.000	U	340.000	UR	350.000	U	350.000	U
1,2-DICHLOROBENZENE	UG/KG	350.000	U	360.000	U	340.000	UR	350.000	U	350.000	U
2-METHYLPHENOL	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
4-METHYLPHENOL	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	350.000	U	360.000	U	340.000	UJ	350.000	U	350.000	U
HEXACHLOROETHANE	UG/KG	350.000	U	360.000	U	340.000	UR	350.000	U	350.000	U
NITROBENZENE	UG/KG	350.000	U	360.000	U	340.000	UJ	350.000	U	350.000	U
ISOPHORONE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
2-NITROPHENOL	UG/KG	350.000	U	360.000	U	340.000	UJ	350.000	U	350.000	U
2,4-DIMETHYLPHENOL	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
2,4-DICHLOROPHENOL	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
1,2,4-TRICHLOROBENZENE	UG/KG	350.000	U	360.000	U	340.000	UR	350.000	U	350.000	U
NAPHTHALENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
4-CHLOROANILINE	UG/KG	350.000	U	360.000	U	340.000	UJ	350.000	U	350.000	U
HEXACHLOROBUTADIENE	UG/KG	350.000	U	360.000	U	340.000	UR	350.000	U	350.000	U
4-CHLORO-3-METHYLPHENOL	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
2-METHYLNAPHTHALENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	350.000	U	360.000	U	340.000	UR	350.000	U	350.000	U
2,4,6-TRICHLOROPHENOL	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
2,4,5-TRICHLOROPHENOL	UG/KG	840.000	U	860.000	U	830.000	U	850.000	U	840.000	U
2-CHLORONAPHTHALENE	UG/KG	350.000	U	360.000	U	340.000	UR	350.000	U	350.000	U
2-NITROANILINE	UG/KG	840.000	U	860.000	U	830.000	UJ	850.000	U	840.000	U
DIMETHYLPHTHALATE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
ACENAPHTHYLENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
3-NITROANILINE	UG/KG	840.000	U	860.000	U	830.000	UJ	850.000	U	840.000	U
ACENAPHTHENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U

Verified [illegible] 3/21/94

Validated Data Summary, Data Package: B09340-TMA-623

	Samp#	B09337		B09339		B09340		B09341		B09344	
	Date	9-15-93		9-13-93		9-15-93		9-13-93		9-15-93	
	Location	299-W19-95		299-W19-97		299-W19-95		299-W19-97		299-W19-95	
	Depth	90.25 - 92.25		70.00 - 72.50		105.00 - 107.50		101.00 - 103.30		120.00 - 122.50	
	Type	---		---		---		---		---	
	Comments	---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2,4-DINITROPHENOL	UG/KG	840.000	U	860.000	U	830.000	UJ	850.000	U	840.000	U
4-NITROPHENOL	UG/KG	840.000	U	860.000	U	830.000	UJ	850.000	U	840.000	U
DIBENZOFURAN	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
2,4-DINITROTOLUENE	UG/KG	350.000	U	360.000	U	340.000	UJ	350.000	U	350.000	U
2,6-DINITROTOLUENE	UG/KG	350.000	U	360.000	U	340.000	UJ	350.000	U	350.000	U
DIETHYLPHTHALATE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
FLUORENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
4-NITROANILINE	UG/KG	840.000	U	860.000	U	830.000	UJ	850.000	U	840.000	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	840.000	U	860.000	U	830.000	U	850.000	U	840.000	U
N-NITROSODIPHENYLAMINE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
HEXACHLOROBENZENE	UG/KG	350.000	U	360.000	U	340.000	UR	350.000	U	350.000	U
PENTACHLOROPHENOL	UG/KG	840.000	U	860.000	U	830.000	U	850.000	U	840.000	U
PHENANTHRENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
ANTHRACENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
CARBAZOLE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
DI-N-BUTYLPHTHALATE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
FLUORANTHENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
PYRENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
BUTYLBENZYLPHTHALATE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
3,3'-DICHLOROBENZIDINE	UG/KG	350.000	U	360.000	U	340.000	UR	350.000	U	350.000	U
BENZO(A)ANTHRACENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
CHRYSENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
DI-N-OCTYLPHTHALATE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
BENZO(B)FLUORANTHENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
BENZO(K)FLUORANTHENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
BENZO(A)PYRENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
INDENO(1,2,3-CD)PYRENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
DIBENZ(A,H)ANTHRACENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U
BENZO(G,H,I)PERYLENE	UG/KG	350.000	U	360.000	U	340.000	U	350.000	U	350.000	U

