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START

W0083-ITC-094
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2

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT Corporation
2800 George Washington Way
Richland, WA 99352
Attn: Van Pettey

July 18, 1994

4 AUG 1994 RECEIVED SOLA

Job Number: 622 & 649

This is the Certificate of Analysis for the following samples:

SDG:	W0083
Client Project ID:	WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1
Date Received by Lab:	June 7 & June 14, 1994
Number of Samples:	Nine (9)
Sample Type:	Soil

I. Introduction

On June 7 and June 14, 1994, nine (9) soil samples arrived at ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report. Samples BOBX93 and BOBX95 were cancelled per Record of Disposition 94-00148, dated June 10, 1994.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Soil result are reported on a dry weight basis.

The samples were analyzed for Target Compound List (TCL) volatiles and semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 3/90 Statement of Work.

Reviewed and Approved:

Sheree' A. Schneider
Project Manager

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RECORD COPY

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

IT ANALYTICAL SERVICES
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KNOXVILLE, TN

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total cyanide in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for anions by ion chromatography using EPA method 300.0.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J & W DB-624 capillary column on a Finnigan INCOS 500 GC/MS/DS. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All QC results met method specified limits. The samples were extracted outside of holding time in accordance to ROD 94-00148.

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All QC results met method specified limits. The samples were extracted outside of holding time in accordance to ROD 94-00148.

Data were reported with qualifiers as follows:

U - Compound analyzed for but not detected; value given is quantitation limit.
E - Compound exceeded calibration range.
D - Compound analyzed at a secondary dilution factor.
J - Compound detected but below quantitation limit; value estimated.
S - Spiked compound.
B - Compound found in method blank.
A - Suspected aldol condensation product.
Y - Indistinguishable isomer in tentatively identified compounds.
N - Presumptive evidence of compound presence.

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

III. Quality Control (Continued)

The samples for work order #622 were digested on July 5, 1994 for ICP and June 22, 1994 for GFAA. The CVAA analysis for mercury was performed on June 27, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from June 22 through June 28, 1994; the remaining metals were analyzed by ICP on July 5, 1994. All run QC was acceptable. Samples are batched with QC from work order #647.

The samples for work order #649 were digested on June 15, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on June 21, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from June 16 through June 22, 1994; the remaining metals were analyzed by ICP on July 6, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number BOBX97. Spike recovery (accuracy) results were within acceptance limits for all parameters. Duplicate RPD (precision) results were within acceptance limits for all parameters except for zinc which exhibited a slight variation due to probable sample nonhomogeneity for this analyte.

Data were reported with qualifiers as follows:

"C" Qualifiers

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
B - Value greater than instrument detection limit, but less than contract required quantitation limit.

"Q" Qualifiers

* - Duplicate analysis outside control limits.
N - Spiked sample recovery outside control limits.
W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
S - The reported value was determined by method of standard additions.

"M" Qualifiers

P - Analysis performed by ICP.
V - Analysis performed by CVAA.
F - Analysis performed by GFAA.
C - Cyanide analysis by manual distillation/colorimetric determination.

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

III. Quality Control (Continued)

Miscellaneous

D - Duplicate.
S - Spike.
NR - Not required.
G - Native analyte > 4 times spike added, therefore, acceptance criteria do not apply.
X - Detection limits higher than normal due to sample matrix interferences.

The samples were analyzed for nitrate/nitrite on June 28, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All quality control results were acceptable.

The samples were analyzed for fluoride, chloride, phosphate, nitrate, nitrite and sulfate by EPA method 300.0 from June 27 through June 29, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All quality control results were acceptable.

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

IT ANALYTICAL SERVICES
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KNOXVILLE, TN

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AB0326	406042-01A	BOBX94	VOC
AB0327	406042-01B	"	SVOC
AB0328	406042-01C	"	METALS-T
AB0329	406042-01D	"	CYANIDE
AB0330	406042-01E	"	ANIONS
AB0331	406042-01F	"	NO_3NO_2
AB0344	406042-02A	BOBX95	VOC
AB0345	406042-03A	BOBX96	VOC
AB0332	406042-04A	BOBJ16	VOC
AB0333	406042-04B	"	SVOC
AB0334	406042-04C	"	METALS-T
AB0335	406042-04D	"	CYANIDE
AB0336	406042-04E	"	ANIONS
AB0337	406042-04F	"	NO_3NO_2
AB0338	406042-05A	BOBX93	VOC
AB0339	406042-05B	"	SVOC
AB0340	406042-05C	"	METALS-T
AB0341	406042-05D	"	CYANIDE
AB0342	406042-05E	"	ANIONS
AB0343	406042-05F	"	NO_3NO_2

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AB0606	406264-01A	BOBX98	VOC
AB0607	406264-01B	"	SVOC
AB0608	406264-01C	"	METALS-T
AB0674	406264-01D	"	CYANIDE
AB0610	406264-01E	"	ANIONS
AB0611	406264-01F	"	NO_3NO_2
AB0612	406264-02A	BOBX97	VOC
AB0613	406264-02B	"	SVOC
AB0614	406264-02C	"	METALS-T
AB0615	406264-02D	"	CYANIDE
AB0616	406264-02E	"	ANIONS
AB0617	406264-02F	"	NO_3NO_2
AB0618	406264-03A	BOBX99	VOC
AB0619	406264-04A	BOBXB0	VOC

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IV. Certification

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

Reviewed and Approved:

Sheree A. Schneider

Sheree' A. Schneider
Project Manager

9613476.1525

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-94-00148
Record of Disposition No.

DATE: 06/10/94	LABORATORY: IT
PROJECT TITLE/NO.: 200-UP-1 Soil Sampling-Round 1 (SAF 94-046)	NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS: BOBJ16, BOBX93, BOBX94, BOBX95, BOBX96

DESCRIPTION OF EVENT:
On 6/07/94, IT was instructed to postpone the analysis of samples received on 6/04/94 until further notice from WHC.

DISPOSITION OF SAMPLES:
Per the technical representative, IT is to cancel the analysis of samples BOBX95, and BOBX93. The analysis of BOBJ16, BOBX94, and BOBX96 is to continue.

APPROVAL SIGNATURES:

J.A. Lerch — 6/10/94
HASM Project Coordinator (Print/Sign Name) — Date

B.E. Innis — 6/27/94
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ16

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0332

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0332

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. 17 Date Analyzed: 06/29/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	7	BJ
67-64-1	Acetone	13	
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	17	
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	12	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ16

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0332

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0332

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. 17 Date Analyzed: 06/29/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBXB0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0619

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0619

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: not dec. 0 Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	17	B
67-64-1	Acetone	5	BJ
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.

BOBXB0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0619

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0619

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: not dec. 0 Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	15.93	7	J
2.	Unknown	17.47	7	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX94

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0326

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0326

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. 0 Date Analyzed: 06/29/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	BJ
67-64-1	Acetone	6	J
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
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	13	
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.

BOBX94

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0326

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0326

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. 0 Date Analyzed: 06/29/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX96

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0345

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0345

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. 1 Date Analyzed: 06/29/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	BJ
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	15	
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.

BOBX96

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0345

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0345

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. 1 Date Analyzed: 06/29/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	15.90	7	J
2.	UNKNOWN	17.43	6	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX97

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0612

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0612

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: not dec. 11 Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	23	B
67-64-1	Acetone	13	B
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBX97

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0612

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0612

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: not dec. 11 Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX98

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0606

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0606

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: not dec. 19 Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	28	B
67-64-1	Acetone	18	B
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	12	U
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	12	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBX98

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0606

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0606

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: not dec. 19 Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	2.23	10	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX99

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0618

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0618

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: not dec. 0 Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	16	B
67-64-1	Acetone	11	B
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

BOBX99

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.:W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0618

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0618

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: not dec. 0 Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	Unknown	2.27	7	J
2	Unknown	15.30	5	J
3	Unknown	15.90	10	J
4	Unknown	17.23	14	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ16

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0333

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AB0333

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: 17 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	bis(2-Chloroethyl)Ether	400	U
95-57-8	2-Chlorophenol	400	U
541-73-1	1,3-Dichlorobenzene	400	U
106-46-7	1,4-Dichlorobenzene	400	U
95-50-1	1,2-Dichlorobenzene	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-Di-n-Propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
111-91-1	bis(2-Chloroethoxy)Methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-Methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	960	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	960	U
131-11-3	Dimethylphthalate	400	U
208-96-8	Acenaphthylene	400	U
606-20-2	2,6-Dinitrotoluene	400	U
99-09-2	3-Nitroaniline	960	U
83-32-9	Acenaphthene	400	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ16

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0333

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AB0333

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: 17 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	960	U
100-02-7	4-Nitrophenol	960	U
132-64-9	Dibenzofuran	400	U
121-14-2	2,4-Dinitrotoluene	400	U
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	960	U
534-52-1	4,6-Dinitro-2-Methylphenol	960	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	960	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
86-74-8	Carbazole	400	U
84-74-2	Di-n-Butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	400	U
56-55-3	Benzo(a)Anthracene	400	U
218-01-9	Chrysene	400	U
117-81-7	bis(2-Ethylhexyl)Phthalate	110	J
117-84-0	Di-n-Octyl Phthalate	400	U
205-99-2	Benzo(b)Fluoranthene	400	U
207-08-9	Benzo(k)Fluoranthene	400	U
50-32-8	Benzo(a)Pyrene	400	U
193-39-5	Indeno(1,2,3-cd)Pyrene	400	U
53-70-3	Dibenz(a,h)Anthracene	400	U
191-24-2	Benzo(g,h,i)Perylene	400	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ16

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0333

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AB0333

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: 17 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

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-MET	4.13	8100	BJNA
2.	UNKNOWN	17.58	120	J
3.	UNKNOWN	18.42	110	J
4.	UNKNOWN	19.02	120	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX94

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0327

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AB0327

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	790	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	790	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	790	U
83-32-9	Acenaphthene	330	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX94

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0327

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AB0327

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	790	U
100-02-7	4-Nitrophenol	790	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	790	U
534-52-1	4,6-Dinitro-2-Methylphenol	790	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	790	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	53	J
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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBX94

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0327

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AB0327

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

Number TICs found: 7

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-MET	4.13	7300	ABJN
2.	UNKNOWN	7.43	67	AJ
3.	UNKNOWN	17.58	140	J
4.	UNKNOWN	18.43	110	J
5.	UNKNOWN	19.02	78	J
6.	UNKNOWN	19.08	93	J
7.	UNKNOWN	19.67	83	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX97

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0613

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AB0613

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: 11 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	370	U
111-44-4	bis(2-Chloroethyl)Ether	370	U
95-57-8	2-Chlorophenol	370	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
95-50-1	1,2-Dichlorobenzene	370	U
95-48-7	2-Methylphenol	370	U
108-60-1	2,2'-oxybis(1-Chloropropane)	370	U
106-44-5	4-Methylphenol	370	U
621-64-7	N-Nitroso-Di-n-Propylamine	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
88-75-5	2-Nitrophenol	370	U
105-67-9	2,4-Dimethylphenol	370	U
111-91-1	bis(2-Chloroethoxy)Methane	370	U
120-83-2	2,4-Dichlorophenol	370	U
120-82-1	1,2,4-Trichlorobenzene	370	U
91-20-3	Naphthalene	370	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
59-50-7	4-Chloro-3-Methylphenol	370	U
91-57-6	2-Methylnaphthalene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
88-06-2	2,4,6-Trichlorophenol	370	U
95-95-4	2,4,5-Trichlorophenol	900	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	900	U
131-11-3	Dimethylphthalate	370	U
208-96-8	Acenaphthylene	370	U
606-20-2	2,6-Dinitrotoluene	370	U
99-09-2	3-Nitroaniline	900	U
83-32-9	Acenaphthene	370	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX97

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0613

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AB0613

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: 11 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	900	U
100-02-7	4-Nitrophenol	900	U
132-64-9	Dibenzofuran	370	U
121-14-2	2,4-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-phenylether	370	U
86-73-7	Fluorene	370	U
100-01-6	4-Nitroaniline	900	U
534-52-1	4,6-Dinitro-2-Methylphenol	900	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
87-86-5	Pentachlorophenol	900	U
85-01-8	Phenanthrene	370	U
120-12-7	Anthracene	370	U
86-74-8	Carbazole	370	U
84-74-2	Di-n-Butylphthalate	370	U
206-44-0	Fluoranthene	370	U
129-00-0	Pyrene	370	U
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(a)Anthracene	370	U
218-01-9	Chrysene	370	U
117-81-7	bis(2-Ethylhexyl)Phthalate	370	U
117-84-0	Di-n-Octyl Phthalate	370	U
205-99-2	Benzo(b)Fluoranthene	370	U
207-08-9	Benzo(k)Fluoranthene	370	U
50-32-8	Benzo(a)Pyrene	370	U
193-39-5	Indeno(1,2,3-cd)Pyrene	370	U
53-70-3	Dibenz(a,h)Anthracene	370	U
191-24-2	Benzo(g,h,i)Perylene	370	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBX97

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0613

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AB0613

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: 11 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

Number TICs found: 6

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-MET	4.12	6500	ABJN
2.	UNKNOWN	17.58	190	J
3.	UNKNOWN	18.42	180	J
4.	UNKNOWN	19.02	180	J
5.	UNKNOWN	20.20	82	J
6.	UNKNOWN	21.32	87	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX98

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0607

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AB0607

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: 19 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	410	U
111-44-4	bis(2-Chloroethyl)Ether	410	U
95-57-8	2-Chlorophenol	410	U
541-73-1	1,3-Dichlorobenzene	410	U
106-46-7	1,4-Dichlorobenzene	410	U
95-50-1	1,2-Dichlorobenzene	410	U
95-48-7	2-Methylphenol	410	U
108-60-1	2,2'-oxybis(1-Chloropropane)	410	U
106-44-5	4-Methylphenol	410	U
621-64-7	N-Nitroso-Di-n-Propylamine	410	U
67-72-1	Hexachloroethane	410	U
98-95-3	Nitrobenzene	410	U
78-59-1	Isophorone	410	U
88-75-5	2-Nitrophenol	410	U
105-67-9	2,4-Dimethylphenol	410	U
111-91-1	bis(2-Chloroethoxy)Methane	410	U
120-83-2	2,4-Dichlorophenol	410	U
120-82-1	1,2,4-Trichlorobenzene	410	U
91-20-3	Naphthalene	410	U
106-47-8	4-Chloroaniline	410	U
87-68-3	Hexachlorobutadiene	410	U
59-50-7	4-Chloro-3-Methylphenol	410	U
91-57-6	2-Methylnaphthalene	410	U
77-47-4	Hexachlorocyclopentadiene	410	U
88-06-2	2,4,6-Trichlorophenol	410	U
95-95-4	2,4,5-Trichlorophenol	980	U
91-58-7	2-Chloronaphthalene	410	U
88-74-4	2-Nitroaniline	980	U
131-11-3	Dimethylphthalate	410	U
208-96-8	Acenaphthylene	410	U
606-20-2	2,6-Dinitrotoluene	410	U
99-09-2	3-Nitroaniline	980	U
83-32-9	Acenaphthene	410	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX98

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0607

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AB0607

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: 19 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	980	U
100-02-7	4-Nitrophenol	980	U
132-64-9	Dibenzofuran	410	U
121-14-2	2,4-Dinitrotoluene	410	U
84-66-2	Diethylphthalate	410	U
7005-72-3	4-Chlorophenyl-phenylether	410	U
86-73-7	Fluorene	410	U
100-01-6	4-Nitroaniline	980	U
534-52-1	4,6-Dinitro-2-Methylphenol	980	U
86-30-6	N-Nitrosodiphenylamine (1)	410	U
101-55-3	4-Bromophenyl-phenylether	410	U
118-74-1	Hexachlorobenzene	410	U
87-86-5	Pentachlorophenol	980	U
85-01-8	Phenanthrene	410	U
120-12-7	Anthracene	410	U
86-74-8	Carbazole	410	U
84-74-2	Di-n-Butylphthalate	410	U
206-44-0	Fluoranthene	410	U
129-00-0	Pyrene	410	U
85-68-7	Butylbenzylphthalate	410	U
91-94-1	3,3'-Dichlorobenzidine	410	U
56-55-3	Benzo(a)Anthracene	410	U
218-01-9	Chrysene	410	U
117-81-7	bis(2-Ethylhexyl)Phthalate	81	J
117-84-0	Di-n-Octyl Phthalate	410	U
205-99-2	Benzo(b)Fluoranthene	410	U
207-08-9	Benzo(k)Fluoranthene	410	U
50-32-8	Benzo(a)Pyrene	410	U
193-39-5	Indeno(1,2,3-cd)Pyrene	410	U
53-70-3	Dibenz(a,h)Anthracene	410	U
191-24-2	Benzo(g,h,i)Perylene	410	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBX98

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0607

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AB0607

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: 19 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

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-MET	4.12	6600	ABJN
2.	UNKNOWN	17.57	210	J
3.	UNKNOWN	18.42	180	J
4.	UNKNOWN	19.02	170	J
5.	UNKNOWN	21.75	85	J

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBJ16

Lab Name: ITAS_KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: W0622 SAS No.: SDG No.: W0083

Matrix (soil/water): SOIL Lab Sample ID: AB0334

Level (low/med): LOW Date Received: 06/07/94

% Solids: 83.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7690			P
7440-36-0	Antimony	12.0	U		P
7440-38-2	Arsenic	0.48	U	W	F
7440-39-3	Barium	50.3			P
7440-41-7	Beryllium	0.58	B		P
7440-43-9	Cadmium	1.2	U		P
7440-70-2	Calcium	9680			P
7440-47-3	Chromium	16.2			P
7440-48-4	Cobalt	9.7	B		P
7440-50-8	Copper	11.3			P
7439-89-6	Iron	21000			P
7439-92-1	Lead	6.5			F
7439-95-4	Magnesium	4630			P
7439-96-5	Manganese	310			P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	16.2			P
7440-09-7	Potassium	652	B		P
7782-49-2	Selenium	0.48	U	W	F
7440-22-4	Silver	1.2	U		P
7440-23-5	Sodium	124	B		P
7440-28-0	Thallium	0.48	U	W	F
7440-62-2	Vanadium	44.8			P
7440-66-6	Zinc	27.2		*	P
5955-70-0	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBJ16

Lab Name: ITAS_KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO622 SAS No.: SDG No.: W0083

Matrix (soil/water): SOIL Lab Sample ID: AB0335

Level (low/med): LOW Date Received: 06/07/94

% Solids: 83.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
5955-70-0	Cyanide	1.2	U		AS

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: Clarity After: Artifacts:

Comments:

CYANIDE ONLY.

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBX94

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO622 SAS No.: _____ SDG No.: W0083_
Matrix (soil/water): SOIL_ Lab Sample ID: AB0329
Level (low/med): LOW_ Date Received: 06/07/94
% Solids: _99.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
5955-70-0	Cyanide	1.00	U		AS

Color Before: WHITE____ Clarity Before: _____ Texture: MEDIUM
Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
CYANIDE_ONLY.

