VOLATILE ORGANICS DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09345-TMA-621 (923-E418/621VOA.UP2)

MEMORANDUM

TO: 200-UP-2 Project QA Record April 19, 1994

FR: Michael Higgins, Golder Associates Inc. G for

RE: VOLATILE ORGANICS DATA VALIDATION SUMMARY FOR DATA PACKAGE B09345-TMA-621 (923-E418/621VOA.UP2)

INTRODUCTION

This memorandum presents the results of data validation on data package B09345-TMA-621 prepared by Thermo Analytical Inc. (TMA). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

	SAMPLE DATE	MEDIA	ANALYSIS
B09345	9/16/93	SOIL	SEE NOTES
B09346	9/16/93	SOIL	
B09349	9/16/93	SOIL	
B09350	9/17/93	SOIL	
B09351	9/17/93	SOIL	
B09352	9/17/93	SOIL	
B09353	9/17/93	SOIL	
B09354	9/17/93	SOIL	
B09358	9/20/93	SOIL	

Notes: 1 All samples were analyzed for volatile target compound list (TCL) organics.
2 All samples were 100% validated.

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 referenced analytical method.

Completeness. The data package was complete for all requested analyses. A total of nine (9) samples were validated in this data package with a total of 297 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets normal work plan objectives.

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.

Blanks

- Methylene chloride, acetone, and toluene were detected in the method blank. Attachments 2 and 5 provide a summary of the samples affected, data qualification 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 sample(s) and associated laboratory blank and have been qualified due to associated blank contamination and have been determined to be presumptive and valid (UJN).

- TICs were detected in the sample(s) 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.

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ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

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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 page
4/20/94

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

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DATA QUALIFICATION SUMMARY - FORM B-7

SDG: B09345	REVIEWER: MCH	DATE: 940419	PAGE 1 OF 1
COMMENTS: B09345-TMA-621: VOLATILES			
PARAMETER	QUALIFIER	SAMPLES AFFECTED	REASON
METHYLENE CHLORIDE	U, DETECTS > CRQL U, RESULTS CHANGED TO CRQL AND QUALIFIED	ALL	PRESENT IN BLANK
ACETONE	U, DETECTS > CRQL U, RESULTS CHANGED TO CRQL AND QUALIFIED	ALL	PRESENT IN BLANK
TOLUENE	U, DETECTS > CRQL U, RESULTS CHANGED TO CRQL AND QUALIFIED	B09345 B09353	PRESENT IN BLANK

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ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

9412225.120

Validated Data Summary, Data Package: B09345-TMA-621

	Sampl#	B09345		B09346		B09349		B09350		B09351		B09352	
	Date	9-16-93		9-16-93		9-16-93		9-17-93		9-17-93		9-17-93	
	Location	299-W19-95		299-W19-97		299-W19-97		299-W19-97		299-W19-97		299-W19-97	
	Depth	140.00 - 142.50		130.00 - 132.50		165.00 - 167.50		---		146.00 - 148.50		146.00 - 148.50	
	Type	---		---		---		EQTBLK		---		DUPLICATE	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLOROMETHANE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
BROMOMETHANE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
VINYL CHLORIDE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
CHLOROETHANE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
METHYLENE CHLORIDE	UG/KG	18.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
ACETONE	UG/KG	11.000	U	18.000	U	16.000	U	10.000	U	11.000	U	18.000	U
CARBON DISULFIDE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
1,1-DICHLOROETHENE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
1,1-DICHLOROETHANE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
CHLOROFORM	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
1,2-DICHLOROETHANE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
2-BUTANONE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
1,1,1-TRICHLOROETHANE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
CARBON TETRACHLORIDE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
BROMODICHLOROMETHANE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
1,2-DICHLOROPROPANE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
TRICHLOROETHENE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
DIBROMOCHLOROMETHANE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
1,1,2-TRICHLOROETHANE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
BENZENE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
BROMOFORM	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
4-METHYL-2-PENTANONE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
2-HEXANONE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
TETRACHLOROETHENE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
TOLUENE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
CHLOROBENZENE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
ETHYLBENZENE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
STYRENE	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U
XYLENES (TOTAL)	UG/KG	11.000	U	11.000	U	12.000	U	10.000	U	11.000	U	11.000	U