Verified [illegible] 3/21/94

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

~~000226~~

EPA SAMPLE NO.
299-W19-95
B09337
90.25-92.25

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-03B

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 30928S13

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/28/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.7

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

CAS NO.	COMPOUND		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	840	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	840	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
99-09-2	3-Nitroaniline	840	U
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	840	U

FORM I SV-1 3/90

Verified
3/07/94

011

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
299-W19-95

~~000227~~

B09337
90.25-92.25

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-03B

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 30928S13

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/28/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.7

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

CAS NO.	COMPOUND	UG/KG	Q
100-02-7	4-Nitrophenol	840	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	840	U
534-52-1	4,6-Dinitro-2-methylphenol	840	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	840	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 ~~110~~	~~BJ~~ U
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

FORM I SV-2 3/90

3/07/94

012

9413225.1252

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

~~000228~~

EPA SAMPLE NO.
299-W19-95

B09337
90.25-92.25

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-03B

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 30928S13

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/28/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.7

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
~~1. 123-42-2~~	~~2-PENTANONE,4-HYDROXY-4-METH~~	~~6.17~~	~~55000~~	~~ABJ~~
~~2.~~	~~UNKNOWN HYDROCARBON~~	~~7.37~~	~~800~~	~~BJ~~
3.	UNKNOWN HYDROCARBON	8.70	70	J
4.	UNKNOWN HYDROCARBON	23.57	70	J
5.	HEXANEDIOIC ACID ISOMER	26.22	4800	BJ

Q

4/20/94

Revised 4/20/94

Verified 3/07/94

FORM I SV-TIC 3/90

013

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
299-W19-97

~~000247~~

B09339
70 - 72.5'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-04B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 30928S14

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: 8 decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/28/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.7

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

CAS NO.	COMPOUND	UG/KG	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	860	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	860	U
131-11-3	Dimethylphthalate	360	U
208-96-8	Acenaphthylene	360	U
99-09-2	3-Nitroaniline	860	U
83-32-9	Acenaphthene	360	U
51-28-5	2,4-Dinitrophenol	860	U

FORM I SV-1 Verified 3/90

3/07/94

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

~~000248~~

EPA SAMPLE NO.

299-W19-97

B09339

70-72.5'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-04B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 30928S14

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: 8 decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/28/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.7

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

CAS NO.	COMPOUND	UG/KG	Q	Q
100-02-7	4-Nitrophenol	860	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	860	U	
534-52-1	4,6-Dinitro-2-methylphenol	860	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	860	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 ~~280~~	~~BJ~~	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	36C ~~43~~	~~BJ~~	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

FORM I SV-2 3/90

3/07/94

-015

9413225.1255

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS ~~000249~~

EPA SAMPLE NO.
299-W19-97
B09339
70-72.5'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-04B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 30928S14

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: 8 decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/28/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.7

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
~~1. 123-42-2~~	~~2-PENTANONE,4-HYDROXY-4-METH~~	~~6.22~~	~~79000~~	~~ABJ~~	UR
2.	UNKNOWN HYDROCARBON	6.32	110	~~J~~	UNCONFIRMED
~~3.~~	~~UNKNOWN HYDROCARBON~~	~~6.80~~	~~72~~	~~BJ~~	
~~4.~~	~~UNKNOWN HYDROCARBON~~	~~7.38~~	~~1200~~	~~BJ~~	
5.	UNKNOWN HYDROCARBON	8.70	110	~~J~~	
~~6.~~	~~PROPANOIC ACID ISOMER~~	~~18.08~~	~~360~~	~~BJ~~	
~~7.~~	~~HEXANEDIOIC ACID ISOMER~~	~~26.20~~	~~390~~	~~BJ~~	