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBX94

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO622 SAS No.: SDG No.: W0083

Matrix (soil/water): SOIL Lab Sample ID: AB0328

Level (low/med): LOW Date Received: 06/07/94

% Solids: 99.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	98.4			P
7440-36-0	Antimony	10.0	U		P
7440-38-2	Arsenic	0.40	U		F
7440-39-3	Barium	0.99	B		P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	42.8	B		P
7440-47-3	Chromium	2.2			P
7440-48-4	Cobalt	2.0	U		P
7440-50-8	Copper	2.0	U		P
7439-89-6	Iron	177			P
7439-92-1	Lead	1.1			F
7439-95-4	Magnesium	14.7	B		P
7439-96-5	Manganese	1.1	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	4.0	U		P
7440-09-7	Potassium	200	U		P
7782-49-2	Selenium	0.40	U		F
7440-22-4	Silver	1.0	U		P
7440-23-5	Sodium	20.8	B		P
7440-28-0	Thallium	0.40	U		F
7440-62-2	Vanadium	2.0	U		P
7440-66-6	Zinc	2.5	B	*	P
5955-70-0	Cyanide				NR

Color Before: WHITE Clarity Before: Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBX97

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO647 SAS No.: SDG No.: W0083
Matrix (soil/water): SOIL Lab Sample ID: AB0614
Level (low/med): LOW Date Received: 06/14/94
% Solids: 89.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4360			P
7440-36-0	Antimony	11.2	U		P
7440-38-2	Arsenic	0.49	B		F
7440-39-3	Barium	40.5	B		P
7440-41-7	Beryllium	0.23	B		P
7440-43-9	Cadmium	1.1	U		P
7440-70-2	Calcium	2490			P
7440-47-3	Chromium	9.4			P
7440-48-4	Cobalt	5.3	B		P
7440-50-8	Copper	9.0			P
7439-89-6	Iron	8410			P
7439-92-1	Lead	2.2			F
7439-95-4	Magnesium	2830			P
7439-96-5	Manganese	153			P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	11.3			P
7440-09-7	Potassium	578	B		P
7782-49-2	Selenium	0.43	U		F
7440-22-4	Silver	1.1	U		P
7440-23-5	Sodium	275	B		P
7440-28-0	Thallium	0.43	U	W	F
7440-62-2	Vanadium	15.8			P
7440-66-6	Zinc	21.1		*	P
5955-70-0	Cyanide				NR

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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7/15/94

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBX97

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO647 SAS No.: _____ SDG No.: W0083_

Matrix (soil/water): SOIL_ Lab Sample ID: AB0615

Level (low/med): LOW__ Date Received: 06/14/94

% Solids: _89.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
5955-70-0	Cyanide	1.1	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY.

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBX98

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: W0647 SAS No.: SDG No.: W0083

Matrix (soil/water): SOIL Lab Sample ID: AB0608

Level (low/med): LOW Date Received: 06/14/94

% Solids: 81.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4850			P
7440-36-0	Antimony	12.3	U		P
7440-38-2	Arsenic	0.49	U		F
7440-39-3	Barium	47.2	B		P
7440-41-7	Beryllium	0.32	B		P
7440-43-9	Cadmium	1.2	U		P
7440-70-2	Calcium	2680			P
7440-47-3	Chromium	15.5			P
7440-48-4	Cobalt	5.0	B		P
7440-50-8	Copper	11.9			P
7439-89-6	Iron	10900			P
7439-92-1	Lead	2.4			F
7439-95-4	Magnesium	3340			P
7439-96-5	Manganese	193			P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	15.0			P
7440-09-7	Potassium	644	B		P
7782-49-2	Selenium	0.49	U		F
7440-22-4	Silver	1.2	U		P
7440-23-5	Sodium	281	B		P
7440-28-0	Thallium	0.49	U	W	F
7440-62-2	Vanadium	23.9			P
7440-66-6	Zinc	35.0		*	P
5955-70-0	Cyanide				NR

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBX98

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO647 SAS No.: _____ SDG No.: W0083_

Matrix (soil/water): SOIL_ Lab Sample ID: AB0674

Level (low/med): LOW__ Date Received: 06/14/94

% Solids: _81.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
5955-70-0	Cyanide	1.2	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY.

FORM I - IN

ILM02.1

S 7/15/94

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0083
Contract Name:	Westinghouse Hanford	Job Number:	622
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	06/28/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	AB1758/P6352	0.50	U
BOBX94	AB0331	0.50	U
BOBJ16	AB0337	0.81	+

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0083
Contract Name:	Westinghouse Hanford	Job Number:	647
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	06/28/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	AB1758/P6352	0.50	U
BOBX98	AB0611	0.90	+
BOBX97	AB0617	1.29	+

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0083
Contract Name:	Westinghouse Hanford	Job Number:	622
Client Sample ID:	BOBJ16	Preparation Date:	06/22/94
Lab Sample ID:	AB0336	Analysis Date:	06/27/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	3.0	+	0.4
nitrite	0.4	U	0.4
nitrate	1.5	+	0.4
phosphate	1.0	U	1.0
sulfate	4.4	+	1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0083
Contract Name:	Westinghouse Hanford	Job Number:	622
Client Sample ID:	BOBX94	Preparation Date:	06/22/94
Lab Sample ID:	AB0330	Analysis Date:	06/27/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	3.8	+	0.4
nitrite	0.4	U	0.4
nitrate	0.5	+	0.4
phosphate	1.0	U	1.0
sulfate	2.7	+	1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0083
Contract Name:	Westinghouse Hanford	Job Number:	647
Client Sample ID:	BOBX97	Preparation Date:	06/22/94
Lab Sample ID:	AB0616	Analysis Date:	06/29/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	3.7	+	0.8
nitrite	0.4	U	0.4
nitrate	14	+	4.0
phosphate	1.0	U	1.0
sulfate	8.0	+	1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0083
Contract Name:	Westinghouse Hanford	Job Number:	647
Client Sample ID:	BOBX98	Preparation Date:	06/22/94
Lab Sample ID:	AB0610	Analysis Date:	06/29/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	3.8	+	0.4
nitrite	0.4	U	0.4
nitrate	14	+	2.0
phosphate	1.0	U	1.0
sulfate	7.5	+	1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

August 1, 1994

Attention: J.A.Lerch

SAF Number	:	94-046
Date SDG Closed	:	June 17, 1994
Number of Samples	:	Four (4)
Sample Type	:	Soil
SDG Number	:	W0083
Data Deliverable	:	Stand Alone

I. Introduction

On June 3 and 13, 1994, four soil samples were received by ITAS-Richland for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the WHC specific IDs:

ITAS-Richland ID	WHC ID	Matrix	Date of Receipt
406043-01A	B0BX94	Soil	6/3/94
406043-02A	B0BJ16	Soil	6/3/94
406265-01A	B0BX98	Soil	6/13/94
406265-02A	B0BX97	Soil	6/13/94

Regional Office
2800 George Washington Way • Richland, Washington 99352-1613 • 509-375-3131 • FAX: 509-375-5590

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II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, the analytical result(s) and the appropriate associated statistical errors.

The requested analyses were:

Alpha Spectroscopy
Americium-241, Curium-244 by method ITAS-RD-3302
Neptunium-237 by method ITAS-RD-3208
Plutonium-238, 239/40 by method ITAS-RD-3209
Uranium-234, 235, 238 by method ITAS-RD-3234
Gamma Spectroscopy
Gamma Scan by method ITAS-RD-3219
Iodine-129 by method ITAS-RD-3219
Gas Proportional Counting
Gross Alpha by method ITAS-RD-3222
Gross Beta by method ITAS-RD-3222
Strontium-90 by method ITAS-RD-3204
Liquid Scintillation Counting
Carbon-14 by method ITAS-RD-3247
Technetium-99 by method ITAS-IT-RS-0001

III. Quality Control

The analytical results for each analysis performed under SDG W0083 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate.

Quality control sample results are reported in the same units as sample results except for Gross Alpha and Gross Beta quality control sample results which are reported in pCi/sample.

IV. Comments

The initial radioactivity screening of the samples classified samples B0BX94 and B0BJ16 as Category II and samples B0BX98 and B0BX97 as Category I.

Analysis of sample B0BX93, received with samples B0BX94 and B0BJ16, was cancelled per WHC ROD 94-00148.

Alpha Spectroscopy

Americium-241, Curium-244 by method ITAS-RD-3302
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BJ16) results are within contractual requirements.

Neptunium-237 by method ITAS-RD-3208
The LCS radiochemical recovery is accepted with a low bias (32%). The batch data are accepted based on an acceptable matrix spike recovery (72%), and acceptable batch blank, sample and sample duplicate (duplicate of sample B0BJ16) results.

Plutonium-238, 239/40 by method ITAS-RD-3209
The tracer yield for sample B0BJ16 was less than 20%, however, the sample results are reported as acceptable because the required detection limit was achieved, the sample result was less than contractual detection limit, the sample was duplicated and the sample duplicate yield is acceptable, and the sample duplicate result is within the 3 sigma error around the sample result. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BJ16) results are accepted and reported.

Uranium-234, 235, 238 by method ITAS-RD-3234
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BJ16) results are accepted and reported.

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219
Cd-109 was detected in all of the samples and QC samples. The Cd-109 results are not reported because they are suspected false positive results caused by x-ray lines produced by energy reflection from the detector shielding. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BX94) results are within contractual requirements.

Iodine-129 by method ITAS-RD-3219
The LCS was biased high (125%) on the initial count. The recount of the LCS indicated a low bias (42%). The original LCS value is accepted and reported. The cause of the LCS recovery fluctuations is under investigation by the Technical Associate Group. None of the batch samples were above the detection limit for I-129. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BX94) results are accepted and reported.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BX94) results are within contractual requirements.

Gross Beta by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BX94) results are within contractual requirements.

Strontium-90 by method ITAS-RD-3204
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BX94) results are within contractual requirements.

Liquid Scintillation Counting

Carbon-14 by method ITAS-RD-3247
Carbon-14 results are not reportable for these samples due to an insufficient presence of carbon in the samples to perform the analysis. The carbon-14 method requires that 2 grams of carbon be present in each sample. The samples produced insufficient carbon dioxide during sample preparation. Two separate attempts were made to extrude carbon from the sample matrices. The sample results are considered unreportable due to a matrix effect (lack of carbon in the matrix).

Technetium-99 by method ITAS-IT-RS-0001
The matrix spike, LCS, batch blank, sample and sample duplicate (duplicate of sample B0BJ16) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Suzanne Gaines

Suzanne Gaines
Project Manager

9613476.1671

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40604301	MATRIX:	SOIL
CLIENT ID:	B0BX94	DATE RECEIVED:	6/3/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	-4.93E-04	9.86E-04	9.90E-04	2.48E-02	pCi/g	58.80%	RD3302
CM-242	-5.38E-03	3.58E-03	3.70E-03	4.97E-02	pCi/g	58.80%	RD3302
CM-244	-4.95E-04	1.82E-02	1.82E-02	5.83E-02	pCi/g	58.80%	RD3302
NP-237	3.83E-03	8.36E-03	8.40E-03	1.68E-02	pCi/g	100.00%	RD3208
PU-238	0.00E+00	0.00E+00	1.96E-02	1.77E-02	pCi/g	63.70%	RD3209
PU239/40	3.92E-03	1.36E-02	1.36E-02	3.69E-02	pCi/g	63.70%	RD3209
U-234	8.89E-02	4.49E-02	4.63E-02	3.49E-02	pCi/g	76.60%	RD3234
U-235	3.69E-03	1.10E-02	1.10E-02	2.90E-02	pCi/g	76.60%	RD3234
U-238DA	7.47E-02	4.07E-02	4.18E-02	2.71E-02	pCi/g	76.60%	RD3234
CO-58	5.22E-04	3.01E-03	3.01E-03	5.07E-03	pCi/g	N/A	RD3219
CO-60	-1.63E-03	2.71E-03	2.72E-03	4.20E-03	pCi/g	N/A	RD3219
CS-137DA	-1.39E-03	2.63E-03	2.64E-03	4.15E-03	pCi/g	N/A	RD3219
EU-152	-1.08E-02	1.41E-02	1.42E-02	2.26E-02	pCi/g	N/A	RD3219
EU-154	-1.21E-03	7.76E-03	7.76E-03	1.33E-02	pCi/g	N/A	RD3219
EU-155	1.30E-02	7.52E-03	7.63E-03	1.23E-02	pCi/g	N/A	RD3219
FE-59	4.12E-03	6.43E-03	6.44E-03	1.16E-02	pCi/g	N/A	RD3219
I-129LP	1.39E-01	2.65E-01	2.66E-01	5.09E-01	pCi/g	N/A	RD3219
K-40	5.11E-01	8.18E-02	9.64E-02	N/A	pCi/g	N/A	RD3219
RA-224DA	1.34E-01	7.99E-03	1.56E-02	N/A	pCi/g	N/A	RD3219
RA-226DA	9.29E-02	1.26E-02	1.56E-02	N/A	pCi/g	N/A	RD3219
RA-228DA	1.12E-01	1.93E-02	2.23E-02	N/A	pCi/g	N/A	RD3219
U-238DLP	1.64E-01	1.59E-01	1.60E-01	N/A	pCi/g	N/A	RD3219
ALPHA	4.62E+00	3.48E+00	3.52E+00	5.33E+00	pCi/g	100.00%	RD3214
BETA	2.89E+00	1.88E+00	1.89E+00	3.66E+00	pCi/g	100.00%	RD3214
STRONTIUM	-6.23E-03	4.49E-02	4.49E-02	1.23E-01	pCi/g	100.00%	RD3204

682A-6-93

9613476.1572

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40604301	MATRIX:	SOIL
CLIENT ID:	B0BX94	DATE RECEIVED:	6/3/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
TC-99	3.60E-02	2.13E-01	9.59E-01	4.96E-01	pCi/g	100.00%	ITAS-IT-RS-0001

Number of Results: 26

682A-6-93

9613476.1573

IT ANALYTICAL SERVICES
RICHLAND, WA
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SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40604302	MATRIX:	SOIL
CLIENT ID:	B0BJ16	DATE RECEIVED:	6/3/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	3.03E-03	1.03E-02	1.03E-02	2.85E-02	pCi/g	71.80%	RD3302
CM-242	-1.71E-03	1.28E-02	1.28E-02	4.86E-02	pCi/g	71.80%	RD3302
CM-244	-4.47E-03	1.52E-02	1.52E-02	5.38E-02	pCi/g	71.80%	RD3302
NP-237	1.22E-02	1.44E-02	1.47E-02	1.67E-02	pCi/g	100.00%	RD3208
PU-238	0.00E+00	0.00E+00	7.11E-02	6.42E-02	pCi/g	17.60%	RD3209
PU239/40	-4.74E-03	9.47E-03	9.55E-03	1.13E-01	pCi/g	17.60%	RD3209
U-234	8.25E-01	1.44E-01	1.82E-01	3.72E-02	pCi/g	66.40%	RD3234
U-235	8.06E-02	4.53E-02	4.66E-02	2.87E-02	pCi/g	66.40%	RD3234
U-238DA	8.95E-01	1.50E-01	1.93E-01	3.35E-02	pCi/g	66.40%	RD3234
CO-58	9.60E-04	5.71E-03	5.71E-03	9.46E-03	pCi/g	N/A	RD3219
CO-60	-4.57E-03	5.83E-03	5.85E-03	9.06E-03	pCi/g	N/A	RD3219
CS-137DA	0.00E+00	4.87E-03	4.87E-03	8.20E-03	pCi/g	N/A	RD3219
EU-152	9.42E-02	2.39E-02	2.57E-02	4.70E-02	pCi/g	N/A	RD3219
EU-154	-1.70E-02	1.74E-02	1.75E-02	2.83E-02	pCi/g	N/A	RD3219
EU-155	4.56E-02	1.68E-02	1.74E-02	2.70E-02	pCi/g	N/A	RD3219
FE-59	8.47E-03	1.56E-02	1.56E-02	2.61E-02	pCi/g	N/A	RD3219
I-129LP	-1.10E-02	5.22E-01	5.22E-01	9.04E-01	pCi/g	N/A	RD3219
K-40	1.12E+01	2.48E-01	1.15E+00	N/A	pCi/g	N/A	RD3219
MN-54	1.23E-02	7.28E-03	7.38E-03	N/A	pCi/g	N/A	RD3219
RA-224DA	9.19E-01	1.86E-02	9.37E-02	N/A	pCi/g	N/A	RD3219
RA-226DA	5.62E-01	2.49E-02	6.14E-02	N/A	pCi/g	N/A	RD3219
RA-228DA	9.21E-01	4.80E-02	1.04E-01	N/A	pCi/g	N/A	RD3219
U-238DLP	8.15E-01	3.03E-01	3.13E-01	N/A	pCi/g	N/A	RD3219
ALPHA	1.56E+01	5.63E+00	5.88E+00	5.22E+00	pCi/g	100.00%	RD3214
BETA	2.21E+01	3.42E+00	3.71E+00	3.74E+00	pCi/g	100.00%	RD3214

1100

682A-6-93

9613476.1574

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40604302	MATRIX:	SOIL
CLIENT ID:	B0BJ16	DATE RECEIVED:	6/3/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	-4.95E-03	1.26E-01	1.26E-01	3.38E-01	pCi/g	32.50%	RD3204
TC-99	5.97E-01	2.30E-01	1.01E+00	4.96E-01	pCi/g	100.00%	ITAS-IT-RS-0001

Number of Results: 27

682A-6-93

9613476.1575

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40626501	MATRIX:	SOIL
CLIENT ID:	B0BX98	DATE RECEIVED:	6/13/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	0.00E+00	0.00E+00	1.80E-02	1.62E-02	pCi/g	60.50%	RD3302
CM-242	-5.60E-04	1.12E-03	1.12E-03	2.81E-02	pCi/g	60.50%	RD3302
CM-244	-4.82E-04	9.63E-04	9.67E-04	2.42E-02	pCi/g	60.50%	RD3302
NP-237	7.32E-03	1.18E-02	1.19E-02	2.07E-02	pCi/g	100.00%	RD3208
PU-238	0.00E+00	0.00E+00	1.82E-02	1.64E-02	pCi/g	68.90%	RD3209
PU239/40	-1.21E-03	2.42E-03	2.42E-03	2.89E-02	pCi/g	68.90%	RD3209
U-234	5.83E-01	1.38E-01	1.63E-01	4.60E-02	pCi/g	51.10%	RD3234
U-235	6.84E-03	1.64E-02	1.64E-02	3.72E-02	pCi/g	51.10%	RD3234
U-238DA	5.12E-01	1.29E-01	1.50E-01	3.72E-02	pCi/g	51.10%	RD3234
CO-58	-5.09E-04	5.28E-03	5.28E-03	8.63E-03	pCi/g	N/A	RD3219
CO-60	-1.28E-03	5.35E-03	5.35E-03	8.83E-03	pCi/g	N/A	RD3219
CS-137DA	1.05E-02	5.35E-03	5.45E-03	N/A	pCi/g	N/A	RD3219
EU-152	3.86E-02	2.17E-02	2.20E-02	3.93E-02	pCi/g	N/A	RD3219
EU-154	9.37E-03	1.71E-02	1.71E-02	2.85E-02	pCi/g	N/A	RD3219
EU-155	2.17E-02	1.33E-02	1.35E-02	2.23E-02	pCi/g	N/A	RD3219
FE-59	-1.23E-02	1.46E-02	1.46E-02	2.35E-02	pCi/g	N/A	RD3219
I-129LP	1.76E-01	4.81E-01	4.81E-01	8.56E-01	pCi/g	N/A	RD3219
K-40	1.43E+01	2.53E-01	1.45E+00	N/A	pCi/g	N/A	RD3219
RA-224DA	5.25E-01	1.46E-02	5.45E-02	N/A	pCi/g	N/A	RD3219
RA-226DA	3.73E-01	2.14E-02	4.30E-02	N/A	pCi/g	N/A	RD3219
RA-228DA	5.04E-01	3.51E-02	6.14E-02	N/A	pCi/g	N/A	RD3219
U-238DLP	4.57E-01	2.48E-01	2.53E-01	N/A	pCi/g	N/A	RD3219
ALPHA	1.09E+01	4.95E+00	5.09E+00	5.83E+00	pCi/g	100.00%	RD3214
BETA	2.23E+01	3.46E+00	3.76E+00	3.87E+00	pCi/g	100.00%	RD3214
STRONTIUM	6.08E-02	6.57E-02	6.73E-02	1.57E-01	pCi/g	78.20%	RD3206