Verified 9/40310

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Validated Data Summary, Data Package: B09345-TMA-621

	Samp#	B09353		B09354		B09358	
	Date	9-17-93		9-17-93		9-20-93	
	Location	299-W19-97		299-W19-97		---	
	Depth	---		156.00 - 158.50		---	
	Type	FLDBLK		---		---	
	Comments	---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q
CHLOROMETHANE	UG/KG	10.000	U	12.000	U	10.000	U
BROMOMETHANE	UG/KG	10.000	U	12.000	U	10.000	U
VINYL CHLORIDE	UG/KG	10.000	U	12.000	U	10.000	U
CHLOROETHANE	UG/KG	10.000	U	12.000	U	10.000	U
METHYLENE CHLORIDE	UG/KG	10.000	U	17.000	U	10.000	U
ACETONE	UG/KG	10.000	U	12.000	U	10.000	U
CARBON DISULFIDE	UG/KG	10.000	U	12.000	U	10.000	U
1,1-DICHLOROETHENE	UG/KG	10.000	U	12.000	U	10.000	U
1,1-DICHLOROETHANE	UG/KG	10.000	U	12.000	U	10.000	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	10.000	U	12.000	U	10.000	U
CHLOROFORM	UG/KG	10.000	U	12.000	U	10.000	U
1,2-DICHLOROETHANE	UG/KG	10.000	U	12.000	U	10.000	U
2-BUTANONE	UG/KG	10.000	U	12.000	U	10.000	U
1,1,1-TRICHLOROETHANE	UG/KG	10.000	U	12.000	U	10.000	U
CARBON TETRACHLORIDE	UG/KG	10.000	U	12.000	U	10.000	U
BROMODICHLOROMETHANE	UG/KG	10.000	U	12.000	U	10.000	U
1,2-DICHLOROPROPANE	UG/KG	10.000	U	12.000	U	10.000	U
CIS-1,3-DICHLOROPROPENE	UG/KG	10.000	U	12.000	U	10.000	U
TRICHLOROETHENE	UG/KG	10.000	U	12.000	U	10.000	U
DIBROMOCHLOROMETHANE	UG/KG	10.000	U	12.000	U	10.000	U
1,1,2-TRICHLOROETHANE	UG/KG	10.000	U	12.000	U	10.000	U
BENZENE	UG/KG	10.000	U	12.000	U	10.000	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	10.000	U	12.000	U	10.000	U
BROMOFORM	UG/KG	10.000	U	12.000	U	10.000	U
4-METHYL-2-PENTANONE	UG/KG	10.000	U	12.000	U	10.000	U
2-HEXANONE	UG/KG	10.000	U	12.000	U	10.000	U
TETRACHLOROETHENE	UG/KG	10.000	U	12.000	U	10.000	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	10.000	U	12.000	U	10.000	U
TOLUENE	UG/KG	10.000	U	12.000	U	10.000	U
CHLOROBENZENE	UG/KG	10.000	U	12.000	U	10.000	U
ETHYLBENZENE	UG/KG	10.000	U	12.000	U	10.000	U
STYRENE	UG/KG	10.000	U	12.000	U	10.000	U
XYLENES (TOTAL)	UG/KG	10.000	U	12.000	U	10.000	U

Validated 9/30/93

9W9225.1122

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09345

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R05

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

% Moisture: not dec. 12 Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

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

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

Verified 940308

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09345

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R05

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

% Moisture: not dec. 12 Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	24.78	10	J

Q
UJN

FORM I VOA-TIC

3/90

011

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09346

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-03A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R07

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

% Moisture: not dec. 7 Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	11 ~~8~~	~~BJ~~ U
67-64-1	Acetone	18	~~B~~ U
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

FORM I VOA 3/90

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09346

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-03A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R07

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

% Moisture: not dec. 7 Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

Verified 6/30/93 WM

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09349

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-02A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R13