SD 4/20/94

Revised
SD 4/20/94

Verified
3/27/94

FORM I SV-TIC 3/90

016

9413225.1256

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
299-W19-95

~~000272~~

B09340
105-107.5'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-01B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30928S09

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: 4 decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/28/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.8

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

CAS NO.	COMPOUND		Q	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~~	UR
106-46-7	1,4-Dichlorobenzene	340	~~U~~	UR
95-50-1	1,2-Dichlorobenzene	340	~~U~~	UR
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~~	UJ
67-72-1	Hexachloroethane	340	~~U~~	UR
98-95-3	Nitrobenzene	340	~~U~~	UJ
78-59-1	Isophorone	340	U	
88-75-5	2-Nitrophenol	340	~~U~~	UJ
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~~	UR
91-20-3	Naphthalene	340	U	
106-47-8	4-Chloroaniline	340	~~U~~	UJ
87-68-3	Hexachlorobutadiene	340	~~U~~	UR
59-50-7	4-Chloro-3-Methylphenol	340	U	
91-57-6	2-Methylnaphthalene	340	U	
77-47-4	Hexachlorocyclopentadiene	340	~~U~~	UR
88-06-2	2,4,6-Trichlorophenol	340	U	
95-95-4	2,4,5-Trichlorophenol	830	U	
91-58-7	2-Chloronaphthalene	340	~~U~~	UR
88-74-4	2-Nitroaniline	830	~~U~~	UJ
131-11-3	Dimethylphthalate	340	U	
208-96-8	Acenaphthylene	340	U	
99-09-2	3-Nitroaniline	830	~~U~~	UJ
83-32-9	Acenaphthene	340	U	
51-28-5	2,4-Dinitrophenol	830	~~U~~	UJ

FORM I SV-1 3/90

Verified 3/07/94

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

~~000273~~

EPA SAMPLE NO.
299-W19-95
B09340
105-107.5'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-01B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30928S09

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: 4 decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/28/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.8

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

CAS NO.	COMPOUND		Q	Q
100-02-7	4-Nitrophenol	830	~~U~~	UJ
132-64-9	Dibenzofuran	340	U	
121-14-2	2,4-Dinitrotoluene	340	~~U~~	UJ
606-20-2	2,6-Dinitrotoluene	340	~~U~~	UJ
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	830	~~U~~	UJ
534-52-1	4,6-Dinitro-2-methylphenol	830	U	
86-30-6	N-Nitrosodiphenylamine (1)	340	U	
101-55-3	4-Bromophenyl-phenylether	340	U	
118-74-1	Hexachlorobenzene	340	~~U~~	UR
87-86-5	Pentachlorophenol	830	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 ~~180~~	~~BJ~~	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~~	UR
56-55-3	Benzo(a)Anthracene	340	U	
117-81-7	bis(2-Ethylhexyl)Phthalate	340 ~~140~~	~~BJ~~	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

FORM I SV-2 3/90

3/07/94

·018

9413225.1258

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS ~~000274~~

EPA SAMPLE NO. 299-W19-95

B09340 105-107.5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-01B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30928S09

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: 4 decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/28/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.8

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
~~1. 123-42-2~~	~~2-PENTANONE,4-HYDROXY-4-METH~~	~~6.02~~	~~6600~~	~~ABJ~~
~~2.~~	~~UNKNOWN HYDROCARBON~~	~~7.37~~	~~240~~	~~BJ~~
~~3.~~	~~PROPANOIC ACID ISOMER~~	~~18.12~~	~~170~~	~~BJ~~
4.	HEXANEDIOIC ACID ISOMER	26.22	1600	~~BJ~~

Q

LR

4/22/94

Revised 4/22/94

Verified 3/07/94

FORM I SV-TIC 3/90

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
299-W19-97

~~000294~~

B09341
101-103.3'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-05B

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 30929S03

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

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

Verified 3/07/94

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

299-W19-97

~~000295~~

B09341

101-103.3'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-05B

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 30929S03

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

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
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	U
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 ~~37~~	~~BJ~~ 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