0013

9613476.1576

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40626501	MATRIX:	SOIL
CLIENT ID:	B0BX98	DATE RECEIVED:	6/13/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
TC-99	4.41E-01	2.25E-01	9.92E-01	4.96E-01	pCi/g	100.00%	ITAS-IT-RS-0001

Number of Results: 26

682A-6-93

9613476.1577

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40626502	MATRIX:	SOIL
CLIENT ID:	B0BX97	DATE RECEIVED:	6/13/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	4.36E-03	1.05E-02	1.05E-02	2.37E-02	pCi/g	80.10%	RD3302
CM-242	-9.69E-04	1.37E-03	1.38E-03	2.77E-02	pCi/g	80.10%	RD3302
CM-244	4.38E-03	1.05E-02	1.05E-02	2.38E-02	pCi/g	80.10%	RD3302
NP-237	7.98E-03	1.18E-02	1.19E-02	1.67E-02	pCi/g	100.00%	RD3208
PU-238	-1.12E-03	2.24E-03	2.25E-03	2.69E-02	pCi/g	74.30%	RD3209
PU239/40	0.00E+00	0.00E+00	1.68E-02	1.52E-02	pCi/g	74.30%	RD3209
U-234	4.67E-01	1.04E-01	1.20E-01	2.85E-02	pCi/g	72.80%	RD3234
U-235	1.01E-02	1.62E-02	1.63E-02	2.85E-02	pCi/g	72.80%	RD3234
U-238DA	5.50E-01	1.13E-01	1.34E-01	3.80E-02	pCi/g	72.80%	RD3234
CO-58	3.20E-03	5.21E-03	5.22E-03	8.85E-03	pCi/g	N/A	RD3219
CO-60	5.24E-04	5.65E-03	5.65E-03	9.33E-03	pCi/g	N/A	RD3219
CS-137DA	3.60E-03	4.85E-03	4.86E-03	7.94E-03	pCi/g	N/A	RD3219
EU-152	9.22E-02	2.39E-02	2.56E-02	4.67E-02	pCi/g	N/A	RD3219
EU-154	-4.45E-03	1.89E-02	1.89E-02	3.05E-02	pCi/g	N/A	RD3219
EU-155	1.37E-02	1.35E-02	1.36E-02	2.24E-02	pCi/g	N/A	RD3219
FE-59	-6.09E-03	1.47E-02	1.47E-02	2.39E-02	pCi/g	N/A	RD3219
I-129LP	-2.44E-01	4.73E-01	4.74E-01	7.96E-01	pCi/g	N/A	RD3219
K-40	1.49E+01	2.75E-01	1.51E+00	N/A	pCi/g	N/A	RD3219
MN-54	1.07E-02	5.59E-03	5.69E-03	N/A	pCi/g	N/A	RD3219
RA-224DA	5.32E-01	1.52E-02	5.53E-02	N/A	pCi/g	N/A	RD3219
RA-226DA	3.90E-01	2.13E-02	4.45E-02	N/A	pCi/g	N/A	RD3219
RA-228DA	5.53E-01	4.61E-02	7.20E-02	N/A	pCi/g	N/A	RD3219
U-238DLP	2.62E-01	1.98E-01	2.00E-01	N/A	pCi/g	N/A	RD3219
ALPHA	6.80E+00	4.04E+00	4.10E+00	5.45E+00	pCi/g	100.00%	RD3214
BETA	1.70E+01	3.13E+00	3.32E+00	3.91E+00	pCi/g	100.00%	RD3214

0015

9613476.1578

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40626502	MATRIX:	SOIL
CLIENT ID:	B0BX97	DATE RECEIVED:	6/13/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	-5.71E-03	5.41E-02	5.41E-02	1.47E-01	pCi/g	80.90%	RD3204
TC-99	4.05E-01	2.20E-01	9.88E-01	4.96E-01	pCi/g	100.00%	ITAS-IT-RS-0001

Number of Results: 27

682A-6-93

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: GWS-015	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0-	Bill of Lading/Air Bill No.
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4	COOL 4		
Type of Container	aGs	aG	G	G	G	G	P/G	P/G			aGs	aGs	aGs		
No. of Container(s)	1	1	1	1	1	1	1	1			1	1	1		
Volume	125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml			125ml	250ml	40ml		
SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)	*1	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		
406042	A	B	C	D	E	F	406043								

Sample No.	Matrix*	Date Sampled	Time Sampled														
~~BOBX93~~	~~S~~			~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~					~~X~~	WVS 5-31-94
BOBX94 01	S	5-31-94	1010	X	X	X	X	X	X	X 01	X					X	
BOBX95 2	S	5-31-94	0940											X 02A			
BOBX96 3	S	5-31-94	0730									X 03A					
~~BOBX97~~	~~S~~			~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~					~~X~~	WVS 5/31/94
BOBJ16 4	S	6-1-94	1043	X	X	X	X	X	X	X	02 X					X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
W. V. Setzer	6-1-94 1409	A Simpson 6/1/94	1409
Relinquished By: Loren C. Rogers for Amy Simpson	Date/Time: 6-3-94 0945	Received By: [signature] 6/3/94	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540) alternate custodian relinquished custody of samples for custodian due to illness of the shipping facility custodian. Samples stored at shipping facility in locked refrigerator prior to delivery to the laboratory [signature] 6-3-94.

LOWEST HOLDING TIME = 7DAYS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION	Received By	Title	Date/Time
	[signature]	IIAS	6/3/94 1430

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

0048

9613476.1579

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: 6W5-015	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0-	Bill of Lading/Air Bill No.
Possible Sample Hazards/Remarks: NONE OBSERVED		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4	COOL 4		
Type of Container	aGs	aG	G	G	G	G	P/G	P/G			aGs	aGs	aGs		
No. of Container(s)	1	1	1	1	1	1	1	1			1	1	1		
Volume	125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml			125ml	250ml	40ml		
SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)	*1	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		
406642	05A	B	C	D	E	F	40604303								

Sample No.	Matrix*	Date Sampled	Time Sampled														
BORX93	S	6-2-94	1245	X	X	X	X	X	X	X	X					X	

0049

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
W. V. Setzer	6/2/94 1405	A Simpson	6/2/94 1405
Lorenz Rogers for Amy Simpson	6394 0957		

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540) alternate custodian relinquished custody of samples for custodian due to illness of the shipping facility custodian. Samples stored at shipping facility in locked refrigerator prior to delivery to the laboratory. LOWEST HOLDING TIME = 7DAYS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION

Received By	Title	Date/Time
Tom [illegible]	ITAS	6/3/94 1430

FINAL SAMPLE DISPOSITION

Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

9413146.1500

9613476.1581

Hand Delivery

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-0-0594 #38

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ER Eng Support	Field & Analytical Supp	ER Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Contractor ☐ Vendor

Shipped to
IT Analytical Services
2800 George Washington Way
Richland, WA 99352

Off-site Custodian

Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs	Sample #: B0BX98 B0BX97 B0BX99 B0BXB0 Cooler ID: EG-1D Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs	Sample #: Cooler ID: AJS Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the

Bill of lading # NA

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
Michael S. Fox	178688	6-13-94

Location of Property (Area & Bldg.)	Contact	Phone
200 UP 1	P. H. Butcher	(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
6/13/94	PT1FA / 8B410	NA

Originated By	Date	Authorized By	Date
AJ SIMPSON		AJ Simpson	6/13/94

Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
		[illegible]	6/13/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient / Date	Return Order No.	Date Issued	Purchase Order No.	Date Issued
C. Kerstyn IT 6-13-94 1045				0050

DISTRIBUTION

By Originator	Shipping Operation – Sign all Copies and Forward to:
White, Green, Yellow, Pink – Property Management Goldenrod – Retain	White – Property Management Yellow – Retain Green – Property Control Custodian (Issuing Office) Pink – Originator

54-3000-479 (09/89)

9613476.1582

SAMPLE STATUS REPORT FOR E 7426. E-BLANK BOBX94 TIME: 6/ 2/94 8:33
DISPATCHED: 5/13/94 7:50 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/ 1/94 14:10

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

SAMPLE STATUS REPORT FOR E 7425. E-BLANK BOBX93 TIME: 6/ 3/94 8:21
DISPATCHED: 5/13/94 7:49 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/ 2/94 14:46

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

9613476.1584

SAMPLE STATUS REPORT FOR E 5537. E-BLANK BOBJ16 TIME: 6/ 2/94 8:26
DISPATCHED: 3/ 8/94 10:43 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/ 1/94 14:10

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

9613476.1585

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-0-0594-02

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ER Eng Support	Field & Analytical Supp	ER Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
IT Analytical Services 2800 George Washington Way Richland, WA 99352	
	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs.	Sample #: B0BX94, B0BX95, B0BX96, B0BJ16, B0BX93 Cooler ID: GWS 015 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs.	Sample #: Cooler ID: NA Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the 200 AREA

RECEIVED
JUN 3 1994
PROPERTY RECORDS

Bill of lading #_____

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
Michael S. Jones	157755	06-03-94

Location of Property (Area & Bldg.)	Contact	Phone
200-UP-1	P. H. Butcher	(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
6-3-94	8B410 PT2AB	NA

Originated By	Date	Authorized By	Date
Pit Butcher	6/3/94	Paul Deans	6-3-94
Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
		[illegible]	6/3/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
[illegible] ITAS				
Date 6/3/94 1430				0054

DISTRIBUTION

By Originator	Shipping Operation – Sign all Copies and Forward to:
White, Green, Yellow, Pink – Property Management Goldenrod – Retain	White – Property Management Yellow – Retain Green – Property Control Custodian (Issuing Office) Pink – Originator

54-3000-479 (09/89)

9613476.1586

BOBX95 BOBX96 ~~BOBNR4~~ SGR 6-3-94

SAMPLE STATUS REPORT FOR E 2261. E-BLANK TIME: 10/ 4/93 8:21
DISPATCHED: 9/23/93 14:44 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 10/ 4/93 8: 9

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

Silica Sand
W.V. Setzer 6-2-94

9613476.1507

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6/3/94 1430 Client Name WHC

Project/Client # 94-046 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) GWS 015

1. Condition of shipping container? ok
2. Custody Seals on cooler intact? Yes ☑ No ☐
3. Custody Seals dated and signed? Yes ☑ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☑ No ☐
5. Vermiculite/packing material is: Wet ☐ Dry ☑
6. Each sample is in a plastic bag? Yes ☐ No ☑
7. Number of sample containers in cooler: 29
8. Samples have: ____ tape ____ hazard labels
   ✓ custody seals ✓ appropriate sample labels
9. Samples are: ✓ in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☑ No ☐

Sample temperature 4°C

11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) N/A
    Request for analysis #(s) N/A
    Airbill # N/A Carrier ____
12. Have any anomalies been identified above? Yes ☐ No ☑
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature Tom Gilmore [signature] Date/Time 6/3/94 1430

FORM NO. LS-042, Rev.0, 2/94

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Category II
3 June 94

Customer Code WHC	Recieved Date		Screening Prep Date		Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
	6-3-94		6-3		6-3	10	5	233	240

Customer ID WHC/SOIL	pH <2 Rcvd/Relq	Residue Wght mG	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Alpha	Counts Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliqout Alpha	Beta	uCi per Sample Alpha	Beta	2 Sigma Error uCi per Sample Alpha	Beta	pCi/(Gm or L) Alpha	Beta	Category 1 Yes/No	Aliquot to Cat 1 Gm or L Alpha	Beta
03 B0BX93		97.3	97	1300.0	4	3	43	0.28	3.33	2.76E+00	8.12E+00	1.7E-02	4.9E-02	2.3E-05	1.9E-05	1.3E+01	3.8E+01	No	7.8E+02	2.7E+03
01 B0BX94		84.9	85	1400.0	6	2	14	0.18	0.43	1.72E+00	8.80E-01	1.3E-02	6.5E-03	2.0E-05	8.1E-06	9.1E+00	4.7E+00	No	1.1E+03	2.1E+04
02 B0BJ16		97.1	97	1550.0	7	5	27	0.48	1.73	4.96E+00	3.86E+00	3.6E-02	2.8E-02	3.7E-05	1.3E-05	2.3E+01	1.8E+01	No	4.3E+02	5.6E+03
TOTAL uCi												5.2E-02	7.7E-02							

E40004

0057

9415746.1588

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: ER-1D	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0- 0594-38	Bill of Lading/Air Bill No.:
Possible Sample Hazards/Remarks: NONE OBSERVED		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE Ref 3C LCS 6/9/94		

Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4	COOL 4		
Type of Container	aGs	aG	G	G	G	G	P/G	P/G			aGs	aGs	aGs		
No. of Container(s)	1	1	1	1	1	1	1	1			1	1	1		
Volume	125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml			125ml	250ml	40ml		
SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)	*1	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		
0058 4062664	6/13/94 A	B	C	D	E	F	4062665								

Sample No.	Matrix*	Date Sampled	Time Sampled	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)	*1	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		
BOBX98 01	S	6-9-94	0940	✓	✓	✓	✓	✓	✓	01 ✓	✓					✓		
BOBX97 2	S	6-9-94	0940	✓	✓	✓	✓	✓	✓	02 ✓	✓					✓		
BOBX99 3A	S	6-9-94	0840											✓				
BOBXB0 4A	S	6-9-94	0900												✓			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
W. V. Setzer	6-9-94 1205	L Sweeney L Sweeney	1205 6/9/94
L Sweeney L Sweeney	1300 6/9/94	A J Simpson	6/9/94 1300
A J Simpson	6/13/94 1035	C Kentzer IT	6-13-94 1045

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540)

SDG W0083

LOWEST HOLDING TIME = 7DAYS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION: Received By | Title | Date/Time

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

9513176.1688

9613476.1590

Hand Delivery

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-0-0594 #38

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ER Eng Support	Field & Analytical Supp	ER Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Contractor ☐ Vendor

Shipped to
IT Analytical Services
2800 George Washington Way
Richland, WA 99352

Off-site Custodian

Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs	Sample #: B0BX98 B0BX97 B0BX99 B0BXB0 Cooler ID: EG-1D Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs	Sample #: AJS Cooler ID: Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the

RECEIVED
JUN 13 1994
PROPERTY RECORD

Bill of lading # N/A

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
Michael D. Jones	178688	6-13-94

Location of Property (Area & Bldg.)	Contact	Phone
200 UP 1	P. H. Butcher	(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
6/13/94	PTIFA / 8B410	NA

Originated By	Date	Authorized By	Date
AJ SIMPSON		AJ Simpson	6/13/94

Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
		[illegible]	6/13/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient / Date	Return Order No.	Date Issued	Purchase Order No.	Date Issued
C Kerstyn IT 6-13-94 1045				0059

DISTRIBUTION

By Originator	Shipping Operation – Sign all Copies and Forward to:
White, Green, Yellow, Pink – Property Management Goldenrod – Retain	White – Property Management Yellow – Retain Green – Property Control Custodian (Issuing Office) Pink – Originator

54-3000-479 (09/89)

SAMPLE STATUS REPORT FOR E 7430. E-BLANK BOBX98 TIME: 6/10/94 8:32
DISPATCHED: 5/13/94 7:52 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/ 9/94 12:59

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

SAMPLE STATUS REPORT FOR E 7429. E-BLANK BOBX97 TIME: 6/10/94 8:32
DISPATCHED: 5/13/94 7:52 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/ 9/94 12:59

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

9613476.1593

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6-13-94 1045 Client Name WHC

Project/Client # 94-046 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) ER-10

1. Condition of shipping container? O.K
2. Custody Seals on cooler intact? Yes ☑ No ☐
3. Custody Seals dated and signed? Yes ☑ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☑ No ☐
5. Vermiculite/packing material is: Wet ☐ Dry ☑
6. Each sample is in a plastic bag? Yes ☑ No ☐
7. Number of sample containers in cooler: 20
8. Samples have: ✓ tape ____ hazard labels
   ✓ custody seals ____ appropriate sample labels
9. Samples are: ✓ in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☑ No ☐

Sample temperature 4°C

11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) NA
    Request for analysis #(s) NA
    Airbill # NA Carrier ____
12. Have any anomalies been identified above? Yes ☒ No ☐
13. Memos have been initiated for all anomalies identified above? Yes ☒

Printed Name/Signature C Kenichyn MAS [illegible] Date/Time 10:50

FORM NO. LS-042, Rev.0, 2/94

O.K. JRN
13 June 94

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Customer Code	Recieved Date		Screening Prep Date		Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC	61394		61394		6-13	30	15	238	240

	Customer ID WHC/SOIL	pH <2 Rcvd/Reiq	Residue Wght mG	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Counts Alpha	Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliqout Alpha	Beta	uCi per Sample Alpha	Beta	2 Sigma Error uCi per Sample Alpha	Beta	pCi/(Gm or L) Alpha	Beta	Category 1 Yes/No	Aliquot to Cat 1 Gm or L Alpha	Beta
02	B0BX97		68.3	68	1000.0	50	5	80	0.10	1.68	8.1E-01	3.9E+00	5.3E-03	2.6E-02	7.2E-06	8.2E-06	5.3E+00	2.6E+01	Yes	1.9E+03	3.9E+03
01	B0BX98		95.1	95	800.0	51	8	77	0.20	1.58	2.0E+00	3.8E+00	7.7E-03	1.4E-02	7.2E-06	4.8E-06	9.7E+00	1.8E+01	Yes	1.0E+03	5.6E+03
	TOTAL	uCi											1.3E-02	4.0E-02							

SDG-W0083

406-264 Chem
4-06-265 - Rad.

JUN 24 1994

0064

9613476.1595

Quanterra
Environmental Services

Quanterra Incorporated
2800 George Washington Way
Richland, Washington 99352

509 375-3131 Telephone
509 375-5590 Fax

December 8, 1994

DEC 1994
RECEIVED
Data
Log In

Joan Kessner
Buyer's Technical Representative
Bechtel Hanford, Inc.
345 Hills
Richland, WA 99352

Reference: Contract MPV-SVV-239000.

Dear Ms. Kessner:

Accompanying this letter are the addendum Radiochemical sample results for the following BHI samples:

SDG NUMBER	SAF NUMBER
W0083	94-046

If you have any questions regarding this data package or require any additional information please contact me at 375-3131.