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

% Moisture: not dec. 20 Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Q
74-87-3	Chloromethane	12	U	
74-83-9	Bromomethane	12	U	
75-01-4	Vinyl Chloride	12	U	
75-00-3	Chloroethane	12	U	
75-09-2	Methylene Chloride	~~5~~ 12	~~BJ~~	U
67-64-1	Acetone	16	~~B~~	U
75-15-0	Carbon Disulfide	12	U	
75-35-4	1,1-Dichloroethene	12	U	
75-34-3	1,1-Dichloroethane	12	U	
540-59-0	1,2-Dichloroethene (total)	12	U	
67-66-3	Chloroform	12	U	
107-06-2	1,2-Dichloroethane	12	U	
78-93-3	2-Butanone	12	U	
71-55-6	1,1,1-Trichloroethane	12	U	
56-23-5	Carbon Tetrachloride	12	U	
75-27-4	Bromodichloromethane	12	U	
78-87-5	1,2-Dichloropropane	12	U	
10061-01-5	cis-1,3-Dichloropropene	12	U	
79-01-6	Trichloroethene	12	U	
124-48-1	Dibromochloromethane	12	U	
79-00-5	1,1,2-Trichloroethane	12	U	
71-43-2	Benzene	12	U	
10061-02-6	trans-1,3-Dichloropropene	12	U	
75-25-2	Bromoform	12	U	
108-10-1	4-Methyl-2-Pentanone	12	U	
591-78-6	2-Hexanone	12	U	
127-18-4	Tetrachloroethene	12	U	
79-34-5	1,1,2,2-Tetrachloroethane	12	U	
108-88-3	Toluene	12	U	
108-90-7	Chlorobenzene	12	U	
100-41-4	Ethylbenzene	12	U	
100-42-5	Styrene	12	U	
1330-20-7	Xylene (total)	12	U	

Verified 9/30/93

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09349

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-02A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R13

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

% Moisture: not dec. 20 Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

Verified 9/30/93

~~000151~~

EPA SAMPLE NO.

B09350

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-04A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R14

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

% Moisture: not dec. 0 Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

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

Verified 9/30/93

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09350

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-04A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R14

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

% Moisture: not dec. 0 Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1.	UNKNOWN HYDROCARBON	8.28	5	~~BJ~~	JN
2. 66-25-1	HEXANAL	18.17	8	JN	
3.	UNKNOWN HYDROCARBON	21.78	5	~~J~~	JN
4.	UNKNOWN HYDROCARBON	26.33	14	~~J~~	JN

Revised 940419

Verified 940308

~~000167~~

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09351

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-05A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R16

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

% Moisture: not dec. 6 Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND		Q	
74-87-3	Chloromethane	11	U	
74-83-9	Bromomethane	11	U	
75-01-4	Vinyl Chloride	11	U	
75-00-3	Chloroethane	11	U	
75-09-2	Methylene Chloride	11 ~~8~~	~~BJ~~	U
67-64-1	Acetone	11 ~~6~~	~~BJ~~	U
75-15-0	Carbon Disulfide	11	U	
75-35-4	1,1-Dichloroethene	11	U	
75-34-3	1,1-Dichloroethane	11	U	
540-59-0	1,2-Dichloroethene (total)	11	U	
67-66-3	Chloroform	11	U	
107-06-2	1,2-Dichloroethane	11	U	
78-93-3	2-Butanone	11	U	
71-55-6	1,1,1-Trichloroethane	11	U	
56-23-5	Carbon Tetrachloride	11	U	
75-27-4	Bromodichloromethane	11	U	
78-87-5	1,2-Dichloropropane	11	U	
10061-01-5	cis-1,3-Dichloropropene	11	U	
79-01-6	Trichloroethene	11	U	
124-48-1	Dibromochloromethane	11	U	
79-00-5	1,1,2-Trichloroethane	11	U	
71-43-2	Benzene	11	U	
10061-02-6	trans-1,3-Dichloropropene	11	U	
75-25-2	Bromoform	11	U	
108-10-1	4-Methyl-2-Pentanone	11	U	
591-78-6	2-Hexanone	11	U	
127-18-4	Tetrachloroethene	11	U	
79-34-5	1,1,2,2-Tetrachloroethane	11	U	
108-88-3	Toluene	11	U	
108-90-7	Chlorobenzene	11	U	
100-41-4	Ethylbenzene	11	U	
100-42-5	Styrene	11	U	
1330-20-7	Xylene (total)	11	U	