FORM I SV-2 Verified 3/07/94 3/90

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

~~000296~~

EPA SAMPLE NO.
299-W19-97

B09341
101-103.3'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-05B

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 30929S03

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

Number TICs found: 9

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
~~1. 123-42-2~~	~~2-PENTANONE,4-HYDROXY-4-METH~~	~~6.17~~	~~58000~~	~~ABJ~~	~~BJ~~
~~2.~~	~~UNKNOWN HYDROCARBON~~	~~6.78~~	~~71~~	~~BJ~~	~~BJ~~
~~3.~~	~~UNKNOWN HYDROCARBON~~	~~7.37~~	~~1000~~	~~BJ~~	~~BJ~~
4.	UNKNOWN HYDROCARBON	8.70	110	~~J~~	JN
5.	UNKNOWN ALKANE	25.43	71	~~J~~	JN
~~6.~~	~~HEXANEDIOIC ACID ISOMER~~	~~26.22~~	~~14000~~	~~BJ~~	~~BJ~~
7.	UNKNOWN ALKANE	27.12	71	~~J~~	JN
8.	UNKNOWN ALKANE	28.05	71	~~J~~	JN
9.	UNKNOWN ALKANE	30.32	71	~~J~~	JN
6.	HEXANEDIOIC ACID ISOMER	26.22	14000	~~BJ~~	~~BJ~~

4/20/94

Revised 4/20/94

Verified 3/07/94

FORM I SV-TIC 3/90

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

~~000319~~

EPA SAMPLE NO.
299-W19-95

B09344
120-122.5'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-02D

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 30929S02

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.5

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	840	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	840	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
99-09-2	3-Nitroaniline	840	U
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	840	U

Verified
3/07/94

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
299-W19-95

~~000320~~

B09344
120-122.5'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-02D

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 30929S02

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.5

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

CAS NO.	COMPOUND		Q	Q
100-02-7	4-Nitrophenol	840	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	840	U	
534-52-1	4,6-Dinitro-2-methylphenol	840	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	840	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 ~~200~~	~~BJ~~	u
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

FORM I SV-2 3/90

3/27/94

-024

94/225.264

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

~~000321~~

EPA SAMPLE NO.

299-W19-95

B09344

120-122.5'

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-02D

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 30929S02

Level: (low/med) LOW Date Received: 09/17/93

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.5

Number TICs found: 8

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
~~1. 123-42-2~~	~~2-PENTANONE,4-HYDROXY-4-METH~~	~~6.13~~	~~49000~~	~~ABJ~~
2.	UNKNOWN HYDROCARBON	6.28	70	~~J~~
~~3.~~	~~UNKNOWN HYDROCARBON~~	~~7.37~~	~~880~~	~~BJ~~
4.	UNKNOWN HYDROCARBON	8.70	70	~~J~~
~~5.~~	~~HEXANEDIOIC ACID ISOMER~~	~~26.20~~	~~490~~	~~BJ~~
6.	UNKNOWN ALKANE	26.28	70	~~J~~
7.	UNKNOWN HYDROCARBON	30.33	70	~~J~~
8.	UNKNOWN ALKANE	31.78	100	~~J~~

Q

4/20/94

Revised 4/20/94

Verified

FORM I SV-TIC 3/90

3/07/94

9413225.1265

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

94132E.1266

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 09-045

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : September 17, 1993

1.0 DESCRIPTION OF CASE :

Six 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
B09340	A3-09-045-01A	V	SOIL
B09340	A3-09-045-01B	SV	SOIL
B09340 MS	A3-09-045-01C	SV	SOIL
B09340 MSD	A3-09-045-01D	SV	SOIL
B09340	A3-09-045-01G	K	SOIL
B09344	A3-09-045-02A	V	SOIL
B09344 MS	A3-09-045-02B	V	SOIL
B09344 MSD	A3-09-045-02C	V	SOIL
B09344	A3-09-045-02D	SV	SOIL
B09344	A3-09-045-02G	K	SOIL
B09337	A3-09-045-03A	V	SOIL
B09337	A3-09-045-03B	SV	SOIL
B09337	A3-09-045-03D	K	SOIL
B09337 MS	A3-09-045-03E	K	SOIL
B09337 MSD	A3-09-045-03F	K	SOIL
B09339	A3-09-045-04A	V	SOIL
B09339	A3-09-045-04B	SV	SOIL
B09339	A3-09-045-04D	K	SOIL
B09341	A3-09-045-05A	V	SOIL
B09341	A3-09-045-05B	SV	SOIL
B09341	A3-09-045-05D	K	SOIL
B09347	A3-09-045-06A	V	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.