Sincerely,

Jodie Carnes
Document Control Officer

Receipt of this letter and the package are acknowledged by:

Name	Date	Time
[illegible]	12/8/94	2:00p

XC: Vicki Parr
Van Pettey
Wade Price
File

9613476.1596

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40626502	MATRIX:	SOIL
CLIENT ID:	B0BX97	DATE RECEIVED:	6/13/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	4.36E-03	1.1E-02	1.1E-02	2.37E-02	pCi/g	80.10%	RD3302
CM-242	-9.69E-04	1.4E-03	1.4E-03	2.77E-02	pCi/g	80.10%	RD3302
CM-244	4.38E-03	1.1E-02	1.1E-02	2.38E-02	pCi/g	80.10%	RD3302
NP-237	7.98E-03	1.2E-02	1.2E-02	1.67E-02	pCi/g	100.00%	RD3208
PU-238	-3.16E-04	6.3E-04	6.3E-04	2.37E-02	pCi/g	66.10%	RD3209
PU239/40	-6.30E-04	8.9E-04	9.0E-04	2.63E-02	pCi/g	66.10%	RD3209
U-234	4.67E-01	1.0E-01	1.2E-01	2.85E-02	pCi/g	72.80%	RD3234
U-235	1.01E-02	1.6E-02	1.6E-02	2.85E-02	pCi/g	72.80%	RD3234
U-238DA	5.50E-01	1.1E-01	1.3E-01	3.80E-02	pCi/g	72.80%	RD3234
CO-58	3.20E-03	5.2E-03	5.2E-03	8.85E-03	pCi/g	N/A	RD3219
CO-60	5.24E-04	5.7E-03	5.7E-03	9.33E-03	pCi/g	N/A	RD3219
CS-137DA	3.60E-03	4.9E-03	4.9E-03	7.94E-03	pCi/g	N/A	RD3219
EU-152	9.22E-02	2.4E-02	2.6E-02	4.67E-02	pCi/g	N/A	RD3219
EU-154	-4.45E-03	1.9E-02	1.9E-02	3.05E-02	pCi/g	N/A	RD3219
EU-155	1.37E-02	1.4E-02	1.4E-02	2.24E-02	pCi/g	N/A	RD3219
FE-59	-6.09E-03	1.5E-02	1.5E-02	2.39E-02	pCi/g	N/A	RD3219
I-129LP	-2.44E-01	4.7E-01	4.7E-01	7.96E-01	pCi/g	N/A	RD3219
K-40	1.49E+01	2.8E-01	1.5E+00	N/A	pCi/g	N/A	RD3219
MN-54	1.07E-02	5.6E-03	5.7E-03	N/A	pCi/g	N/A	RD3219
RA-224DA	5.32E-01	1.5E-02	5.5E-02	N/A	pCi/g	N/A	RD3219
RA-226DA	3.90E-01	2.1E-02	4.5E-02	N/A	pCi/g	N/A	RD3219
RA-228DA	5.53E-01	4.6E-02	7.2E-02	N/A	pCi/g	N/A	RD3219
U-238DLP	2.62E-01	2.0E-01	2.0E-01	N/A	pCi/g	N/A	RD3219
ALPHA	6.80E+00	4.0E+00	4.1E+00	5.45E+00	pCi/g	100.00%	RD3222
BETA	1.70E+01	3.1E+00	3.3E+00	3.91E+00	pCi/g	100.00%	RD3222

682A-6-93

9613476.1597

DON'T SAY IT --- Write It!

DATE August 2, 1994

To W0083, samples B0BX94, B0BJ16, B0BX93 B0BX98 and B0BX97

FROM Jeff Lerch H4-23
Telephone 372-2596

cc: Doris Ayres
Briana Colley
Chris Koerner
Sandy Walls

SUBJECT Carbon-14 data not reported

Due to an insufficient presence of carbon in the samples (described on page 0007 of the radiochemistry laboratory case narrative), data for C-14 will not be reported for samples B0BX94, B0BJ16, B0BX93, B0BX98 and B0BX97.

9613476.1598

W0083-ITC-094

RECORD COPY

MEMORANDUM

TO: 200-UP-1 Round 1 Soil, Project QA Record November 30, 1994

FR: Diana Waterbury, Golder Associates Inc.

RE: VOLATILES DATA VALIDATION SUMMARY FOR
DATA PACKAGE: W0083-ITC-094, (943-1610.034, 094VOA.UP1)

INTRODUCTION

This memo presents the results of data validation on data package W0083-ITC-094 prepared by the International Technology Analytical Services. Sample information is provided in the following table.

SAMPLE ID	MEDIA	ANALYSIS	COMMENTS
B0BJ16	SOIL	VOLATILES	
B0BX94	SOIL	VOLATILES	EQUIPMENT BLANK
B0BX96	SOIL	VOLATILES	TRIP BLANK
B0BX97	SOIL	VOLATILES	
B0BX98*	SOIL	VOLATILES	DUPLICATE OF B0BX97
B0BX99	SOIL	VOLATILES	TRIP BLANK
B0BXB0	SOIL	VOLATILES	FIELD BLANK
* Indicates sample results which were 100% recalculated.			

Data validation was conducted to level D in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1993). Attachments 1 through 5 provide the following information:

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.

Revised 1/30/94

001

Completeness. The data package was complete for all requested analyses. A total of seven (7) samples were validated in this data package with a total of 231 determinations reported, 168 of which were deemed valid. This results in a completeness of 73 percent which does not meet the work plan completeness objective of 90 percent.

MAJOR DEFICIENCIES

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

Holding Times

- The holding times for samples B0BX94 and B0BX96 were greater than two times the maximum allowable holding time. Attachments 2 and 5 provide a summary of the data qualifications applied and supporting documentation.

MINOR DEFICIENCIES

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

Holding Times

- The maximum allowable holding time for samples B0BJ16, B0BX94, and B0BX96 were exceeded. Attachments 2 and 5 provide supporting documentation.

Laboratory blanks

- Acetone and methylene chloride were detected in the laboratory blanks. Attachments 2 and 5 provide a summary of the data qualifications applied and supporting documentation.

FIELD QC

- Samples B0BX94, B0BXB0, B0BX96 and B0BX99 were identified as equipment, field or trip blanks. Toluene was detected in the equipment blank, however no qualification is required for field QC.

- Sample B0BX98 was identified as the field duplicate of sample B0BX97. All relative percent differences (%RPD) were within control limits.

TENTATIVELY IDENTIFIED COMPOUNDS

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

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

Reviewed 1/30/94

REFERENCES

WHC 1994, Environmental and Waste Characterization Analytical Data Validation, Purchase Order MSH-SWV-315905; Validation Statement of Work, Revision 1.0, September 7, 1994; Westinghouse Hanford Company, Richland, Washington.

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

Reviewed 11/30/94

9613476.1601

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

ATTACHMENT 1. GLOSSARY OF 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.

9613476.1603

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

ATTACHMENT 2 - SUMMARY OF DATA QUALIFICATIONS

SDG: W0083-ITC-094	BY: D. Waterbury	DATE: 11/30/94	PAGE 1 OF 1
COMMENTS: VOLATILE ORGANICS			
COMPOUND/ ANALYTE	QUALIFIER	SAMPLES AFFECTED	REASON
ALL (except Toluene)	UR	B0BX96	Holding time.
ALL (except Acetone and Toluene)	UR	B0BX94	Holding time.
ALL (except Acetone and Toluene)	UJ	B0BJ16	Holding time.
ACETONE	J	B0BJ16, B0BX94	Holding time.
TOLUENE	J	B0BJ16, B0BX94, B0BX96	Holding time.
METHYLENE CHLORIDE	U UJ UR	B0BX97, B0BX98, B0BX99, B0BXB0 B0BJ16 B0BX94, B0BX96,	COMPOUND DETECTED IN THE LABORATORY BLANK.
ACETONE	U	B0BX97, B0BX98, B0BX99, B0BXB0	COMPOUND DETECTED IN THE LABORATORY BLANK.

Reviewed 11/30/94

9613476.1605

ATTACHMENT 3

QUALIFIED DATA SUMMARY and ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0083-ITC-094

	Samp#	B0BJ16		B0BX94		B0BX96		B0BX97		B0BX98		B0BX99	
	Date	6-1-94		5-31-94				6-9-94		6-9-94		6-9-94	
	Location	299-W19-34B		699-38-68A				699-38-68A		699-38-68A			
	Depth	332.00 - 334.00		---		---		285.00 - 287.00		285.00 - 287.00		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments			EQUIP.BL		TRIP BLANK				DUPLICATE		TRIP BLANK	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLOROMETHANE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
BROMOMETHANE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
VINYL CHLORIDE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
CHLOROETHANE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
METHYLENE CHLORIDE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	23.000	U	28.000	U	16.000	U
ACETONE	UG/KG	13.000	J	6.000	J	10.000	UR	13.000	U	18.000	U	11.000	U
CARBON DISULFIDE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
1,1-DICHLOROETHENE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
1,1-DICHLOROETHANE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
CHLOROFORM	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
1,2-DICHLOROETHANE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
2-BUTANONE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
1,1,1-TRICHLOROETHANE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
CARBON TETRACHLORIDE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
BROMODICHLOROMETHANE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
1,2-DICHLOROPROPANE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
CIS-1,3-DICHLOROPROPENE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
TRICHLOROETHENE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
DIBROMOCHLOROMETHANE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
1,1,2-TRICHLOROETHANE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
BENZENE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
BROMOFORM	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
4-METHYL-2-PENTANONE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
2-HEXANONE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
TETRACHLOROETHENE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
TOLUENE	UG/KG	17.000	J	13.000	J	15.000	J	11.000	U	12.000	U	10.000	U
CHLOROBENZENE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
ETHYLBENZENE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
STYRENE	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U
XYLENES (TOTAL)	UG/KG	12.000	UJ	10.000	UR	10.000	UR	11.000	U	12.000	U	10.000	U

The decimal places shown do not reflect the precision reported by the laboratory

Reviewed 11/30/94

9413476.1606

Validated Data Summary, Data Package: W0083-ITC-094

Parameter	Samp# / Date / Location / Depth / Type / Comments	B0BXB0 / 6-10-94 / / 0.00 - 0.00 / SOIL / FIELD BLANK	
Parameter	Units	Result	Q
CHLOROMETHANE	UG/KG	10.000	U
BROMOMETHANE	UG/KG	10.000	U
VINYL CHLORIDE	UG/KG	10.000	U
CHLOROETHANE	UG/KG	10.000	U
METHYLENE CHLORIDE	UG/KG	17.000	U
ACETONE	UG/KG	10.000	U
CARBON DISULFIDE	UG/KG	10.000	U
1,1-DICHLOROETHENE	UG/KG	10.000	U
1,1-DICHLOROETHANE	UG/KG	10.000	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	10.000	U
CHLOROFORM	UG/KG	10.000	U
1,2-DICHLOROETHANE	UG/KG	10.000	U
2-BUTANONE	UG/KG	10.000	U
1,1,1-TRICHLOROETHANE	UG/KG	10.000	U
CARBON TETRACHLORIDE	UG/KG	10.000	U
BROMODICHLOROMETHANE	UG/KG	10.000	U
1,2-DICHLOROPROPANE	UG/KG	10.000	U
CIS-1,3-DICHLOROPROPENE	UG/KG	10.000	U
TRICHLOROETHENE	UG/KG	10.000	U
DIBROMOCHLOROMETHANE	UG/KG	10.000	U
1,1,2-TRICHLOROETHANE	UG/KG	10.000	U
BENZENE	UG/KG	10.000	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	10.000	U
BROMOFORM	UG/KG	10.000	U
4-METHYL-2-PENTANONE	UG/KG	10.000	U
2-HEXANONE	UG/KG	10.000	U
TETRACHLOROETHENE	UG/KG	10.000	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	10.000	U
TOLUENE	UG/KG	10.000	U
CHLOROBENZENE	UG/KG	10.000	U
ETHYLBENZENE	UG/KG	10.000	U
STYRENE	UG/KG	10.000	U
XYLENES (TOTAL)	UG/KG	10.000	U

The decimal places shown do not reflect the precision reported by the laboratory

DSW
11-15-94

9612176.1607

9613476.1608

0000011 TOSW

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ16

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0332

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0332

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. 17 Date Analyzed: 06/29/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	~~U~~ UJ
74-83-9	Bromomethane	12	~~U~~
75-01-4	Vinyl Chloride	12	~~U~~
75-00-3	Chloroethane	12	~~U~~
75-09-2	Methylene Chloride	12 ~~7~~	~~BJ~~ UJ
67-64-1	Acetone	13	J
75-15-0	Carbon Disulfide	12	~~U~~ UJ
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~~ UJ
108-88-3	Toluene	17	J
108-90-7	Chlorobenzene	12	~~U~~ UJ
100-41-4	Ethylbenzene	12	~~U~~
100-42-5	Styrene	12	~~U~~
1330-20-7	Xylene (total)	12	~~U~~ UJ

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ16

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0332

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0332

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. 17 Date Analyzed: 06/29/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

9613476.1610

0000013 105H

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX94

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0326

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0326

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. 0 Date Analyzed: 06/29/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	~~U~~ UR
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 ~~5~~	~~BJ~~ UR
67-64-1	Acetone	6	~~J~~ ~~UR~~ J 11/29/94
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~~ UR
108-88-3	Toluene	13	
108-90-7	Chlorobenzene	10	~~U~~ UR
100-41-4	Ethylbenzene	10	~~U~~
100-42-5	Styrene	10	~~U~~
1330-20-7	Xylene (total)	10	~~U~~ UR

FORM I VOA

Reviewed 11/29/94 3/90

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBX94

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0326

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0326

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. 0 Date Analyzed: 06/29/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

9613476.1612

0000015 DSW

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX96 TRIP BLK

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0345

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0345

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. 1 Date Analyzed: 06/29/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U UR
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 ~~5~~	~~BJ~~ UR
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 UR
108-88-3	Toluene	15	J
108-90-7	Chlorobenzene	10	U UR
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U UR

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBX96

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0345

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0345

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. 1 Date Analyzed: 06/29/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	15.90	7	~~J~~ JN
2.	UNKNOWN	17.43	6	~~J~~ JN

9613476.1614

0000017 10SW

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX97

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0612

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0612

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: not dec. 11 Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	23	~~B~~ U
67-64-1	Acetone	13	~~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

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBX97

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0612

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0612

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: not dec. 11 Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX98

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0606

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0606

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: not dec. 19 Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	28	~~B~~ U
67-64-1	Acetone	18	~~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

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBX98

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0606

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0606

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: not dec. 19 Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	2.23	10	~~J~~ JN

9613476.1618

0000021

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX99 TRIP BLK

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0618

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0618

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: not dec. 0 Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	16	~~B~~ U
67-64-1	Acetone	11	~~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	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

BOBX99

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.:W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0618

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0618

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: not dec. 0 Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	Unknown	2.27	7	~~J~~ JN
2	Unknown	15.30	5	~~J~~ JN
3	Unknown	15.90	10	~~J~~ JN
4	Unknown	17.23	14	~~J~~ JN

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBXB0 FIELD BLK

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0619

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0619

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: not dec. 0 Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	17	~~B~~ 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.

BOBXB0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0619

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AB0619

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: not dec. 0 Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	15.93	7	~~J~~ JN
2.	Unknown	17.47	7	~~J~~ JN

9613476.1622

ATTACHMENT 4

LABORATORY NARRATIVE and CHAIN-OF-CUSTODY DOCUMENTATION

9613476.1623

0000001 OSW

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT Corporation
2800 George Washington Way
Richland, WA 99352
Attn: Van Pettey

July 18, 1994

4 AUG 1994 RECEIVED SDLA

Job Number: 622 & 649

This is the Certificate of Analysis for the following samples:

SDG:	W0083
Client Project ID:	WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1
Date Received by Lab:	June 7 & June 14, 1994
Number of Samples:	Nine (9)
Sample Type:	Soil

I. Introduction

On June 7 and June 14, 1994, nine (9) soil samples arrived at ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report. Samples BOBX93 and BOBX95 were cancelled per Record of Disposition 94-00148, dated June 10, 1994.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Soil result are reported on a dry weight basis.

The samples were analyzed for Target Compound List (TCL) volatiles and semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 3/90 Statement of Work.

Reviewed and Approved:

Sheree' A. Schneider

Sheree' A. Schneider
Project Manager

RECORD COPY

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total cyanide in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for anions by ion chromatography using EPA method 300.0.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J & W DB-624 capillary column on a Finnigan INCOS 500 GC/MS/DS. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All QC results met method specified limits. The samples were extracted outside of holding time in accordance to ROD 94-00148.

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All QC results met method specified limits. The samples were extracted outside of holding time in accordance to ROD 94-00148.

Data were reported with qualifiers as follows:

U - Compound analyzed for but not detected; value given is quantitation limit.
E - Compound exceeded calibration range.
D - Compound analyzed at a secondary dilution factor.
J - Compound detected but below quantitation limit; value estimated.
S - Spiked compound.
B - Compound found in method blank.
A - Suspected aldol condensation product.
Y - Indistinguishable isomer in tentatively identified compounds.
N - Presumptive evidence of compound presence.

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

III. Quality Control (Continued)

The samples for work order #622 were digested on July 5, 1994 for ICP and June 22, 1994 for GFAA. The CVAA analysis for mercury was performed on June 27, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from June 22 through June 28, 1994; the remaining metals were analyzed by ICP on July 5, 1994. All run QC was acceptable. Samples are batched with QC from work order #647.

The samples for work order #649 were digested on June 15, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on June 21, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from June 16 through June 22, 1994; the remaining metals were analyzed by ICP on July 6, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number BOBX97. Spike recovery (accuracy) results were within acceptance limits for all parameters. Duplicate RPD (precision) results were within acceptance limits for all parameters except for zinc which exhibited a slight variation due to probable sample nonhomogeneity for this analyte.

Data were reported with qualifiers as follows:

"C" Qualifiers

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
B - Value greater than instrument detection limit, but less than contract required quantitation limit.

"Q" Qualifiers

* - Duplicate analysis outside control limits.
N - Spiked sample recovery outside control limits.
W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
S - The reported value was determined by method of standard additions.

"M" Qualifiers

P - Analysis performed by ICP.
V - Analysis performed by CVAA.
F - Analysis performed by GFAA.
C - Cyanide analysis by manual distillation/colorimetric determination.

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

III. Quality Control (Continued)

Miscellaneous

D - Duplicate.
S - Spike.
NR - Not required.
G - Native analyte > 4 times spike added, therefore, acceptance criteria do not apply.
X - Detection limits higher than normal due to sample matrix interferences.

The samples were analyzed for nitrate/nitrite on June 28, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All quality control results were acceptable.

The samples were analyzed for fluoride, chloride, phosphate, nitrate, nitrite and sulfate by EPA method 300.0 from June 27 through June 29, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All quality control results were acceptable.

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AB0326	406042-01A	BOBX94	VOC
AB0327	406042-01B	"	SVOC
AB0328	406042-01C	"	METALS-T
AB0329	406042-01D	"	CYANIDE
AB0330	406042-01E	"	ANIONS
AB0331	406042-01F	"	NO_3NO_2
AB0344	406042-02A	BOBX95	VOC
AB0345	406042-03A	BOBX96	VOC
AB0332	406042-04A	BOBJ16	VOC
AB0333	406042-04B	"	SVOC
AB0334	406042-04C	"	METALS-T
AB0335	406042-04D	"	CYANIDE
AB0336	406042-04E	"	ANIONS
AB0337	406042-04F	"	NO_3NO_2
AB0338	406042-05A	BOBX93	VOC
AB0339	406042-05B	"	SVOC
AB0340	406042-05C	"	METALS-T
AB0341	406042-05D	"	CYANIDE
AB0342	406042-05E	"	ANIONS
AB0343	406042-05F	"	NO_3NO_2

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AB0606	406264-01A	BOBX98	VOC
AB0607	406264-01B	"	SVOC
AB0608	406264-01C	"	METALS-T
AB0674	406264-01D	"	CYANIDE
AB0610	406264-01E	"	ANIONS
AB0611	406264-01F	"	NO_3NO_2
AB0612	406264-02A	BOBX97	VOC
AB0613	406264-02B	"	SVOC
AB0614	406264-02C	"	METALS-T
AB0615	406264-02D	"	CYANIDE
AB0616	406264-02E	"	ANIONS
AB0617	406264-02F	"	NO_3NO_2
AB0618	406264-03A	BOBX99	VOC
AB0619	406264-04A	BOBXB0	VOC

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

IV. Certification

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

Reviewed and Approved:

Sheree A. Schneider

Sheree' A. Schneider
Project Manager

031

682-1-89

9613476.1630

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-94-00148
Record of Disposition No.

DATE: 06/10/94

LABORATORY: IT

PROJECT TITLE/NO.: 200-UP-1 Soil Sampling-Round 1 (SAF 94-046)

NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS: BOBJ16, BOBX93, BOBX94, BOBX95, BOBX96

DESCRIPTION OF EVENT:
On 6/07/94, IT was instructed to postpone the analysis of samples received on 6/04/94 until further notice from WHC.