Reviewed 9/30/93

FORM I VOA 3/90

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09351

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-05A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R16

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

% Moisture: not dec. 6 Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1.	UNKNOWN HYDROCARBON	24.83	7	J	UJ

Reviewed 9/30/93

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09352

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-06A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R18

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

% Moisture: not dec. 6 Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Q
74-87-3	Chloromethane	11	U	
74-83-9	Bromomethane	11	U	
75-01-4	Vinyl Chloride	11	U	
75-00-3	Chloroethane	11	U	
75-09-2	Methylene Chloride	~~8~~ 11	~~B~~ U	U
67-64-1	Acetone	18	~~B~~	U
75-15-0	Carbon Disulfide	11	U	
75-35-4	1,1-Dichloroethene	11	U	
75-34-3	1,1-Dichloroethane	11	U	
540-59-0	1,2-Dichloroethene (total)	11	U	
67-66-3	Chloroform	11	U	
107-06-2	1,2-Dichloroethane	11	U	
78-93-3	2-Butanone	11	U	
71-55-6	1,1,1-Trichloroethane	11	U	
56-23-5	Carbon Tetrachloride	11	U	
75-27-4	Bromodichloromethane	11	U	
78-87-5	1,2-Dichloropropane	11	U	
10061-01-5	cis-1,3-Dichloropropene	11	U	
79-01-6	Trichloroethene	11	U	
124-48-1	Dibromochloromethane	11	U	
79-00-5	1,1,2-Trichloroethane	11	U	
71-43-2	Benzene	11	U	
10061-02-6	trans-1,3-Dichloropropene	11	U	
75-25-2	Bromoform	11	U	
108-10-1	4-Methyl-2-Pentanone	11	U	
591-78-6	2-Hexanone	11	U	
127-18-4	Tetrachloroethene	11	U	
79-34-5	1,1,2,2-Tetrachloroethane	11	U	
108-88-3	Toluene	11	U	
108-90-7	Chlorobenzene	11	U	
100-41-4	Ethylbenzene	11	U	
100-42-5	Styrene	11	U	
1330-20-7	Xylene (total)	11	U	

Verified 9/30

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09352

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-06A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R18

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

% Moisture: not dec. 6 Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	8.25	5	~~BJ~~
2.	UNKNOWN HYDROCARBON	26.33	20	~~J~~

Q
UJN
JN

Reviewed 970919

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09353

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-07A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R20

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

% Moisture: not dec. 0 Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

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

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

Verified

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09353

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-07A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R20

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

% Moisture: not dec. 0 Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09354

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-08A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30930R12

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

% Moisture: not dec. 15 Date Analyzed: 09/30/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

9413225.1130

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Q
74-87-3	Chloromethane	12	U	
74-83-9	Bromomethane	12	U	
75-01-4	Vinyl Chloride	12	U	
75-00-3	Chloroethane	12	U	
75-09-2	Methylene Chloride	17	~~B~~	4
67-64-1	Acetone	12	U	
75-15-0	Carbon Disulfide	12	U	
75-35-4	1,1-Dichloroethene	12	U	
75-34-3	1,1-Dichloroethane	12	U	
540-59-0	1,2-Dichloroethene (total)	12	U	
67-66-3	Chloroform	12	U	
107-06-2	1,2-Dichloroethane	12	U	
78-93-3	2-Butanone	12	U	
71-55-6	1,1,1-Trichloroethane	12	U	
56-23-5	Carbon Tetrachloride	12	U	
75-27-4	Bromodichloromethane	12	U	
78-87-5	1,2-Dichloropropane	12	U	
10061-01-5	cis-1,3-Dichloropropene	12	U	
79-01-6	Trichloroethene	12	U	
124-48-1	Dibromochloromethane	12	U	
79-00-5	1,1,2-Trichloroethane	12	U	
71-43-2	Benzene	12	U	
10061-02-6	trans-1,3-Dichloropropene	12	U	
75-25-2	Bromoform	12	U	
108-10-1	4-Methyl-2-Pentanone	12	U	
591-78-6	2-Hexanone	12	U	
127-18-4	Tetrachloroethene	12	U	
79-34-5	1,1,2,2-Tetrachloroethane	12	U	
108-88-3	Toluene	12	U	
108-90-7	Chlorobenzene	12	U	
100-41-4	Ethylbenzene	12	U	
100-42-5	Styrene	12	U	
1330-20-7	Xylene (total)	12	U	