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

TUNES :

All BFB tunes were injected directly into the GC/MS instrument.

9W4225.1268

3.2.2 SEMIVOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the CLP SOW holding times.

Sample B09340 had low surrogate recoveries. However, the following surrogate recoveries were below the QC limits: Nitrobenzene-d5 and 2-Fluorophenol, as well as the advisory surrogate, 1,2-Dichlorobenzene-d4. In accordance with CLP protocol, no reanaylsis was required if one base/neutral surrogate recovery and one acid surrogate recovery was outside of the QC limits. Sample B09340 was also spiked with the matrix spike compounds and analyzed accordingly. The MS and the MSD samples exhibited very good surrogate recoveries, and in accordance with the protocol, were treated as the reextract of sample B09340.

The matrix spike recoveries of 2,4-Dinitrotoluene for samples B09340MS and B09340MSD were slightly above the QC limits. Sample B09340MS also had a matrix spike recovery of Phenol that was slightly above the QC limit. Although the MS and MSD samples had 4-Nitrophenol spike recoveries within the QC limits, the actual concentration detected in the samples exceeded the calibration of the instrument. Hence, the results for 4-Nitrophenol have been "E" qualified. In accordance with CLP protocol, no further action was required for any of the aforementioned occurrences.

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

3.2.3 EXTRACTABLE HYDROCARBONS "KEROSENE RANGE" COMMENTS :

SEQUENCE NOTES :

The sequence was started on 10/05/93 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 200ppm to 2000ppm. The continuing calibration at the 1000ppm level was injected amongst a series of 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 for extractable hydrocarbons in the Kerosene range within the required holding times. Approximately 20 g of each sample was extracted and concentrated to 5 mL.

There were no hydrocarbons in the Kerosene range detected in any of the samples. Sample B09337 was spiked with Kerosene and the matrix spike recoveries were between 90% and 101%. The blank spike was prepared at the same time, and had a 92% recovery.

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

9413225.1269

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 designee, as verified by the following signatures.

Nicole Roth 12/10/93
Nicole Roth
CLP Program Manager

Maureen Parrish 12/10/93
Maureen Parrish
Project Manager

~~DDDDC2A~~

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: 9-15-93

Ice Chest No.: SML 319 — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 253695 6191 — Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09340

- 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) B09344

- 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) B09337 — 9-16-93

- ~~1,250ml~~ 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP * 2,120mL
- 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:
1050 L E Rogers 9-16-93	TMA/NORCAL	9-17-93 11:30
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:

NOTE: TMA/NORCAL received the 1,250 ml TAL METALS, Hg Ti bottle also

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: 9-13-93

Ice Chest No.: SML 365

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 253 695 6191

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09339

- 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) B09341

- 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

RER 9-16-93

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

Relinquished by:	Received by:	Date/Time:
1050 9-16-93	H. NARCISO TMA/NERCAL	9/17/93 11:30
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

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

9413225.1272

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200-UP-2			DATA PACKAGE: B09340-TMA-623		
VALIDATOR: [illegible]		LAB: TMA		DATE: 03/04/94	
CASE:			SDG: B09340-TMA-623		

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
B09337
B09339
B09340
B09341
B09344

9413225.1273

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:

033

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: Di-n-butyl phthalate and bis(2-ethylhexyl) phthalate and several TICs were present in the laboratory blank.

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:

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? . . . . . 3/4/94 . Yes No N/A

Comments:

The MS/MSD %R for 2,4-dinitrotoluene are 161% and 97%, respectively. The MS %R for phenol is 44%. No qualification was required since these MS/MSD %R are close to 100%, which is ideal.