DISPOSITION OF SAMPLES:
Per the technical representative, IT is to cancel the analysis of samples BOBX95, and BOBX93. The analysis of BOBJ16, BOBX94, and BOBX96 is to continue.

APPROVAL SIGNATURES:

J.A. Lerch — 6/10/94
HASM Project Coordinator (Print/Sign Name) — Date

B.E. Innis — 6/27/94
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

Revised 11/30/94

031A

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#622

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: 6W5-015	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0-	Bill of Lading/Air Bill No.:
Possible Sample Hazards/Remarks: NONE OBSERVED		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Sample No.	Matrix*	Date Sampled	Time Sampled	VOA (CLP) 05A	SEMIVOA (CLP) B	ICP MTL GFAA METALS Hg (CLP) C	Cn (CLP) D	ANIONS IC-F,CL SO4,NO2 NO3,PO4 E	NO2,NO3 EPA(353.2) F	*1 40604303	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		
Preservative				COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4	COOL 4		
Type of Container				aGs	aG	G	G	G	G	P/G	P/G			aGs	aGs	aGs		
No. of Container(s)				1	1	1	1	1	1	1	1			1	1	1		
Volume				125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml			125ml	250ml	40ml		
SAMPLE ANALYSIS 406642																		
BORX93	S	6-2-94	1245	X	X	X	X	X	X	X	X					X		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: W. V. Setzer	Date/Time: 6/2/94 1405	Received By: A. Simpson	Date/Time: 6/2/94 1405
Relinquished By: Karen Hoppe for Anna Simpson	Date/Time: 6394 0957	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540) Ultimate custodian relinquished custody of samples to intermediary due to illness of the shipping facility custodian. Samples stored at shipping facility in locked refrigerator prior to delivery to the laboratory. 6-3-94

LOWEST HOLDING TIME = 7DAYS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION	Received By	Title	Date/Time
	Tom [illegible]	ITAS	6/3/94 1430

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

9413176.1691

032

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#622

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: GWS-015	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0-	Bill of Lading/Air Bill No.
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4	COOL 4		
Type of Container	aGs	aG	G	G	G	G	P/G	P/G			aGs	aGs	aGs		
No. of Container(s)	1	1	1	1	1	1	1	1			1	1	1		
Volume	125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml			125ml	250ml	40ml		
SAMPLE ANALYSIS 406042	VOA (CLP) A	SEMIVOA (CLP) B	ICP MTL GFAA METALS Hg (CLP) C	Cn (CLP) D	ANIONS IC-F,CL SO4,NO2 NO3,PO4 E	NO2,NO3 EPA(353.2) F	*1 466043	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		

Sample No.	Matrix*	Date Sampled	Time Sampled	A	B	C	D	E	F								
~~BOBX93~~	~~S~~			~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~				~~X~~	WVS	5-31-94
BOBX94 01	S	5-31-94	1010	X	X	X	X	X	X	X 01	X				X		
BOBX95 2	S	5-31-94	0940											X 02A			
BOBX96 3	S	5-31-94	0730									X 03A					
~~BOBX97~~	~~S~~			~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~				~~X~~	WVS	5/31/94
BOBJ16 4	S	6-1-94	1043	X	X	X	X	X	X	X	02 X				X		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: W. V. Setzer	Date/Time: 6-1-94 1409	Received By: A. Simpson	Date/Time: 6/1/94 1469
Relinquished By: Loren C. Hopkins for Amy Simpson	Date/Time: 6-3-94 0945	Received By: [illegible]	Date/Time: 6/3/94
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540). Ultimate custodian relinquished custody of samples for custodian due to illness of the shipper for all custodian. Samples iced at shipper & placed in ice chest refrigerator prior to delivery to the laboratory [illegible] 6-3-94.

LOWEST HOLDING TIME = 7DAYS

Matrix*

S	= Soil
SE	= Sediment
SO	= Solid
SL	= Sludge
W	= Water
O	= Oil
A	= Air
DS	= Drum Solids
DL	= Drum Liquids
T	= Tissue
WI	= Wipe
L	= Liquid
V	= Vegetation
X	= Other

LABORATORY SECTION	Received By	Title	Date/Time
	[illegible]	IVAS	6/3/94 1430

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

9513976.1652

033

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#647

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: ER-1D	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: 494-0- 0594-38	Bill of Lading/Air Bill No.
Possible Sample Hazards/Remarks: NONE OBSERVED		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE	Rot 3C LS 6/7/94	

Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4	COOL 4		
Type of Container	aGs	aG	G	G	G	G	P/G	P/G			aGs	aGs	aGs		
No. of Container(s)	1	1	1	1	1	1	1	1			1	1	1		
Volume	125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml			125ml	250ml	40ml		
SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)	*1	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		
406264	6/13/94 A	B	C	D	E	F	406265								

Sample No.	Matrix*	Date Sampled	Time Sampled														
B0BX98 01	S	6-9-94	0940	✓	✓	✓	✓	✓	✓	01 ✓	✓					✓	
B0BX97 2	S	6-9-94	0940	✓	✓	✓	✓	✓	✓	02 ✓	✓					✓	
B0BX99 3A	S	6-9-94	0840										✓				
B0BXB0 4A	S	6-9-94	0900											✓			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
W. V. Setzer	6-9-94 1205	L Sweeney L Sweeney	1205 6/9/94
Relinquished By	Date/Time	Received By	Date/Time
L Sweeney L Sweeney	1304 6/9/94	C J Simpson	6/9/94 1300
Relinquished By	Date/Time	Received By	Date/Time
C J Simpson	6/13/94 1035	R Kentzer IT	6-13-94 1045
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540)

SDG W0083

LOWEST HOLDING TIME = 7DAYS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

9616976.1693

034

9613476.1654

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E

PROJECT: 200-UP-1		DATA PACKAGE: W0083-ITC-094	
VALIDATOR: WATERBURY	LAB: IT CORP.	DATE: 11-11-94	
CASE:		SDG: W0083	

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		
	B0BX98 -SOIL	B0BJ116 -SOIL
	B0BX97 -SOIL	B0BX93 - cancelled
	B0BX99 -SOIL	B0BX94 -SOIL
	B0BXB0 -SOIL	B0BX95 - cancelled
		B0BX96 -SOIL

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: Samples B0BJ116, B0BX94, and B0BX96 exceeded the holding time limits. See attachments 2 & 5.

036

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 11/29/94

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: Samples BOBX96 and BOBX99 are trip blanks for the assoc. samples, no qualification is required based on trip blank results. Sample BOBXBD is a field blank. Sample BOBX94 is an equipment blank.
Methylene chloride and acetone detected in lab blanks. Associated sample results qualified as non-detects (u). less than 5X blanks.

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:

Reviewed 11/30/94

037

GC/MS ORGANIC DATA VALIDATION CHECKLIST

6. PRECISION

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

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

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

Comments: Sample B0BX98 is the field duplicate of sample B0BX97.

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: W00083 | VALIDATOR: WATERBURY | DATE: 11.11.94 | PAGE 1 OF 1

COMMENTS: Volatiles

	FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
	B0BJ16	VOA	6.01.94		6.29.94		28	J or UJ
EQUIP	B0BX94	VOA	5.31.94		6.29.94		29	J or UR
	B0BX97	VOA	6.09.94		6.21.94		12	none
DUP	B0BX98	VOA	6.09.94		6.21.94		12	none
TRIP	B0BX99	VOA	6.09.94		6.21.94		12	none
FIELD	B0BXB0	VOA	6.10.94		6.21.94		11	none
B-TRIP	B0BX96	VOA	5.31.94		6.29.94		29	J or UR

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKAB2114

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB2114

Sample wt/vol: 5.0 (g/mL) G Lab File ID: WB0629

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

% Moisture: not dec. ____ Date Analyzed: 06/29/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	2.23	7	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKAB2114

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB2114

Sample wt/vol: 5.0 (g/mL) G Lab File ID: WB0629

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

% Moisture: not dec. ____ Date Analyzed: 06/29/94

GC Column: DB624 ID: 0.530 (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	3	J	x10=30
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	

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0000294

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKAB1724

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB1724

Sample wt/vol: 5.0 (g/mL) G Lab File ID: WB0621

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

% Moisture: not dec. ____ Date Analyzed: 06/21/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
74-87-3	Chloromethane	10	U	
74-83-9	Bromomethane	10	U	
75-01-4	Vinyl Chloride	10	U	
75-00-3	Chloroethane	10	U	
75-09-2	Methylene Chloride	14		x10=140
67-64-1	Acetone	10		x10=100
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	3	J	
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 Revised 1/30/94

042

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DON'T SAY IT - - WRITE IT!

Date: 12/16/94 PKR.

From: P. K. Reich H4-14, (509) 372-2785

Subject: Correction of Validation Date Received Stamp

The date stamped on this validation report is the date the final correction documents were received in the completion of the Validation Review Process.

The original front pages(s) are maintained as a documented record of the date the Validation Report was originally received from the Validators.

Thank You,

Pat Reich
Sample Management

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MEMORANDUM

NOV 1994 RECEIVED Validation Log In

original validation data rec'd 12-16-94 PKR

TO: 200-UP-1 Round 1 Soil, Project QA Record November 16, 1994

FR: Diana Waterbury, Golder Associates Inc. DSW

RE: VOLATILES DATA VALIDATION SUMMARY FOR
DATA PACKAGE: W0083-ITC-094, (943-1610.034, 094VOA.UP1)

INTRODUCTION

This memo presents the results of data validation on data package W0083-ITC-094 prepared by the International Technology Analytical Services. Sample information is provided in the following table.

SAMPLE ID	MEDIA	ANALYSIS	COMMENTS
B0BJ16	SOIL	VOLATILES	
B0BX94	SOIL	VOLATILES	EQUIPMENT BLANK
B0BX96	SOIL	VOLATILES	TRIP BLANK
B0BX97	SOIL	VOLATILES	
B0BX98*	SOIL	VOLATILES	DUPLICATE OF B0BX97
B0BX99	SOIL	VOLATILES	TRIP BLANK
B0BXB0	SOIL	VOLATILES	FIELD BLANK

* Indicates sample results which were 100% recalculated.

Data validation was conducted to level D in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1993). Attachments 1 through 5 provide the following information:

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.

Completeness. The data package was complete for all requested analyses. A total of seven (7) samples were validated in this data package with a total of 231 determinations reported, 167 of which were deemed valid. This results in a completeness of 72 percent which does not meets the work plan completeness objective of 90 percent.

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NOV 1994
RECEIVED

original validation date was 12-14-94 PFR

MEMORANDUM

TO: 200-UP-1 Round 1 Soil Project QA Record November 15, 1994

FR: Thomas Stapp, Golder Associates Inc.

RE: RADIOCHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE W0083-ITC-094 (943-1610.034 094RAD.UP1)

INTRODUCTION

This memo presents the results of data validation on data package W0083-ITC-094 prepared by International Technology Laboratory. Sample information is provided in the following table.

SAMPLE ID	COMMENTS	MEDIA	ANALYSIS
B0BX94	EQUIPMENT BLANK	SOIL	RADIOCHEMISTRY
B0BJ16		SOIL	
B0BX98*	DUPLICATE OF B0BX97	SOIL	SEE ATTACHMENT 4
B0BX97		SOIL	
* Indicates the sample results which were 100% recalculated.			

Data validation was conducted to level D in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1993). Attachments 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

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

Precision. Goals for precision were met.

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

Sample Result Verification. All sample results were supported in the raw data with the exception of carbon-14 which was not reported due to a deficiency of carbon in the samples.

Detection Limits. Detection limit goals were met for all results.

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W0083-ITC-094

RECORD COPY

MEMORANDUM

NOV 1994 RECEIVED Validation Log In

TO: 200-UP-1 Project QA Record

November 10, 1994

FR: Sandra Schildt, Golder Associates Inc.

RE: GENERAL CHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE W0083-ITC-094 (943-1610.034,094gen.up1)

INTRODUCTION

This memorandum presents the results of data validation on data package W0083-ITC-094 prepared by International Technology Corporation. A list of the samples validated along with the analytes reported and the method of analysis is provided in the following table.

SAMPLE ID	COMMENTS	MEDIA	ANALYSIS
B0BX94	EQUIP. BLANK	SOIL	GENERAL CHEMISTRY
B0BJ16		SOIL	
B0BX97*		SOIL	
B0BX98		SOIL	SEE ATTACHMENT 4
*Indicates the sample results which were 100% recalculated.			

Data validation was conducted to level D in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1993). Attachments 1 through 5 to this memo provide the following information:

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.

Completeness. The data package was complete for all requested analyses. Four samples (4) were validated in this data set with a total of 28 determinations reported, of which 20 were deemed valid. This results in a completeness of 71% which does not meet normal work plan objectives of 90%.

MAJOR DEFICIENCIES

Major deficiencies were identified during data validation which required qualification of data as unusable.

- The holding time for nitrite and phosphate analysis was exceeded by more than two times the maximum holding time (MHT) and sample results were undetected. Attachments 2 and 5 provide a summary of the samples and data qualification applied.

MINOR DEFICIENCIES

Minor deficiencies were identified during validation which required qualification of data.

- The holding time for nitrate analysis was exceeded by more than two times the MHT and nitrate was detected in the samples. Attachments 2 and 5 provide a summary of the samples and data qualification applied.

FIELD QUALITY CONTROL

- Sample B0BX94 was identified as an equipment blank. Chloride, nitrate, and sulfate were detected in the equipment blank. No qualification was applied in accordance with validation procedures.

REFERENCES

WHC 1994, Environmental and Waste Characterization Analytical Data Validation, Purchase Order MSH-SWV-315905; Validation Statement of Work, Revision 1.0, September 7, 1994; Westinghouse Hanford Company, Richland, Washington.

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

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ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

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 sample aliquot size, dilution factors 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 was not detected. Due to a minor quality control deficiency identified during data validation, the concentration reported 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 CRDL but greater then the 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.

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ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

PKG: W0083-ITC-094	REVIEWER: S. Schildt	DATE: 11/10/94	PAGE 1 OF 1
COMMENTS: General Chemistry			
PARAMETER	QUALIFIER	SAMPLES AFFECTED	REASON
Nitrite Phosphate	UR	All	Holding time grossly exceeded
Nitrate	J	All	Holding time grossly exceeded

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ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0083-ITC-094

	Samp#	B0BJ16		B0BX94		B0BX97		B0BX98	
	Date	6-1-94		5-31-94		6-9-94		6-9-94	
	Location	299-W19-35		299-W19-35		299-W19-35		299-W19-35	
	Depth	332.00 - 334.00		---		285.00 - 287.00		285.00 - 287.00	
	Type	SOIL		SOIL		SOIL		SOIL	
	Comments			EQUIP				DUPLI	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q
FLUORIDE	MG/KG	0.400	U	0.400	U	0.400	U	0.400	U
CHLORIDE	MG/KG	3.000		3.800		3.700		3.800	
NITRITE	MG/KG	0.400	UR	0.400	UR	0.400	UR	0.400	UR
NITRATE	MG/KG	1.500	J	0.500	J	14.000	J	14.000	J
PHOSPHATE	MG/KG	1.000	UR	1.000	UR	1.000	UR	1.000	UR
SULFATE	MG/KG	4.400		2.700		8.000		7.500	
NITRATE+NITRITE	MG-N/K	0.810		0.500	U	1.290		0.900	

The decimal places shown do not reflect the precision reported by the laboratory

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Revised 11/30/94

008

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0083
Contract Name:	Westinghouse Hanford	Job Number:	622
Client Sample ID:	BOBJ16	Preparation Date:	06/22/94
Lab Sample ID:	AB0336	Analysis Date:	06/27/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier Q	Detection Limit
fluoride	0.4	U	0.4
chloride	3.0	+	0.4
nitrite	0.4	~~U~~ UR	0.4
nitrate	1.5	~~+~~ J	0.4
phosphate	1.0	~~U~~ UR	1.0
sulfate	4.4	+	1.5

11/10/94

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0083
Contract Name:	Westinghouse Hanford	Job Number:	622
Client Sample ID:	BOBX94	Preparation Date:	06/22/94
Lab Sample ID:	AB0330	Analysis Date:	06/27/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier CQ	Detection Limit
fluoride	0.4	U	0.4
chloride	3.8	+	0.4
nitrite	0.4	~~U~~ UR	0.4
nitrate	0.5	~~+~~ J	0.4
phosphate	1.0	~~U~~ UR	1.0
sulfate	2.7	+	1.5

11/10/94

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0083
Contract Name:	Westinghouse Hanford	Job Number:	622
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	06/28/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	AB1758/P6352	0.50	U
BOBX94	AB0331	0.50	U
BOBJ16	AB0337	0.81	+

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

11/10/94

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0083
Contract Name:	Westinghouse Hanford	Job Number:	647
Client Sample ID:	BOBX97	Preparation Date:	06/22/94
Lab Sample ID:	AB0616	Analysis Date:	06/29/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Q	Detection Limit
fluoride	0.4	U		0.4
chloride	3.7	+		0.8
nitrite	0.4	~~U~~	UR	0.4
nitrate	14	~~+~~	J	4.0
phosphate	1.0	~~U~~	UR	1.0
sulfate	8.0	+		1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

11/10/94

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0083
Contract Name:	Westinghouse Hanford	Job Number:	647
Client Sample ID:	BOBX98	Preparation Date:	06/22/94
Lab Sample ID:	AB0610	Analysis Date:	06/29/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Q	Detection Limit
fluoride	0.4	U		0.4
chloride	3.8	+		0.4
nitrite	0.4	~~U~~	UR	0.4
nitrate	14	~~+~~	J	2.0
phosphate	1.0	~~U~~	UR	1.0
sulfate	7.5	+		1.5

11/10/94

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0083
Contract Name:	Westinghouse Hanford	Job Number:	647
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	06/28/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	AB1758/P6352	0.50	U
BOBX98	AB0611	0.90	+
BOBX97	AB0617	1.29	+

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

11/11/94

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ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

W0083-ITC-094

CERTIFICATE OF ANALYSIS

IT Corporation
2800 George Washington Way
Richland, WA 99352
Attn: Van Pettey

July 18, 1994

AUG 1994 RECEIVED SDLA

Job Number: 622 & 649

This is the Certificate of Analysis for the following samples:

SDG:	W0083
Client Project ID:	WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1
Date Received by Lab:	June 7 & June 14, 1994
Number of Samples:	Nine (9)
Sample Type:	Soil

I. Introduction

On June 7 and June 14, 1994, nine (9) soil samples arrived at ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report. Samples BOBX93 and BOBX95 were cancelled per Record of Disposition 94-00148, dated June 10, 1994.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Soil result are reported on a dry weight basis.

The samples were analyzed for Target Compound List (TCL) volatiles and semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 3/90 Statement of Work.

Reviewed and Approved:

Sheree' A. Schneider
Project Manager

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American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

11/10/94

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IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total cyanide in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for anions by ion chromatography using EPA method 300.0.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J & W DB-624 capillary column on a Finnigan INCOS 500 GC/MS/DS. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All QC results met method specified limits. The samples were extracted outside of holding time in accordance to ROD 94-00148.

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All QC results met method specified limits. The samples were extracted outside of holding time in accordance to ROD 94-00148.

Data were reported with qualifiers as follows:

U - Compound analyzed for but not detected; value given is quantitation limit.
E - Compound exceeded calibration range.
D - Compound analyzed at a secondary dilution factor.
J - Compound detected but below quantitation limit; value estimated.
S - Spiked compound.
B - Compound found in method blank.
A - Suspected aldol condensation product.
Y - Indistinguishable isomer in tentatively identified compounds.
N - Presumptive evidence of compound presence.