Verified 9/30/93

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

~~000209~~
EPA SAMPLE NO.

B09354

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-08A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30930R12

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

% Moisture: not dec. 15 Date Analyzed: 09/30/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	8.28	6	~~BJ~~

Q
UJN

Revised 9-10-19

Verified

FORM I VOA-TIC

3/90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09358

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-09A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R24

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

% Moisture: not dec. 0 Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

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

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09358

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-09A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R24

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

% Moisture: not dec. 0 Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 3 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 66-25-1	HEXANAL	18.20	14	JN
2.	UNKNOWN HYDROCARBON	21.78	5	~~J~~ JN
3.	UNKNOWN HYDROCARBON	26.33	12	~~J~~ JN

Verified 240303

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 09-054

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : September 21, 1993

1.0 DESCRIPTION OF CASE :

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

9413225.1142

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX
B09345	A3-09-054-01A	V	SOIL
B09345	A3-09-054-01B	SV	SOIL
B09345 MS	A3-09-054-01C	SV	SOIL
B09345 MSD	A3-09-054-01D	SV	SOIL
B09345	A3-09-054-01F	K	SOIL
B09349	A3-09-054-02A	V	SOIL
B09349	A3-09-054-02B	SV	SOIL
B09349	A3-09-054-02E	K	SOIL
B09349 MS	A3-09-054-02F	K	SOIL
B09349 MSD	A3-09-054-02G	K	SOIL
B09346	A3-09-054-03A	V	SOIL
B09346 MS	A3-09-054-03B	V	SOIL
B09346 MSD	A3-09-054-03C	V	SOIL
B09346	A3-09-054-03D	SV	SOIL
B09346	A3-09-054-03G	K	SOIL
B09350	A3-09-054-04A	V	SOIL
B09350	A3-09-054-04B	SV	SOIL
B09350	A3-09-054-04D	K	SOIL
B09351	A3-09-054-05A	V	SOIL
B09351	A3-09-054-05B	SV	SOIL
B09351	A3-09-054-05D	K	SOIL
B09352	A3-09-054-06A	V	SOIL
B09352	A3-09-054-06B	SV	SOIL
B09352	A3-09-054-06D	K	SOIL
B09353	A3-09-054-07A	V	SOIL
B09353	A3-09-054-07B	SV	SOIL
B09353	A3-09-054-07D	K	SOIL
B09354	A3-09-054-08A	V	SOIL
B09354	A3-09-054-08B	SV	SOIL
B09354	A3-09-054-08D	K	SOIL
B09358	A3-09-054-09A	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 contract required holding times.

The Terphenyl-d14 (TPH) surrogate recovery for sample B09353 was slightly above the QC limits. In accordance with the protocol, no further action was required.

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.

9413225.1143

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 ranged detected in any of the samples. Sample B09336 was spiked with Kerosene and the matrix spike recoveries were between 84% and 87%. The blank spike was prepared at the same time, and had a 75% recovery.