The base/neutral surrogates nitrobenzene-d5 (18%) and 1,2-dichlorobenzene-d4 (74%) were out of control limits for Sample B0F3C. Compounds associated with nitrobenzene-d5 have been qualified as estimated (UJ) and with 1,2-dichlorobenzene-d4 as unusable (UR) since the %R <10%.

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: This data pkg did not contain any field duplicate or field split samples.

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: The TIC retention times for the propanoic acid isomer and hexanedioic acid isomer detected in the lab blank were incorrectly reported by the laboratory on the Form 1. The retention times have been corrected according to the raw data. All other reported RT are supported in the raw data.

9413225.1275

9413225.1276

HOLDING TIME SUMMARY

B09340-TMA-623

SDG:	VALIDATOR:	DATE: 3/4/94	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
B09337	BNA	9/15/93	9/22/93	9/28/93	7	6	None
B09339		9/13/93		9/28/93	9	6	
B09340		9/15/93		9/28/93	7	6	
B09341		9/13/93		9/29/93	9	7	
B09344		9/15/93		9/29/93	7	7	

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

~~000410~~

EPA SAMPLE NO.

SBLK0922S

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-BLK

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 30928S08

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

% Moisture: _____ decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/28/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
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	270	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	180	J
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

MIP=270J

MIP=180J

FORM I SV-2 3/90

3/4/94

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS ~~000411~~

EPA SAMPLE NO.

SBLK0922S

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309045-BLK

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 30928S08

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

% Moisture: _____ decanted: (Y/N) N Date Extracted: 09/22/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/28/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
~~1. 123-42-2~~	~~2-PENTANONE,4-HYDROXY-4-METH~~	~~6.32~~	~~79000~~	~~AJ~~ R
2.	UNKNOWN HYDROCARBON	6.87	66	J
3.	UNKNOWN HYDROCARBON	7.45	1200	J
4.	PROPANOIC ACID ISOMER	~~23.92~~ 18.12	360	J
5.	HEXANEDIOIC ACID ISOMER	~~34.62~~ 26.22	130	J