AHS 11/10/94

017

682-1-89

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

III. Quality Control (Continued)

The samples for work order #622 were digested on July 5, 1994 for ICP and June 22, 1994 for GFAA. The CVAA analysis for mercury was performed on June 27, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from June 22 through June 28, 1994; the remaining metals were analyzed by ICP on July 5, 1994. All run QC was acceptable. Samples are batched with QC from work order #647.

The samples for work order #649 were digested on June 15, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on June 21, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from June 16 through June 22, 1994; the remaining metals were analyzed by ICP on July 6, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number BOBX97. Spike recovery (accuracy) results were within acceptance limits for all parameters. Duplicate RPD (precision) results were within acceptance limits for all parameters except for zinc which exhibited a slight variation due to probable sample nonhomogeneity for this analyte.

Data were reported with qualifiers as follows:

"C" Qualifiers

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
B - Value greater than instrument detection limit, but less than contract required quantitation limit.

"Q" Qualifiers

* - Duplicate analysis outside control limits.
N - Spiked sample recovery outside control limits.
W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
S - The reported value was determined by method of standard additions.

"M" Qualifiers

P - Analysis performed by ICP.
V - Analysis performed by CVAA.
F - Analysis performed by GFAA.
C - Cyanide analysis by manual distillation/colorimetric determination.

AH 11/10/94

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682-1-89

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

III. Quality Control (Continued)

Miscellaneous

D - Duplicate.
S - Spike.
NR - Not required.
G - Native analyte > 4 times spike added, therefore, acceptance criteria do not apply.
X - Detection limits higher than normal due to sample matrix interferences.

The samples were analyzed for nitrate/nitrite on June 28, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All quality control results were acceptable.

The samples were analyzed for fluoride, chloride, phosphate, nitrate, nitrite and sulfate by EPA method 300.0 from June 27 through June 29, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All quality control results were acceptable.

AS 11/10/94

019

682-1-89

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AB0326	406042-01A	BOBX94	VOC
AB0327	406042-01B	"	SVOC
AB0328	406042-01C	"	METALS-T
AB0329	406042-01D	"	CYANIDE
AB0330	406042-01E	"	ANIONS
AB0331	406042-01F	"	NO_3NO_2
AB0344	406042-02A	BOBX95	VOC
AB0345	406042-03A	BOBX96	VOC
AB0332	406042-04A	BOBJ16	VOC
AB0333	406042-04B	"	SVOC
AB0334	406042-04C	"	METALS-T
AB0335	406042-04D	"	CYANIDE
AB0336	406042-04E	"	ANIONS
AB0337	406042-04F	"	NO_3NO_2
AB0338	406042-05A	BOBX93	VOC
AB0339	406042-05B	"	SVOC
AB0340	406042-05C	"	METALS-T
AB0341	406042-05D	"	CYANIDE
AB0342	406042-05E	"	ANIONS
AB0343	406042-05F	"	NO_3NO_2

11/10/94

020

682-1-89

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AB0606	406264-01A	BOBX98	VOC
AB0607	406264-01B	"	SVOC
AB0608	406264-01C	"	METALS-T
AB0674	406264-01D	"	CYANIDE
AB0610	406264-01E	"	ANIONS
AB0611	406264-01F	"	NO_3NO_2
AB0612	406264-02A	BOBX97	VOC
AB0613	406264-02B	"	SVOC
AB0614	406264-02C	"	METALS-T
AB0615	406264-02D	"	CYANIDE
AB0616	406264-02E	"	ANIONS
AB0617	406264-02F	"	NO_3NO_2
AB0618	406264-03A	BOBX99	VOC
AB0619	406264-04A	BOBXB0	VOC

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

IV. Certification

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

Reviewed and Approved:

Sheree A. Schneider

Sheree' A. Schneider
Project Manager

11/10/94

022
682-1-89

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-94-00148
Record of Disposition No.

DATE: 06/10/94	LABORATORY: IT
PROJECT TITLE/NO.: 200-UP-1 Soil Sampling-Round 1 (SAF 94-046)	NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS: B0BJ16, B0BX93, B0BX94, B0BX95, B0BX96

DESCRIPTION OF EVENT:
On 6/07/94, IT was instructed to postpone the analysis of samples received on 6/04/94 until further notice from WHC.

DISPOSITION OF SAMPLES:
Per the technical representative, IT is to cancel the analysis of samples B0BX95, and B0BX93. The analysis of B0BJ16, B0BX94, and B0BX96 is to continue.

APPROVAL SIGNATURES:

J.A. Lerch — 6/10/94
HASM Project Coordinator (Print/Sign Name) — Date

B.E. Innis
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

11/10/94

9613476.1668

0000009

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WO#642

WORK ORDER NUMBER: 4062642, 3, 4 DATE INITIATED: 6/13/94

INITIATED BY: TGilmore

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 6/13/94 1045

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
BOBX97		CN
BOBX99		Voa
BOBXBO		Voa

Samples were received with the following deficiencies:

- ☐ 1. Not enough sample received for proper analysis.
- ☐ 2. Sample received without proper preservative.
- ☐ 3. No sample received in container.
- ☐ 4. Sample received without a RFA/COC form.
- ☐ 5. No sample ID on container.
- ☐ 6. Sample received broken or leaking.
- ☐ 7. Holding time exceeded at receipt.
- ☐ 8. Custody tape broken.
- ☐ 9. COC not relinquished by client.
- ☐ 10. Sample information on container does not match sample information on the paper work (Explain below).
- ☐ 11. All shipping containers (coolers) on waybill not received with shipment.
  - ☐ RFA/COC received
  - ☐ RFA/COC not received
- ☑ 12. Other (Explain below).

NOTES: containes has no lable. All other containers are accounted for and match COC. BOBX99, BOBXBO were not screened. Voa Samples supplied without separate aliquot.

SUPERVISOR REVIEW: _____

PROJECT MANAGER REVIEW: _____

TELEPHONED TO: _____ ON _____ BY _____

TELEFAXED TO: _____ ON _____ BY _____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

11/10/94

FORM NO. LS-023, 3/92, Rev. 0

024

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#622

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: 6W5-015	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0-	Bill of Lading/Air Bill No.:
Possible Sample Hazards/Remarks: NONE OBSERVED		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4	COOL 4		
Type of Container	aGs	aG	G	G	G	G	P/G	P/G			aGs	aGs	aGs		
No. of Container(s)	1	1	1	1	1	1	1	1			1	1	1		
Volume	125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml			125ml	250ml	40ml		
SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)	*1	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		
406042	05A	B	C	D	E	F	40604303								

Sample No.	Matrix*	Date Sampled	Time Sampled														
BORX93	S	6-2-94	1245	X	X	X	X	X	X	X	X					X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: W. V. Setzer	Date/Time: 6/2/94 1405	Received By: A. J. Simpson	Date/Time: 6/2/94 1405
Relinquished By: Karen C. Hoppe for Amy Simpson	Date/Time: 6394 0957	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540) Ultimate custodian relinquished custody of samples in custody due to illness of the shipping facility custodian. Samples stored at shipping facility in refrigerator prior to delivery to the laboratory. [illegible] 6-3-94

LOWEST HOLDING TIME = 7DAYS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION	Received By: [illegible]	Title: ITAS	Date/Time: 6/3/94 1430
FINAL SAMPLE DISPOSITION	Disposal Method:	Disposed By:	Date/Time:

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

0000027

96134676.1660

11/10/94

025

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#622

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: GWS-015	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0-	Bill of Lading/Air Bill No.:
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4	COOL 4		
Type of Container	aGs	aG	G	G	G	G	P/G	P/G			aGs	aGs	aGs		
No. of Container(s)	1	1	1	1	1	1	1	1			1	1	1		
Volume	125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml			125ml	250ml	40ml		
SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)	*1	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		
406042	A	B	C	D	E	F	406043								

Sample No.	Matrix*	Date Sampled	Time Sampled														
~~BOBX93~~	~~S~~			~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~					~~X~~	WVS 5-31-94
BOBX94 01	S	5-31-94	1010	X	X	X	X	X	X	X 01	X					X	
BOBX95 2	S	5-31-94	0940											X 02A			
BOBX96 3	S	5-31-94	0730									X 02A					
~~BOBX97~~	~~S~~			~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~					~~X~~	WVS 5/31/94
BOBJ16 4	S	6-1-94	1043	X	X	X	X	X	X	X 02	X					X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
W. V. Setzer	6-1-94 1409	A. F. Simpson	6/1/94 1469
Lorenc Hogers for Amy Simpson	6-3-94 0945	[illegible]	6/3/94

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540). Alternate custodian relinquished custody of samples for preservation due to illness of the shipping/receiving custodian. Samples stored at [illegible] in the refrigerator prior to delivery to the laboratory [illegible] 6-3-94.

LOWEST HOLDING TIME = 7DAYS

Matrix*
- S = Soil
- SE = Sediment
- SO = Solid
- SL = Sludge
- W = Water
- O = Oil
- A = Air
- DS = Drum Solids
- DL = Drum Liquids
- T = Tissue
- WI = Wipe
- L = Liquid
- V = Vegetation
- X = Other

LABORATORY SECTION	Received By	Title	Date/Time
	[illegible]	IVAS	6/3/94 1430

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

0000028

9413976.1670

11/10/94

026

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#647

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: ER-1D	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0- 0544-38	Bill of Lading/Air Bill No.
Possible Sample Hazards/Remarks: NONE OBSERVED		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE	Rot 3C LCS 6/7/94	

Sample No.	Matrix*	Date Sampled	Time Sampled	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)	*1	*1	VOA TRIP	VOA FIELD	ACTIVIY SCAN
Preservative				COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4
Type of Container				aGs	aG	G	G	G	G	P/G	P/G	aGs	aGs	aGs
No. of Container(s)				1	1	1	1	1	1	1	1	1	1	1
Volume				125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml	125ml	250ml	40ml
SAMPLE ANALYSIS				6/13/94 A	B	C	D	E	F	4062265				
4062264														
BOBX98 01	S	6-9-94	0940	✓	✓	✓	✓	✓	✓	01 ✓	✓			✓
BOBX97 2	S	6-9-94	0940	✓	✓	✓	✓	✓	✓	02 ✓	✓			✓
BOBX99 3A	S	6-9-94	0840									✓		
BOBXB0 4A	S	6-9-94	0900										✓	

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: W. V. Setzer		6-9-94 1205
Received By: L Sweeney L Sweeney		6/9/94 1205
Relinquished By: L Sweeney L Sweeney		6/9/94 1300
Received By: A J Simpson		6/9/94 1300
Relinquished By: A J Simpson		6/13/94 1035
Received By: R Kentzer IT		6-13-94 1045
Relinquished By:		
Received By:		

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540)

SDG W0083

LOWEST HOLDING TIME = 7DAYS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

0000029

9413764.1671

11/10/94

027

9613476.1672

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-1		DATA PACKAGE: W0083-ITC-094	
VALIDATOR: L. Schulz	LAB: IT		DATE: 11/9/94
CASE: 622,647		SDG: W0083	

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 B0BX94, B0BJ16, B0BX98, B0BX97/aqueous

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: Holding time for NO_2, NO_3, PO_4 exceeded, result qualified (J, UR)

029

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION

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

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

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

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

Comments:

4. BLANKS

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

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

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

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

Comments: Chloride, nitrate and sulfate in equip blank

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 12/13/94

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

Comments: No LCS for NO_3/NO_2. No qualification required: all other LCS performed at the required frequency.

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)

Reviewed 12/13

030

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

Comments:

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:

HOLDING TIME SUMMARY

SDG: W0083-ITC-094 | VALIDATOR: S. Sahlolt | DATE: 11/9/94 | 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
BOBX94	NO_3/NO_2	5/31/94	NA	6/28/94	—	28	none
BOBJ16	↓	6/1/94	↓	↓	—	27	↓
BOBX97,98	↓	6/9/94	↓	↓	—	19	↓
BOBX94	F, Cl, SO_4 anions	5/31/94	6/22/94	6/27/94	22	5	none
BOBJ16	F, Cl, SO_4 anions	6/1/94	6/22/94	6/27/94	21	5	↓
BOBX97,98	F, Cl, SO_4 anions	6/9/94	6/22/94	6/29/94	13	7	↓
BOBX94	NO_2, PO_4	5/31/94	6/22/94	6/27/94	22	5	UR
BOBJ16	↓	6/1/94	↓	6/27/94	21	5	↓
BOBX97,98	↓	6/9/94	↓	6/29/94	13	7	↓
BOBX94	NO_3	5/31/94	↓	6/27/94	22	5	J
BOBJ16	↓	6/1/94	↓	6/27/94	21	5	↓
BOBX97,98	↓	6/9/94	↓	6/29/94	13	7	↓

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W0083-ITC-094

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MEMORANDUM

TO: 200-UP-1 Round 1 Soil, Project QA Record November 16, 1994

FR: Diana Waterbury, Golder Associates Inc. DSW

RE: SEMIVOLATILES DATA VALIDATION SUMMARY FOR
DATA PACKAGE: W0083-ITC-094, (943-1610.034, 094SVOA.UP1)

INTRODUCTION

This memo presents the results of data validation on data package W0083-ITC-094 prepared by the International Technology Analytical Services. Sample information is provided in the following table.

SAMPLE ID	MEDIA	ANALYSIS	COMMENTS
B0BJ16	SOIL	Semivolatiles	
B0BX94	SOIL	Semivolatiles	equip. blank
B0BX97	SOIL	Semivolatiles	
B0BX98*	SOIL	Semivolatiles	duplicate of B0BX97

* Indicates sample results which were 100% recalculated.

Data validation was conducted to level D in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1993). Attachments 1 through 5 provide the following information:

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.

Completeness. The data package was complete for all requested analyses. A total of five (5) samples were validated in this data package with a total of 320 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets the work plan completeness objective of 90 percent.

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.

Holding Times

- The holding time for samples B0BJ16 and B0BX94 was exceeded. Attachments 2 and 5 provide a summary of the data qualifications applied and supporting documentation.

Continuing Calibrations Verification

- The continuing calibration verifications percent difference for N-nitroso-di-n-propylamine, pentachlorophenol, benzo(b)fluoranthene, and benzo(k)fluoranthene percent difference (%D) was unacceptable. Attachment 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

FIELD QC

- Sample B0BX94 was identified as an equipment blank. There were no target analytes detected in the sample which required qualifications of data.

- Sample B0BX98 was identified as a field duplicate of sample B0BX97. All relative percent difference (%RPD) were within control limits.

TENTATIVELY IDENTIFIED COMPOUNDS

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 estimated (UJN).

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

Revised 11/30/94

REFERENCES

WHC 1994, Environmental and Waste Characterization Analytical Data Validation, Purchase Order MSH-SWV-315905; Validation Statement of Work, Revision 1.0, September 7, 1994; Westinghouse Hanford Company, Richland, Washington.

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

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ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

ATTACHMENT 1. GLOSSARY OF 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.

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ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

ATTACHMENT 2 - SUMMARY OF DATA QUALIFICATIONS

SDG: W0083-ITC-094	BY: D. Waterbury	DATE: 11/16/94	PAGE 1 OF 1
COMMENTS: SEMIVOLATILE ORGANICS			
COMPOUND/ ANALYTE	QUALIFIER	SAMPLES AFFECTED	REASON
ALL	UJ	B0BJ16	HOLDING TIMES.
	UJ	B0BX94	
N-Nitroso-di-n-propylamine	UJ	B0BJ16	CONTINUING CALIBRATIONS.
	UJ	B0BX94	
	UJ	B0BX97	
	UJ	B0BX98	
Pentachlorophenol	UJ	B0BJ16	CONTINUING CALIBRATIONS.
	UJ	B0BX94	
	UJ	B0BX97	
	UJ	B0BX98	
Benzo (b) fluoranthene	UJ	B0BJ16	CONTINUING CALIBRATIONS.
	UJ	B0BX94	
	UJ	B0BX97	
	UJ	B0BX98	
Benzo (k) fluoranthene	UJ	B0BJ16	CONTINUING CALIBRATIONS.
	UJ	B0BX94	
	UJ	B0BX97	
	UJ	B0BX98	

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ATTACHMENT 3

QUALIFIED DATA SUMMARY and ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0083-ITC-094

	Samp#	B0BJ16		B0BX94		B0BX97		B0BX98	
	Date	6-1-94		5-31-94		6-9-94		6-9-94	
	Location	299-W19-34B		699-38-68A		699-38-68A		699-38-68A	
	Depth	332.00 - 334.00		---		285.00 - 287.00		285.00 - 287.00	
	Type	SOIL		SOIL		SOIL		SOIL	
	Comments			EQUIP.BLANK				DUPLICATE	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q
PHENOL	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
2-CHLOROPHENOL	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
1,3-DICHLOROBENZENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
1,4-DICHLOROBENZENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
1,2-DICHLOROBENZENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
2-METHYLPHENOL	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
4-METHYLPHENOL	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	400.000	UJ	330.000	UJ	370.000	UJ	410.000	UJ
HEXACHLOROETHANE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
NITROBENZENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
ISOPHORONE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
2-NITROPHENOL	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
2,4-DIMETHYLPHENOL	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
2,4-DICHLOROPHENOL	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
1,2,4-TRICHLOROBENZENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
NAPHTHALENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
4-CHLOROANILINE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
HEXACHLOROBUTADIENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
4-CHLORO-3-METHYLPHENOL	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
2-METHYLNAPHTHALENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
2,4,6-TRICHLOROPHENOL	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
2,4,5-TRICHLOROPHENOL	UG/KG	960.000	UJ	790.000	UJ	900.000	U	980.000	U
2-CHLORONAPHTHALENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
2-NITROANILINE	UG/KG	960.000	UJ	790.000	UJ	900.000	U	980.000	U
DIMETHYLPHTHALATE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
ACENAPHTHYLENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
2,6-DINITROTOLUENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
3-NITROANILINE	UG/KG	960.000	UJ	790.000	UJ	900.000	U	980.000	U
ACENAPHTHENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
2,4-DINITROPHENOL	UG/KG	960.000	UJ	790.000	UJ	900.000	U	980.000	U
4-NITROPHENOL	UG/KG	960.000	UJ	790.000	UJ	900.000	U	980.000	U
DIBENZOFURAN	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
2,4-DINITROTOLUENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
DIETHYLPHTHALATE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
FLUORENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
4-NITROANILINE	UG/KG	960.000	UJ	790.000	UJ	900.000	U	980.000	U

The decimal places shown do not reflect the precision reported by the laboratory

DBW 11-15-94

Validated Data Summary, Data Package: W0083-ITC-094

	Samp#	B0BJ16		B0BX94		B0BX97		B0BX98	
	Date	6-1-94		5-31-94		6-9-94		6-9-94	
	Location	299-W19-34B		699-38-68A		699-38-68A		699-38-68A	
	Depth	332.00 - 334.00		---		285.00 - 287.00		285.00 - 287.00	
	Type	SOIL		SOIL		SOIL		SOIL	
	Comments			EQUIP.BLANK				DUPLICATE	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q
4,6-DINITRO-2-METHYLPHENOL	UG/KG	960.000	UJ	790.000	UJ	900.000	U	980.000	U
N-NITROSODIPHENYLAMINE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
HEXACHLOROBENZENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
PENTACHLOROPHENOL	UG/KG	960.000	UJ	790.000	UJ	900.000	UJ	980.000	UJ
PHENANTHRENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
ANTHRACENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
CARBAZOLE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
DI-N-BUTYLPHTHALATE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
FLUORANTHENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
PYRENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
BUTYLBENZYLPHTHALATE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
3,3'-DICHLOROBENZIDINE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
BENZO(A)ANTHRACENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
CHRYSENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	110.000	J	53.000	J	370.000	U	81.000	J
DI-N-OCTYLPHTHALATE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
BENZO(B)FLUORANTHENE	UG/KG	400.000	UJ	330.000	UJ	370.000	UJ	410.000	UJ
BENZO(K)FLUORANTHENE	UG/KG	400.000	UJ	330.000	UJ	370.000	UJ	410.000	UJ
BENZO(A)PYRENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
INDENO(1,2,3-CD)PYRENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
DIBENZ(A,H)ANTHRACENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U
BENZO(G,H,I)PERYLENE	UG/KG	400.000	UJ	330.000	UJ	370.000	U	410.000	U