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

9413225.1144

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

~~0DDCC2A~~

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: 9-16-93

Ice Chest No.: SML 41 — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: — 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)

B09345

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

B09349

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

ER 9-16-93

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

Relinquished by:	Received by:	Date/Time:
9-20-93 Loren E. Rogers 1205	H. NARCISO TMA/NORCAL	9-21-93 12:35
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

03

DDDDD2C

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: 9-16-93

Ice Chest No.: SML 283

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

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) B09346

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)

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

SER 9-16-93

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

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

Relinquished by:	Received by:	Date/Time:
9-20-93 1205	H. HARRIS TMA/NORCAL	9-21-93 12:35
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

DDDDD2E

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: 9-17-93

Ice Chest No.: SML 372

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

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) B09350 EB

- 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) B09351

- 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) B09352

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

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
9-20-93 1205	H. NARCISO TMA/NORCAL	9-21-92 12:35
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

~~DDDDD26~~

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: 9-17-93

Ice Chest No.: SML283

Field Logbook No.: EFL-1091

~~Bill of Lading~~/Airbill No.:

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) B09353

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) B09354

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

JER 9-17-93

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

Relinquished by:	Received by:	Date/Time:
9-20-93 1205	H. Narcus TMA/NORCAL	9-21-93 12:35
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

000001

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: 9-20-93

Ice Chest No.: SML 283

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

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) B09358

~~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~~

SER 9-20-93

2)

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

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
9-20-93 Loren E Rogers 1205	H. NARCISO TMA/NORCH	9-21-93 12:35
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

9W225.150

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200UP.2	DATA PACKAGE: BØ9345-TMA-621	
VALIDATOR: M. HIGGINS	LAB: TMA	DATE: 940308
CASE: NA	SDG: BØ9345	

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	9-SOIL
BØ9345	BØ9352
BØ9346	BØ9353
BØ9349	BØ9354
BØ9350	BØ9358
BØ9351	

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:

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:

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: FIELD QC NOT AVAILABLE AT THE TIME OF THIS REVIEW. FIELD QC ID HAS BEEN REQUESTED AND WILL BE INCLUDE IN FINAL SUMMARY PACKAGE. ANALYTES DETECTED IN BLANKS WERE QUALIFIED AS ~~E~~ UJN IN SAMPLES

940419

5. ACCURACY

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

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

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

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

Comments:

9404

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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: FIELD QC ID NOT AVAILABLE AT TIME OF REVIEW. DATA ID HAS BEEN REQUESTED AND WILL BE PROVIDED IN FINAL DATA SUMMARY

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:

HOLDING TIME SUMMARY

SDG: NA | VALIDATOR: M. HIGGINS | DATE: 940307 | PAGE 1 OF 1

COMMENTS: B09345-TMA-621 - VOLATILES

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09345	VOA	9/16/93	9/29/93	9/29/93	NA	≤14 days	NONE
B09346							
B09349							
B09350		9/17/93					
B09351							
B09352							
B09353							
B09354			9/30/93	9/30/93			
B09358		9/20/93	9/29/93	9/29/93			

BLANK AND SAMPLE DATA SUMMARY

SDG: NA | VALIDATOR: M. HIGGINS | DATE: 940308 | PAGE 1 OF 1

COMMENTS: B09345 · TMA · 621 – VOA

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER	
SBLK0929	Methylene Chloride	1	J		µg/kg	—	10	B09345 B09346	U	
(VBLK0929R)	Acetone	10	–			—	100		U	
	UNKN. HC	6	J	8.28		30	—		U	JN
	UNKN HC	7	J	24.83		35	—		U	JN
SBLK0929A	Methylene Chloride	3	J			—	30	B09349 B09350	U	
(VBLK0929R1)	Acetone	4	J			—	40	B09351 B09352	U	
	UNKN HC	7	J	8.28		35	—	B09353 B09358	U	JN
	UNKN HC	7	J	24.92		35	—		U	JN
SBLK0930A	Methylene Chloride	2	J			—	20	B09354	U	
(VBLK0930R)	UNKN HC	7	J	8.28		35	—		U	JN
SBLK0929	Toluene	0.773	–			—	7.73	B09345	U	
SBLK0929A	Toluene	0.610	–			—	6.10	B09353	U	

Reviewed 940419

Reviewed 940419

042

000283

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK0929R

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: SBLK0929

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R03

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

% Moisture: not dec. ____ Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	1	J
67-64-1	Acetone	10	
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	0.77 ~~10~~	~~U~~ J
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	~~10~~	~~U~~
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