FORM I SV-TIC

3/4/94

3/90

-038

9413225.1278

9413225.1279

SBLK09225

Propanoic Acid Isomer

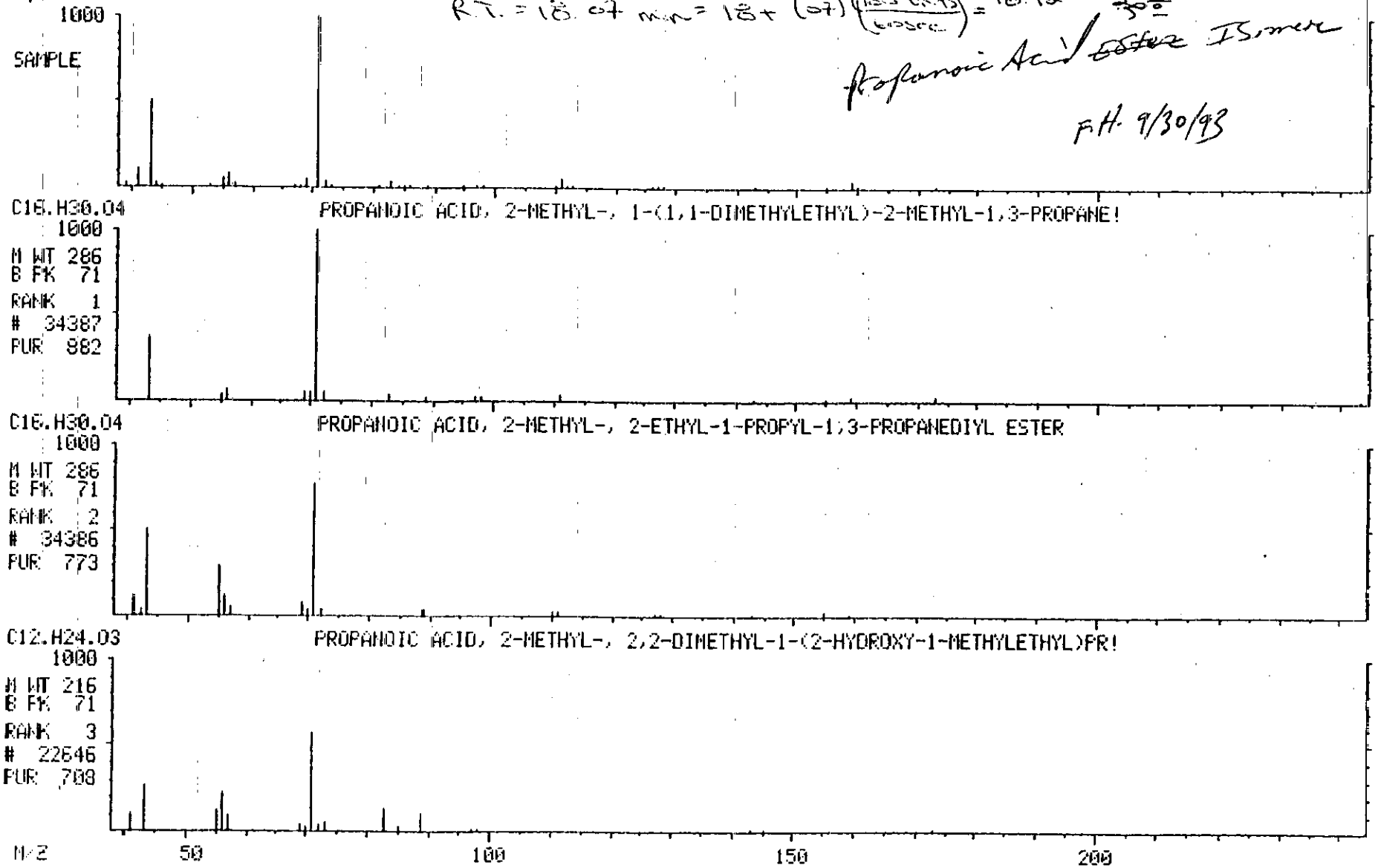
MID LIBRARY SEARCH (~~LIBRARYNB~~)
09/28/93 16:25:00 18:07
SAMPLE: CLP,09045,,SBLK09225,L,S,A309045-BLK,BNA,BLANK
CONDS.: CAP/.25,30928S01,30FT0928S01
ENHANCED (S 15B 2N 0T)

DATA: 30928S08 #1435 BASE M/Z: 71
CALI: 30928S08 # 3 RIC: 35584.