The decimal places shown do not reflect the precision reported by the laboratory

Received 1/30/94

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ16

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0333

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AB0333

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: 17 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	~~U~~ UJ
111-44-4	bis(2-Chloroethyl)Ether	400	~~U~~
95-57-8	2-Chlorophenol	400	~~U~~
541-73-1	1,3-Dichlorobenzene	400	~~U~~
106-46-7	1,4-Dichlorobenzene	400	~~U~~
95-50-1	1,2-Dichlorobenzene	400	~~U~~
95-48-7	2-Methylphenol	400	~~U~~
108-60-1	2,2'-oxybis(1-Chloropropane)	400	~~U~~
106-44-5	4-Methylphenol	400	~~U~~
621-64-7	N-Nitroso-Di-n-Propylamine	400	~~U~~
67-72-1	Hexachloroethane	400	~~U~~
98-95-3	Nitrobenzene	400	~~U~~
78-59-1	Isophorone	400	~~U~~
88-75-5	2-Nitrophenol	400	~~U~~
105-67-9	2,4-Dimethylphenol	400	~~U~~
111-91-1	bis(2-Chloroethoxy)Methane	400	~~U~~
120-83-2	2,4-Dichlorophenol	400	~~U~~
120-82-1	1,2,4-Trichlorobenzene	400	~~U~~
91-20-3	Naphthalene	400	~~U~~
106-47-8	4-Chloroaniline	400	~~U~~
87-68-3	Hexachlorobutadiene	400	~~U~~
59-50-7	4-Chloro-3-Methylphenol	400	~~U~~
91-57-6	2-Methylnaphthalene	400	~~U~~
77-47-4	Hexachlorocyclopentadiene	400	~~U~~
88-06-2	2,4,6-Trichlorophenol	400	~~U~~
95-95-4	2,4,5-Trichlorophenol	960	~~U~~
91-58-7	2-Chloronaphthalene	400	~~U~~
88-74-4	2-Nitroaniline	960	~~U~~
131-11-3	Dimethylphthalate	400	~~U~~
208-96-8	Acenaphthylene	400	~~U~~
606-20-2	2,6-Dinitrotoluene	400	~~U~~
99-09-2	3-Nitroaniline	960	~~U~~
83-32-9	Acenaphthene	400	~~U~~ UJ

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ16

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0333

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AB0333

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: 17 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND		Q
51-28-5	2,4-Dinitrophenol	960	~~U~~ UJ
100-02-7	4-Nitrophenol	960	~~U~~
132-64-9	Dibenzofuran	400	~~U~~
121-14-2	2,4-Dinitrotoluene	400	~~U~~
84-66-2	Diethylphthalate	400	~~U~~
7005-72-3	4-Chlorophenyl-phenylether	400	~~U~~
86-73-7	Fluorene	400	~~U~~
100-01-6	4-Nitroaniline	960	~~U~~
534-52-1	4,6-Dinitro-2-Methylphenol	960	~~U~~
86-30-6	N-Nitrosodiphenylamine (1)	400	~~U~~
101-55-3	4-Bromophenyl-phenylether	400	~~U~~
118-74-1	Hexachlorobenzene	400	~~U~~
87-86-5	Pentachlorophenol	960	~~U~~
85-01-8	Phenanthrene	400	~~U~~
120-12-7	Anthracene	400	~~U~~
86-74-8	Carbazole	400	~~U~~
84-74-2	Di-n-Butylphthalate	400	~~U~~
206-44-0	Fluoranthene	400	~~U~~
129-00-0	Pyrene	400	~~U~~
85-68-7	Butylbenzylphthalate	400	~~U~~
91-94-1	3,3'-Dichlorobenzidine	400	~~U~~
56-55-3	Benzo(a)Anthracene	400	~~U~~
218-01-9	Chrysene	400	~~U~~
117-81-7	bis(2-Ethylhexyl)Phthalate	110	~~J~~ J
117-84-0	Di-n-Octyl Phthalate	400	~~U~~ UJ
205-99-2	Benzo(b)Fluoranthene	400	~~U~~
207-08-9	Benzo(k)Fluoranthene	400	~~U~~
50-32-8	Benzo(a)Pyrene	400	~~U~~
193-39-5	Indeno(1,2,3-cd)Pyrene	400	~~U~~
53-70-3	Dibenz(a,h)Anthracene	400	~~U~~
191-24-2	Benzo(g,h,i)Perylene	400	~~U~~ UJ

(1) - Cannot be separated from Diphenylamine

Revised 11/29/94

FORM I SV-2 3/90

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ16

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0333

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AB0333

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: 17 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

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-MET	4.13	8100	~~BJNA~~	UR
2.	UNKNOWN	17.58	120	~~J~~	JN
3.	UNKNOWN	18.42	110	~~J~~	UJ
4.	UNKNOWN	19.02	120	~~J~~	UJ

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX94

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0327

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AB0327

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	790	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	790	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	790	U
83-32-9	Acenaphthene	330	U

9613476.1691

0000049 RSH

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX94

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0327

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AB0327

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	790	U UJ
100-02-7	4-Nitrophenol	790	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	790	U
534-52-1	4,6-Dinitro-2-Methylphenol	790	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	790	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	53	J J
117-84-0	Di-n-Octyl Phthalate	330	U UJ
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 UJ

(1) - Cannot be separated from Diphenylamine

Reviewed 1/29/94

FORM I SV-2

3/90

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBX94

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0327

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AB0327

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

Number TICs found: 7

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-MET	4.13	7300	~~ABJN~~ UR
2.	UNKNOWN	7.43	67	~~AJ~~ UR
3.	UNKNOWN	17.58	140	~~J~~ JN
4.	UNKNOWN	18.43	110	~~J~~ U
5.	UNKNOWN	19.02	78	~~J~~ JN
6.	UNKNOWN	19.08	93	~~J~~ JN
7.	UNKNOWN	19.67	83	~~J~~ JN

9613476.1693

0000051 DSW

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX97

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0613

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AB0613

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: 11 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
108-95-2	Phenol	370	U	
111-44-4	bis(2-Chloroethyl)Ether	370	U	
95-57-8	2-Chlorophenol	370	U	
541-73-1	1,3-Dichlorobenzene	370	U	
106-46-7	1,4-Dichlorobenzene	370	U	
95-50-1	1,2-Dichlorobenzene	370	U	
95-48-7	2-Methylphenol	370	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	370	U	
106-44-5	4-Methylphenol	370	U	
621-64-7	N-Nitroso-Di-n-Propylamine	370	~~U~~	UJ
67-72-1	Hexachloroethane	370	U	
98-95-3	Nitrobenzene	370	U	
78-59-1	Isophorone	370	U	
88-75-5	2-Nitrophenol	370	U	
105-67-9	2,4-Dimethylphenol	370	U	
111-91-1	bis(2-Chloroethoxy)Methane	370	U	
120-83-2	2,4-Dichlorophenol	370	U	
120-82-1	1,2,4-Trichlorobenzene	370	U	
91-20-3	Naphthalene	370	U	
106-47-8	4-Chloroaniline	370	U	
87-68-3	Hexachlorobutadiene	370	U	
59-50-7	4-Chloro-3-Methylphenol	370	U	
91-57-6	2-Methylnaphthalene	370	U	
77-47-4	Hexachlorocyclopentadiene	370	U	
88-06-2	2,4,6-Trichlorophenol	370	U	
95-95-4	2,4,5-Trichlorophenol	900	U	
91-58-7	2-Chloronaphthalene	370	U	
88-74-4	2-Nitroaniline	900	U	
131-11-3	Dimethylphthalate	370	U	
208-96-8	Acenaphthylene	370	U	
606-20-2	2,6-Dinitrotoluene	370	U	
99-09-2	3-Nitroaniline	900	U	
83-32-9	Acenaphthene	370	U	

9613476.1694

0000052 NSW

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX97

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0613

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AB0613

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: 11 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
51-28-5	2,4-Dinitrophenol	900	U	
100-02-7	4-Nitrophenol	900	U	
132-64-9	Dibenzofuran	370	U	
121-14-2	2,4-Dinitrotoluene	370	U	
84-66-2	Diethylphthalate	370	U	
7005-72-3	4-Chlorophenyl-phenylether	370	U	
86-73-7	Fluorene	370	U	
100-01-6	4-Nitroaniline	900	U	
534-52-1	4,6-Dinitro-2-Methylphenol	900	U	
86-30-6	N-Nitrosodiphenylamine (1)	370	U	
101-55-3	4-Bromophenyl-phenylether	370	U	
118-74-1	Hexachlorobenzene	370	U	
87-86-5	Pentachlorophenol	900	~~U~~	UJ
85-01-8	Phenanthrene	370	U	
120-12-7	Anthracene	370	U	
86-74-8	Carbazole	370	U	
84-74-2	Di-n-Butylphthalate	370	U	
206-44-0	Fluoranthene	370	U	
129-00-0	Pyrene	370	U	
85-68-7	Butylbenzylphthalate	370	U	
91-94-1	3,3'-Dichlorobenzidine	370	U	
56-55-3	Benzo(a)Anthracene	370	U	
218-01-9	Chrysene	370	U	
117-81-7	bis(2-Ethylhexyl)Phthalate	370	U	
117-84-0	Di-n-Octyl Phthalate	370	U	
205-99-2	Benzo(b)Fluoranthene	370	~~U~~	UJ
207-08-9	Benzo(k)Fluoranthene	370	~~U~~	UJ
50-32-8	Benzo(a)Pyrene	370	U	
193-39-5	Indeno(1,2,3-cd)Pyrene	370	U	
53-70-3	Dibenz(a,h)Anthracene	370	U	
191-24-2	Benzo(g,h,i)Perylene	370	U	

(1) - Cannot be separated from Diphenylamine

9613476.1695

0000053 KSW

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBX97

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0613

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AB0613

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: 11 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

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

Number TICs found: 6

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-MET	4.12	6500	~~ABJN~~	UR
2.	UNKNOWN	17.58	190	~~J~~	JN
3.	UNKNOWN	18.42	180	~~J~~	UJ
4.	UNKNOWN	19.02	180	~~J~~	JN
5.	UNKNOWN	20.20	82	~~J~~	JN
6.	UNKNOWN	21.32	87	~~J~~	JN

9613476.1696

0000054 KSW

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX98

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0607

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AB0607

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: 19 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	410	U
111-44-4	bis(2-Chloroethyl)Ether	410	U
95-57-8	2-Chlorophenol	410	U
541-73-1	1,3-Dichlorobenzene	410	U
106-46-7	1,4-Dichlorobenzene	410	U
95-50-1	1,2-Dichlorobenzene	410	U
95-48-7	2-Methylphenol	410	U
108-60-1	2,2'-oxybis(1-Chloropropane)	410	U
106-44-5	4-Methylphenol	410	U
621-64-7	N-Nitroso-Di-n-Propylamine	410	~~U~~ UJ
67-72-1	Hexachloroethane	410	U
98-95-3	Nitrobenzene	410	U
78-59-1	Isophorone	410	U
88-75-5	2-Nitrophenol	410	U
105-67-9	2,4-Dimethylphenol	410	U
111-91-1	bis(2-Chloroethoxy)Methane	410	U
120-83-2	2,4-Dichlorophenol	410	U
120-82-1	1,2,4-Trichlorobenzene	410	U
91-20-3	Naphthalene	410	U
106-47-8	4-Chloroaniline	410	U
87-68-3	Hexachlorobutadiene	410	U
59-50-7	4-Chloro-3-Methylphenol	410	U
91-57-6	2-Methylnaphthalene	410	U
77-47-4	Hexachlorocyclopentadiene	410	U
88-06-2	2,4,6-Trichlorophenol	410	U
95-95-4	2,4,5-Trichlorophenol	980	U
91-58-7	2-Chloronaphthalene	410	U
88-74-4	2-Nitroaniline	980	U
131-11-3	Dimethylphthalate	410	U
208-96-8	Acenaphthylene	410	U
606-20-2	2,6-Dinitrotoluene	410	U
99-09-2	3-Nitroaniline	980	U
83-32-9	Acenaphthene	410	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBX98

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0607

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AB0607

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: 19 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
51-28-5	2,4-Dinitrophenol	980	U	
100-02-7	4-Nitrophenol	980	U	
132-64-9	Dibenzofuran	410	U	
121-14-2	2,4-Dinitrotoluene	410	U	
84-66-2	Diethylphthalate	410	U	
7005-72-3	4-Chlorophenyl-phenylether	410	U	
86-73-7	Fluorene	410	U	
100-01-6	4-Nitroaniline	980	U	
534-52-1	4,6-Dinitro-2-Methylphenol	980	U	
86-30-6	N-Nitrosodiphenylamine (1)	410	U	
101-55-3	4-Bromophenyl-phenylether	410	U	
118-74-1	Hexachlorobenzene	410	U	
87-86-5	Pentachlorophenol	980	~~U~~	UJ
85-01-8	Phenanthrene	410	U	
120-12-7	Anthracene	410	U	
86-74-8	Carbazole	410	U	
84-74-2	Di-n-Butylphthalate	410	U	
206-44-0	Fluoranthene	410	U	
129-00-0	Pyrene	410	U	
85-68-7	Butylbenzylphthalate	410	U	
91-94-1	3,3'-Dichlorobenzidine	410	U	
56-55-3	Benzo(a)Anthracene	410	U	
218-01-9	Chrysene	410	U	
117-81-7	bis(2-Ethylhexyl)Phthalate	81	J	
117-84-0	Di-n-Octyl Phthalate	410	U	
205-99-2	Benzo(b)Fluoranthene	410	~~U~~	UJ
207-08-9	Benzo(k)Fluoranthene	410	~~U~~	UJ
50-32-8	Benzo(a)Pyrene	410	U	
193-39-5	Indeno(1,2,3-cd)Pyrene	410	U	
53-70-3	Dibenz(a,h)Anthracene	410	U	
191-24-2	Benzo(g,h,i)Perylene	410	U	

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBX98

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 647 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB0607

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AB0607

Level: (low/med) LOW Date Received: 06/14/94

% Moisture: 19 decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/10/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

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-MET	4.12	6600	~~ABJN~~ UE
2.	UNKNOWN	17.57	210	~~J~~ JN
3.	UNKNOWN	18.42	180	~~J~~ UJ
4.	UNKNOWN	19.02	170	~~J~~ JN
5.	UNKNOWN	21.75	85	~~J~~ JN

9613476.1699

ATTACHMENT 4

LABORATORY NARRATIVE and CHAIN-OF-CUSTODY DOCUMENTATION

9613476.1700

0000000 TOSW

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT Corporation
2800 George Washington Way
Richland, WA 99352
Attn: Van Pettey

July 18, 1994

AUG 1994 RECEIVED SOLA

Job Number: 622 & 649

This is the Certificate of Analysis for the following samples:

SDG:	W0083
Client Project ID:	WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1
Date Received by Lab:	June 7 & June 14, 1994
Number of Samples:	Nine (9)
Sample Type:	Soil

I. Introduction

On June 7 and June 14, 1994, nine (9) soil samples arrived at ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report. Samples BOBX93 and BOBX95 were cancelled per Record of Disposition 94-00148, dated June 10, 1994.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Soil result are reported on a dry weight basis.

The samples were analyzed for Target Compound List (TCL) volatiles and semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 3/90 Statement of Work.

Reviewed and Approved:

Sheree' A. Schneider
Project Manager

RECORD COPY

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total cyanide in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for anions by ion chromatography using EPA method 300.0.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J & W DB-624 capillary column on a Finnigan INCOS 500 GC/MS/DS. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All QC results met method specified limits. The samples were extracted outside of holding time in accordance to ROD 94-00148.

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All QC results met method specified limits. The samples were extracted outside of holding time in accordance to ROD 94-00148.

Data were reported with qualifiers as follows:

U - Compound analyzed for but not detected; value given is quantitation limit.
E - Compound exceeded calibration range.
D - Compound analyzed at a secondary dilution factor.
J - Compound detected but below quantitation limit; value estimated.
S - Spiked compound.
B - Compound found in method blank.
A - Suspected aldol condensation product.
Y - Indistinguishable isomer in tentatively identified compounds.
N - Presumptive evidence of compound presence.

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

III. Quality Control (Continued)

The samples for work order #622 were digested on July 5, 1994 for ICP and June 22, 1994 for GFAA. The CVAA analysis for mercury was performed on June 27, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from June 22 through June 28, 1994; the remaining metals were analyzed by ICP on July 5, 1994. All run QC was acceptable. Samples are batched with QC from work order #647.

The samples for work order #649 were digested on June 15, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on June 21, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from June 16 through June 22, 1994; the remaining metals were analyzed by ICP on July 6, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number BOBX97. Spike recovery (accuracy) results were within acceptance limits for all parameters. Duplicate RPD (precision) results were within acceptance limits for all parameters except for zinc which exhibited a slight variation due to probable sample nonhomogeneity for this analyte.

Data were reported with qualifiers as follows:

"C" Qualifiers

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
B - Value greater than instrument detection limit, but less than contract required quantitation limit.

"Q" Qualifiers

* - Duplicate analysis outside control limits.
N - Spiked sample recovery outside control limits.
W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
S - The reported value was determined by method of standard additions.

"M" Qualifiers

P - Analysis performed by ICP.
V - Analysis performed by CVAA.
F - Analysis performed by GFAA.
C - Cyanide analysis by manual distillation/colorimetric determination.

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

III. Quality Control (Continued)

Miscellaneous

D - Duplicate.
S - Spike.
NR - Not required.
G - Native analyte > 4 times spike added, therefore, acceptance criteria do not apply.
X - Detection limits higher than normal due to sample matrix interferences.

The samples were analyzed for nitrate/nitrite on June 28, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All quality control results were acceptable.

The samples were analyzed for fluoride, chloride, phosphate, nitrate, nitrite and sulfate by EPA method 300.0 from June 27 through June 29, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All quality control results were acceptable.

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AB0326	406042-01A	BOBX94	VOC
AB0327	406042-01B	"	SVOC
AB0328	406042-01C	"	METALS-T
AB0329	406042-01D	"	CYANIDE
AB0330	406042-01E	"	ANIONS
AB0331	406042-01F	"	NO_3NO_2
AB0344	406042-02A	BOBX95	VOC
AB0345	406042-03A	BOBX96	VOC
AB0332	406042-04A	BOBJ16	VOC
AB0333	406042-04B	"	SVOC
AB0334	406042-04C	"	METALS-T
AB0335	406042-04D	"	CYANIDE
AB0336	406042-04E	"	ANIONS
AB0337	406042-04F	"	NO_3NO_2
AB0338	406042-05A	BOBX93	VOC
AB0339	406042-05B	"	SVOC
AB0340	406042-05C	"	METALS-T
AB0341	406042-05D	"	CYANIDE
AB0342	406042-05E	"	ANIONS
AB0343	406042-05F	"	NO_3NO_2

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AB0606	406264-01A	BOBX98	VOC
AB0607	406264-01B	"	SVOC
AB0608	406264-01C	"	METALS-T
AB0674	406264-01D	"	CYANIDE
AB0610	406264-01E	"	ANIONS
AB0611	406264-01F	"	NO_3NO_2
AB0612	406264-02A	BOBX97	VOC
AB0613	406264-02B	"	SVOC
AB0614	406264-02C	"	METALS-T
AB0615	406264-02D	"	CYANIDE
AB0616	406264-02E	"	ANIONS
AB0617	406264-02F	"	NO_3NO_2
AB0618	406264-03A	BOBX99	VOC
AB0619	406264-04A	BOBXB0	VOC

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

IV. Certification

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

Reviewed and Approved:

Sheree A. Schneider

Sheree' A. Schneider
Project Manager

030

682-1-89

9613476.1707

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-94-00148
Record of Disposition No.