PRESENT IN ANAL. BLANK SAMPLES 309346

940308

FORM I VOA 3/90

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK0929R

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: SBLK0929

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R03

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

% Moisture: not dec. ____ Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	8.28	6	J
2.	UNKNOWN HYDROCARBON	24.83	7	J

PRESENT IN BLANK
ASSOC. SAMPLES B0945, B09346

~~000297~~

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK0929R1

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: SBLK0929A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R12

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

% Moisture: not dec. ____ Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND	UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	J
67-64-1	Acetone	4	J
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	3	J
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	0.610 ~~10~~	~~U~~ J
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

Present in BLANK see 22 ASSOC SAMPLES

940308

FORM I VOA 3/90

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.: VBLK0929R1

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: SBLK0929A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30929R12

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

% Moisture: not dec. ____ Date Analyzed: 09/29/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	8.28	7	J N
2.	UNKNOWN HYDROCARBON	24.92	7	J N

TICs Present in Blank
Assoc Samples: Flagged UJN
B09349, B09350, B09351
B09352, B09353, B09355
Reviewed 9/30/93

FORM I VOA-TIC 3/90

~~000313~~

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK0930R1

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: SBLK0930A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30930R11

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

% Moisture: not dec. ____ Date Analyzed: 09/30/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

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

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

FORM I VOA 3/90

Rextin Blank Assoc. 309359

940305

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK0930R1

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: SBLK0930A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30930R11

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

% Moisture: not dec. _____ Date Analyzed: 09/30/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	8.28	7	J N

TIC Present in Blank Assoc B09354 Flagged UJN

Ver. 970308

Reviewed 9/30/90

FORM I VOA-TIC

048

000288

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	128	188	7:50	1	1.000	A BB	21014.	50.000 PPB	15.87
2	114	388	16:10	2	1.000	A BB	81949.	50.000 PPB	15.87
3	117	481	20:02	3	1.000	A BB	72817.	50.000 PPB	15.87
4	65	245	10:12	1	1.303	A BB	26894.	45.258 PPB	14.37
5	98	457	19:02	3	0.950	A BB	74932.	49.992 PPB	15.87
6	95	558	23:15	3	1.160	A BB	55769.	50.759 PPB	16.11
7	NOT FOUND								
~~8~~	~~94~~	~~39~~	~~1:37~~	~~1~~	~~0.207~~	~~A BB~~	~~1200.~~	~~2.657 PPB~~	~~0.84~~ MM 12/6/93
9	NOT FOUND								
10	NOT FOUND								
11	84	113	4:42	1	0.601	A BB	878.	1.188 PPB	0.38
12	43	129	5:22	1	0.686	A VB	3945.	10.111 PPB	3.21
13	NOT FOUND								
14	NOT FOUND								
15	NOT FOUND								
16	NOT FOUND								
~~17~~	~~83~~	~~232~~	~~9:40~~	~~1~~	~~1.234~~	~~A BB~~	~~1225.~~	~~0.937 PPB~~	~~0.30~~
18	NOT FOUND								
19	NOT FOUND								
~~20~~	~~97~~	~~271~~	~~11:17~~	~~2~~	~~0.698~~	~~A BB~~	~~1102.~~	~~1.270 PPB~~	~~0.40~~
21	NOT FOUND								
22	NOT FOUND								
~~23~~	~~83~~	~~291~~	~~12:07~~	~~2~~	~~0.750~~	~~A BV~~	~~1012.~~	~~0.873 PPB~~	~~0.28~~
24	NOT FOUND								
25	NOT FOUND								
26	NOT FOUND								
27	NOT FOUND								
28	NOT FOUND								
29	NOT FOUND								
30	NOT FOUND								
31	NOT FOUND								
32	NOT FOUND								
33	NOT FOUND								
34	NOT FOUND								
~~35~~	~~83~~	~~440~~	~~18:20~~	~~3~~	~~0.915~~	~~A BV~~	~~767.~~	~~0.545 PPB~~	~~0.17~~
36	NOT FOUND								
~~37~~	~~91~~	~~461~~	~~19:12~~	~~3~~	~~0.958~~	~~A BB~~	~~1462.~~	~~0.773 PPB~~	~~0.25~~
38	NOT FOUND								
39	NOT FOUND								
40	NOT FOUND								
41	NOT FOUND								
42	NOT FOUND								