R.T. = 18.07 min = 18 + (.07)(100 units / 60 sec) = 18.12 R.T. units

Propanoic Acid ~~Ester~~ Isomer

F.H. 9/30/93



Bellmore 3/4/94

9413225.1280

SBLK09225

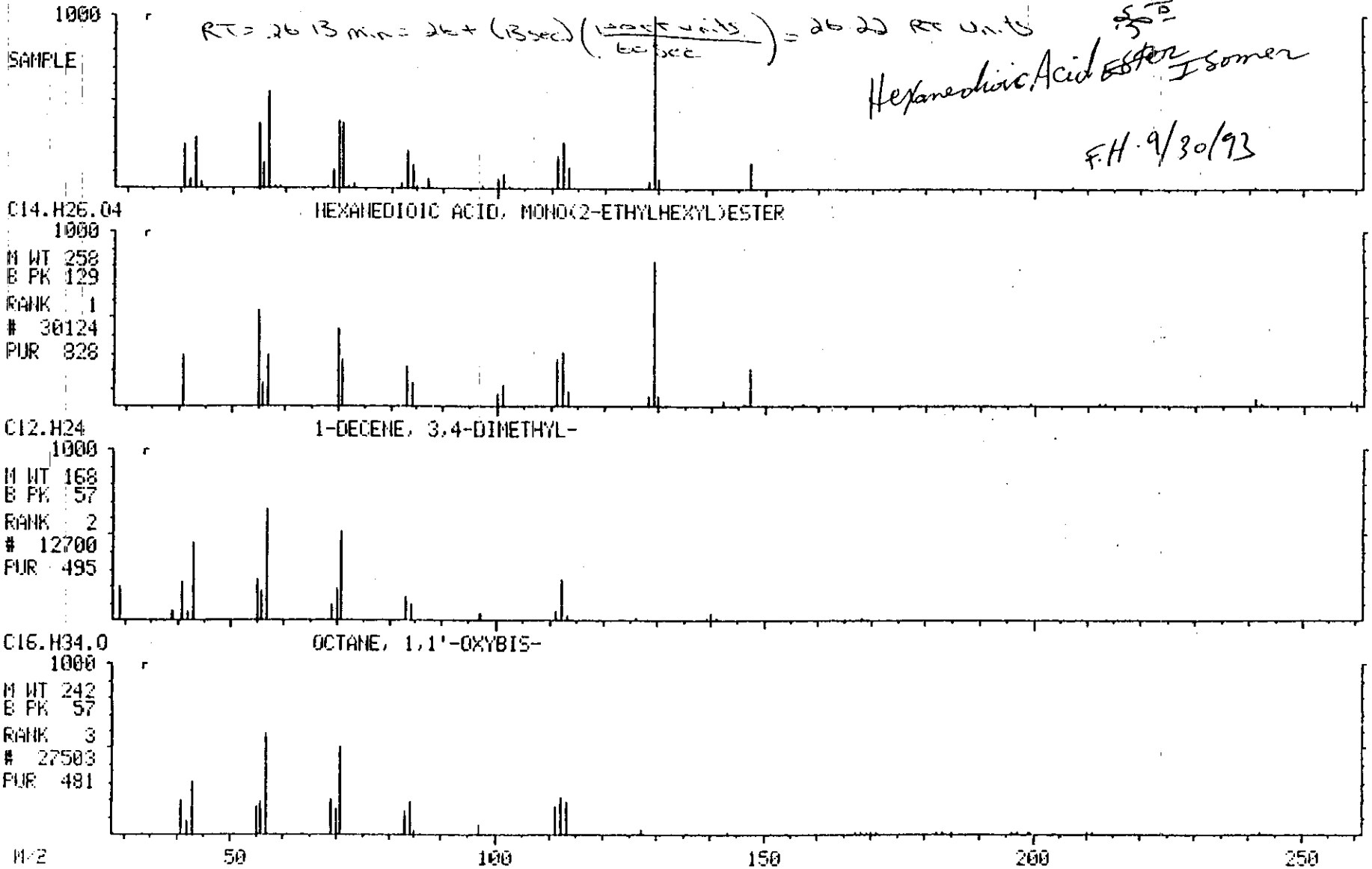
Hexanedioic Acid Isomer

MID LIBRARY SEARCH (LIBRARYHB) DATA: 30928S08 #2077 BASE M/Z: 129
09/28/93 16:25:00 + (26:13) CALI: 30928S08 # 3 RIC: 8816.
SAMPLE: CLP,09045,,SBLK09225,L,S,A309045-BLK,BNA,BLANK
CONDS.: CAP/.25,30928S01,3DFT0928S01
ENHANCED (S 15B 2N 0T)

RT = 26.13 min = 26 + (13 sec) (1 RT unit / 60 sec) = 26.22 RT units

Hexanedioic Acid ~~Ester~~ Isomer

F.H. 9/30/93



000432

040

2D
SOIL SEMIVOLATILE SURROGATE RECOVERY

~~000216~~

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09045 SAS No.: NA SDG No.: NA

Level:(low/med) LOW

	Line #	10	11	12	8	7	9	13	14	
	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	S7 (2CP) #	S8 (DCB) #	TOT OUT
01	B09337	56	66	114	61	59	66	60	59	0
02	B09339	94	100	126	101	102	89	102	101	0
03	B09340	18 *	49	117	37	23 *	72	27	7 *	3
04	B09341	76	79	103	77	85	80	74	74	0
05	B09344	97	98	129	98	108	103	94	91	0
06	B09340MS	89	92	118	96	93	85	95	94	0
07	B09340MSD	82	88	120	89	88	86	87	87	0
08	SBLK0922S	91	94	114	96	98	84	94	95	0

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

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

9413225.1281

FORM II SV-2

3/21/94

3/90