CS 10-4-93

Toluene is tentative associated with sample B0945

No	Ret(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R.Fac	R.Fac(L)	Ratio
1	7:50	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
2	16:10	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
3	20:00	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
4	10:12	1.00	1.303	1.00	45.26	50.00	1.280	1.414	0.91
5	19:02	1.00	0.952	1.00	49.99	50.00	1.029	1.029	1.00
6	23:12	1.00	1.160	1.00	50.76	50.00	0.766	0.754	1.02
7	0:55		0.117						
8	1:40	0.98	0.213	0.98	2.66	50.00	0.057	1.075	0.05
9	2:07		0.271						
10	2:52		0.367						
11	4:42	1.00	0.601	1.00	1.19	50.00	0.042	1.759	0.02
12	5:25	0.99	0.691	0.99	10.11	50.00	0.188	0.928	0.20

940308 MM

10/06/93

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~~000302~~

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	128	188	7:50	1	1.000	A BB	22986.	50.000 PPB	15.94
2	114	388	16:10	2	1.000	A BB	90606.	50.000 PPB	15.94
3	117	481	20:02	3	1.000	A BB	79600.	50.000 PPB	15.94
4	65	244	10:10	1	1.298	A BB	27943.	48.052 PPB	15.32
5	98	457	19:02	3	0.950	A BB	80389.	51.987 PPB	16.58
6	95	558	23:15	3	1.160	A BB	58287.	51.264 PPB	16.35
7	NOT FOUND								
8	NOT FOUND								
9	NOT FOUND								
10	NOT FOUND								
11	84	112	4:40	1	0.596	A BB	2322.	2.806 PPB	0.89
12	43	128	5:20	1	0.681	A BB	1506.	3.659 PPB	1.17
13	NOT FOUND								
14	NOT FOUND								
15	NOT FOUND								
16	NOT FOUND								
17	NOT FOUND								
~~18~~	~~43~~	~~244~~	~~10:10~~	~~1~~	~~1.298~~	~~A BB~~	~~725.~~	~~1.010 PPB~~	~~0.32~~
19	NOT FOUND								
20	97	271	11:17	2	0.698	A BB	2482.	2.666 PPB	0.85
21	NOT FOUND								
22	NOT FOUND								
23	NOT FOUND								
24	NOT FOUND								
25	NOT FOUND								
26	NOT FOUND								
27	NOT FOUND								
28	NOT FOUND								
29	NOT FOUND								
30	NOT FOUND								
31	NOT FOUND								
32	NOT FOUND								
33	NOT FOUND								
34	NOT FOUND								
~~35~~	~~83~~	~~440~~	~~18:20~~	~~3~~	~~0.915~~	~~A BB~~	~~1410.~~	~~0.853 PPB~~	~~0.27~~
36	NOT FOUND								
~~37~~	~~91~~	~~460~~	~~19:10~~	~~3~~	~~0.956~~	~~A BB~~	~~1230.~~	~~0.610 PPB~~	~~0.19~~
38	NOT FOUND								
39	NOT FOUND								
40	NOT FOUND								
41	NOT FOUND								
42	NOT FOUND								

GS 10-6-93

Toluene in Blank Associated with Sample B09353

No	Ret(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R.Fac	R.Fac(L)	Ratio
1	7:50	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
2	16:10	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
3	20:00	1.00	1.000	1.00	50.00	50.00	1.000	1.000	1.00
4	10:12	1.00	1.303	1.00	48.05	50.00	1.216	1.265	0.96
5	19:02	1.00	0.952	1.00	51.99	50.00	1.010	0.971	1.04
6	23:12	1.00	1.160	1.00	51.26	50.00	0.732	0.714	1.03
7	0:55		0.117						
8	1:40		0.213						
9	2:07		0.271						
10	2:52		0.367						
11	4:42	0.99	0.601	0.99	2.81	50.00	0.101	1.800	0.06
12	5:25	0.98	0.691	0.98	3.66	50.00	0.066	0.896	0.07

940308

10/06/93