DATE: 06/10/94	LABORATORY: IT
PROJECT TITLE/NO.: 200-UP-1 Soil Sampling-Round 1 (SAF 94-046)	NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS: BOBJ16, BOBX93, BOBX94, BOBX95, BOBX96

DESCRIPTION OF EVENT:
On 6/07/94, IT was instructed to postpone the analysis of samples received on 6/04/94 until further notice from WHC.

DISPOSITION OF SAMPLES:
Per the technical representative, IT is to cancel the analysis of samples BOBX95, and BOBX93. The analysis of BOBJ16, BOBX94, and BOBX96 is to continue.

APPROVAL SIGNATURES:

J.A. Lerch — 6/10/94
HASM Project Coordinator (Print/Sign Name) — Date

B.E. Innis — 6/27/94
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

Revised 11/30/9

030A

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#622

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: GWS-015	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0-	Bill of Lading/Air Bill No.:
Possible Sample Hazards/Remarks: NONE OBSERVED		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4	COOL 4		
Type of Container	aGs	aG	G	G	G	G	P/G	P/G			aGs	aGs	aGs		
No. of Container(s)	1	1	1	1	1	1	1	1			1	1	1		
Volume	125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml			125ml	250ml	40ml		
SAMPLE ANALYSIS 466642	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)	*1	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		
	05A	B	C	D	E	F	40604303								

Sample No.	Matrix*	Date Sampled	Time Sampled														
BORX93	S	6-2-94	1245	X	X	X	X	X	X	X	X					X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
W. V. Setzer	6/2/94 1405	A. Simpson	6/2/94 1405
Karen Hogers for Amy Simpson	6394 0957		

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520),I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540) Ultimate custodian relinquished custody of samples (unknown) due to illness of the shipping facility custodian. Samples stored at shipping facility in locked refrigerator prior to distribution to the laboratory. [illegible] 6-3-94

LOWEST HOLDING TIME = 7DAYS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION — Received By: Tom [illegible] ITAS — Title: 6/3/94 1430 — Date/Time:

FINAL SAMPLE DISPOSITION — Disposal Method: — Disposed By: — Date/Time:

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

9413476.1708

031

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#622

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: GW3-015	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0-	Bill of Lading/Air Bill No.:
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4	COOL 4		
Type of Container	aGs	aG	G	G	G	G	P/G	P/G			aGs	aGs	aGs		
No. of Container(s)	1	1	1	1	1	1	1	1			1	1	1		
Volume	125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml			125ml	250ml	40ml		
SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)	*1	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		
406042	A	B	C	D	E	F	460043								

Sample No.	Matrix*	Date Sampled	Time Sampled														
~~BOBX93~~	S			X	X	X	X	X	X	X	X					X	WVS 5-31-94
BOBX94 01	S	5-31-94	1010	X	X	X	X	X	X	X 01	X					X	
BOBX95 2	S	5-31-94	0940											X 02A			
BOBX96 3	S	5-31-94	0730									X 03A					
~~BOBX97~~	S			X	X	X	X	X	X	X	X					X	WVS 5/31/94
BOBJ16 4	S	6-1-94	1043	X	X	X	X	X	X	X	02 X					X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: W.V. Setzer	Date/Time: 6-1-94 1409	Received By: A Simpson 6/1/94	Date/Time: 1409
Relinquished By: Loren C. Rogers for Amy Simpson	Date/Time: 6-3-94 0945	Received By: [illegible] 6/3/94	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540). Ultimate custodian relinquished custody of samples for shipping due to illness of the shipping and all custodian. Samples stored at shipping [illegible] in the refrigerator prior to delivery to the laboratory [illegible] 6-3-94.

LOWEST HOLDING TIME = 7DAYS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION	Received By	Title	Date/Time
	[illegible]	IIAS	6/3/94 1430

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

0000028

9413174.1709

032

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#647

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: ER-1D	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0- 0594-38	Bill of Lading/Air Bill No.
Possible Sample Hazards/Remarks: NONE OBSERVED		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4	COOL 4		
Type of Container	aGs	aG	G	G	G	G	P/G	P/G			aGs	aGs	aGs		
No. of Container(s)	1	1	1	1	1	1	1	1			1	1	1		
Volume	125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml			125ml	250ml	40ml		
SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)	*1	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		
	4062664						4062665								
	6/13/94 A	B	C	D	E	F									

Sample No.	Matrix*	Date Sampled	Time Sampled	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)	*1	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		
BOBX98 01	S	6-9-94	0940	✓	✓	✓	✓	✓	✓	01 ✓	✓					✓		
BOBX97 2	S	6-9-94	0940	✓	✓	✓	✓	✓	✓	02 ✓	✓					✓		
BOBX99 3A	S	6-9-94	0840											✓				
BOBXB0 4A	S	6-9-94	0900												✓			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
W. V. Setzer	6-9-94 1205	L Sweeney L Sweeney	1205 6/9/94
L Sweeney L Sweeney	6/9/94 1300	A J Simpson	6/9/94 1300
A J Simpson	6/13/94 1035	R Reintzer IT	6-13-94 1045

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540)

SPG W0083

LOWEST HOLDING TIME = 7DAYS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

033

9413176.1701

9613476.1711

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E

PROJECT: 200-UP-1	DATA PACKAGE: W0083-QES-094	
VALIDATOR: WATERBURY	LAB: IT CORP	DATE: 11.11.94
CASE:	SDG: W0083	

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
BOBJ16 - SOIL
BOBX93 - cancelled
BOBX94 - SOIL
BOBX97 - SOIL
*BOBX98 - SOIL

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)[1] N/A

Comments: (1) Samples BOBJ16 and BOBX94 exceeded prep. holding times.

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[1] N/A

Comments: (1) N-Nitroso-Di-n-propylamine, pentachlorophenol, benzo(b)fluoranthene, and benzo(k)fluoranthene percent difference (%D) was unacceptable.

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 11/30/

Are field/trip blank results acceptable? . . . . . Yes No ~~N/A~~ 11/30/

Comments: Sample BOBX94 was identified as an equipment blank. Bis(2-ethylhexyl)phthalate was detected in the equipment blank. 11/30/94

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:

Revised 11/30/94

036

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: (1) Sample BOBX98 is the field duplicate of sample BOBX97.

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:

037

HOLDING TIME SUMMARY

SDG: W0083 | VALIDATOR: WATERBURY | DATE: 11.11.94 | PAGE 1 OF 1

COMMENTS: SEMIVOLATILE

	FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
	BOBJ16	SVOC	6.01.94	6.22.94	7.10.94	21	19	J or UJ
EQUIP	BOBX94	SVOC	5.31.94	6.22.94	7.10.94	22	19	J or UJ
	BOBX97	SVOC	6.09.94	6.22.94	7.10.94	13	19	none
DUP.	BOBX98	SVOC	6.09.94	6.22.94	7.10.94	13	19	none

9413476.1715

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Instrument ID: FINN Calibration date: 07/10/94 Time: 1638

Lab File ID: CCA0710 Init. Calib. Date(s): 07/01/94 07/01/94

Init. Calib. Times: 1200 1458

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Phenol	1.951	1.982	0.800	-1.6	25.0
bis(2-Chloroethyl)Ether	1.729	1.600	0.700	7.5	25.0
2-Chlorophenol	1.444	1.430	0.800	1.0	25.0
1,3-Dichlorobenzene	1.453	1.503	0.600	-3.4	25.0
1,4-Dichlorobenzene	1.574	1.465	0.500	6.9	25.0
1,2-Dichlorobenzene	1.366	1.291	0.400	5.5	25.0
2-Methylphenol	1.231	1.144	0.700	7.1	25.0
2,2'-oxybis(1-Chloropropane)	2.417	1.424		41.1	
4-Methylphenol	1.264	1.133	0.600	10.4	25.0
N-Nitroso-Di-n-Propylamine	1.150	0.836	0.500	27.3	25.0
Hexachloroethane	0.684	0.586	0.300	14.3	25.0
Nitrobenzene	0.518	0.407	0.200	21.4	25.0
Isophorone	0.947	0.771	0.400	18.6	25.0
2-Nitrophenol	0.218	0.221	0.100	-1.4	25.0
2,4-Dimethylphenol	0.392	0.354	0.200	9.7	25.0
bis(2-Chloroethoxy)Methane	0.545	0.489	0.300	10.3	25.0
2,4-Dichlorophenol	0.286	0.284	0.200	0.7	25.0
1,2,4-Trichlorobenzene	0.317	0.322	0.200	-1.6	25.0
Naphthalene	1.002	0.958	0.700	4.4	25.0
4-Chloroaniline	0.340	0.290		14.7	
Hexachlorobutadiene	0.192	0.159		17.2	
4-Chloro-3-Methylphenol	0.328	0.325	0.200	0.9	25.0
2-Methylnaphthalene	0.654	0.671	0.400	-2.6	25.0
Hexachlorocyclopentadiene	0.441	0.276		37.4	
2,4,6-Trichlorophenol	0.400	0.381	0.200	4.8	25.0
2,4,5-Trichlorophenol	0.395	0.433	0.200	-9.6	25.0
2-Chloronaphthalene	1.217	1.157	0.800	4.9	25.0
2-Nitroaniline	0.530	0.394		25.7	
Dimethylphthalate	1.304	1.262		3.2	
Acenaphthylene	1.695	1.480	1.300	12.7	25.0
2,6-Dinitrotoluene	0.297	0.314	0.200	-5.7	25.0
3-Nitroaniline	0.194	0.257		-32.5	
Acenaphthene	1.070	1.017	0.800	5.0	25.0
2,4-Dinitrophenol	0.167	0.095		43.1	
4-Nitrophenol	0.202	0.119		41.1	
Dibenzofuran	1.508	1.498	0.800	0.7	25.0
2,4-Dinitrotoluene	0.357	0.322	0.200	9.8	25.0

(1) Cannot be separated from Diphenylamine
All other compounds must meet a minimum RRF of 0.010.

DSW 11-15-94

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Instrument ID: FINN Calibration date: 07/10/94 Time: 1638

Lab File ID: CCA0710 Init. Calib. Date(s): 07/01/94 07/01/94

Init. Calib. Times: 1200 1458

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Diethylphthalate	1.308	1.130		13.6	
4-Chlorophenyl-phenylether	0.642	0.621	0.400	3.3	25.0
Fluorene	1.229	1.177	0.900	4.2	25.0
4-Nitroaniline	0.122	0.130		-6.6	
4,6-Dinitro-2-Methylphenol	0.159	0.116		27.0	
N-Nitrosodiphenylamine (1)	0.535	0.541		-1.1	
4-Bromophenyl-phenylether	0.262	0.264	0.100	-0.8	25.0
Hexachlorobenzene	0.293	0.270	0.100	7.8	25.0
Pentachlorophenol	0.184	0.135	0.050	26.6	25.0
Phenanthrene	1.179	1.146	0.700	2.8	25.0
Anthracene	1.132	1.081	0.700	4.5	25.0
Carbazole	0.740	0.718		3.0	
Di-n-Butylphthalate	1.617	1.409		12.9	
Fluoranthene	1.197	1.099	0.600	8.2	25.0
Pyrene	1.263	1.379	0.600	-9.2	25.0
Butylbenzylphthalate	0.769	0.730		5.1	
3,3'-Dichlorobenzidine	0.367	0.311		15.3	
Benzo(a)Anthracene	1.113	1.127	0.800	-1.3	25.0
Chrysene	1.028	1.081	0.700	-5.2	25.0
bis(2-Ethylhexyl)Phthalate	1.070	1.087		-1.6	
Di-n-Octyl Phthalate	1.532	2.130		-39.0	
Benzo(b)Fluoranthene	1.256	1.649	0.700	-31.3	25.0
Benzo(k)Fluoranthene	1.116	1.547	0.700	-38.6	25.0
Benzo(a)Pyrene	0.952	0.994	0.700	-4.4	25.0
Indeno(1,2,3-cd)Pyrene	1.029	0.825	0.500	19.8	25.0
Dibenz(a,h)Anthracene	0.823	0.721	0.400	12.4	25.0
Benzo(g,h,i)Perylene	0.869	0.589	0.500	32.2	25.0
Nitrobenzene-d5	0.506	0.437	0.200	13.6	25.0
2-Fluorobiphenyl	1.324	1.296	0.700	2.1	25.0
Terphenyl-d14	0.914	1.015	0.500	-11.0	25.0
Phenol-d5	2.014	1.993	0.800	1.0	25.0
2-Fluorophenol	1.669	1.568	0.600	6.1	25.0
2,4,6-Tribromophenol	0.157	0.132		15.9	
2-Chlorophenol-d4	1.481	1.495	0.800	-0.9	25.0
1,2-Dichlorobenzene-d4	0.861	0.852	0.400	1.0	25.0

(1) Cannot be separated from Diphenylamine
All other compounds must meet a minimum RRF of 0.010.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLKAB1392A

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 622 SAS No.: _____ SDG No.: W0083

Matrix: (soil/water) SOIL Lab Sample ID: AB1392

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AB1392

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

% Moisture: _____ decanted: (Y/N) N Date Extracted: 06/22/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 07/09/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

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-MET	4.23	7100	~~AJN~~
2.	UNKNOWN	7.55	84	AJ
3.	UNKNOWN	18.57	110	J
4.	UNKNOWN	19.27	210	J

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W0083-ITC-094

RECORD COPY

MEMORANDUM

NOV 1994
RECEIVED
Validation
Log In

TO: 200-UP-1 Project QA Record

November 10, 1994

FR: Sandra Schildt, Golder Associates Inc.

RE: METALS DATA VALIDATION SUMMARY FOR DATA PACKAGE W0083-ITC-094 (943-1610.034,094ino.up1)

INTRODUCTION

This memorandum presents the results of data validation on data package W0083-ITC-094 prepared by International Technology Corporation. A list of the samples validated along with the analytes reported and the method of analysis is provided in the following table.

SAMPLE ID	COMMENTS	MEDIA	ANALYSIS
B0BX94	EQUIP. BLANK	SOIL	INORGANICS
B0BJ16		SOIL	
B0BX97*		SOIL	
B0BX98		SOIL	SEE ATTACHMENT 4
*Indicates the sample results which were 100% recalculated.			

Data validation was conducted to level D in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1993). Attachments 1 through 5 to this memo provide the following information:

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.

Completeness. The data package was complete for all requested analyses. Four samples (4) were validated in this data set with a total of 96 determinations reported, all of which were deemed valid. This results in a completeness of 100% 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 validation which required qualification of data.

Holding Time

- The holding time for cyanide analysis was exceeded. Attachments 2 and 5 provide a summary of the samples and data qualification applied.

Laboratory Blanks

- Manganese, calcium, and lead were detected in one or more of the calibration and preparation blanks. Attachments 2 and 5 provide a summary of the samples and data qualification applied.

Analytical Spikes

- The analytical spike recovery of arsenic, selenium, and thallium were outside control limits. Attachments 2 and 5 provide a summary of the samples and data qualification applied.

FIELD QUALITY CONTROL

- Sample B0BX94 was identified as an equipment blank. Aluminum, barium, chromium, iron, magnesium, sodium, and zinc were detected. No qualification was applied in accordance with the validation procedures.

REFERENCES

WHC 1994, Environmental and Waste Characterization Analytical Data Validation, Purchase Order MSH-SWV-315905; Validation Statement of Work, Revision 1.0, September 7, 1994; Westinghouse Hanford Company, Richland, Washington.

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

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ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

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 sample aliquot size, dilution factors 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 was not detected. Due to a minor quality control deficiency identified during data validation, the concentration reported 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 CRDL but greater then the 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.

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ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

PKG: W0083-ITC-094	REVIEWER: S. Schildt	DATE: 11/9/94	PAGE 1 OF 1
COMMENTS: Metals			
PARAMETER	QUALIFIER	SAMPLES AFFECTED	REASON
Cyanide	UJ	B0BX94, B0BJ16	Holding time exceeded
Calcium Lead Manganese	U	B0BX94	Analyte detected in the blanks
Arsenic Selenium Thallium	UJ	B0BJ16	Analytical spike recovery <85%
Thallium	UJ	B0BX97, B0BX98	Analytical spike recovery <85%

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ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0083-ITC-094

	Samp#	B0BJ16		B0BX94		B0BX97		B0BX98	
	Date	6-1-94		5-31-94		6-9-94		6-9-94	
	Location	299-W19-34B		699-38-68A		699-38-68A		699-38-68A	
	Depth	332.00 - 334.00		---		285.00 - 287.00		285.00 - 287.00	
	Type	SOIL		SOIL		SOIL		SOIL	
	Comments			EQUIP. BLANK				DUPLICATE	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	MG/KG	7690.000		98.400		4360.000		4850.000	
ANTIMONY	MG/KG	12.000	U	10.000	U	11.200	U	12.300	U
ARSENIC	MG/KG	0.480	UJ	0.400	U	0.490	B	0.490	U
BARIUM	MG/KG	50.300		0.990	B	40.500	B	47.200	B
BERYLLIUM	MG/KG	0.580	B	0.200	U	0.230	B	0.320	B
CADMIUM	MG/KG	1.200	U	1.000	U	1.100	U	1.200	U
CALCIUM	MG/KG	9680.000		42.800	U	2490.000		2680.000	
CHROMIUM	MG/KG	16.200		2.200		9.400		15.500	
COBALT	MG/KG	9.700	B	2.000	U	5.300	B	5.000	B
COPPER	MG/KG	11.300		2.000	U	9.000		11.900	
IRON	MG/KG	21000.000		177.000		8410.000		10900.000	
LEAD	MG/KG	6.500		1.100	U	2.200		2.400	
MAGNESIUM	MG/KG	4630.000		14.700	B	2830.000		3340.000	
MANGANESE	MG/KG	310.000		1.100	U	153.000		193.000	
MERCURY	MG/KG	0.120	U	0.100	U	0.110	U	0.120	U
NICKEL	MG/KG	16.200		4.000	U	11.300		15.000	
POTASSIUM	MG/KG	652.000	B	200.000	U	578.000	B	644.000	B
SELENIUM	MG/KG	0.480	UJ	0.400	U	0.430	U	0.490	U
SILVER	MG/KG	1.200	U	1.000	U	1.100	U	1.200	U
SODIUM	MG/KG	124.000	B	20.800	B	275.000	B	281.000	B
THALLIUM	MG/KG	0.480	UJ	0.400	U	0.430	UJ	0.490	UJ
VANADIUM	MG/KG	44.800		2.000	U	15.800		23.900	
ZINC	MG/KG	27.200		2.500	B	21.100		35.000	
CYANIDE	MG/KG	1.200	UJ	1.000	UJ	1.100	U	1.200	U

The decimal places shown do not reflect the precision reported by the laboratory

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Reviewed 11/30/94

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBX94
Equip Blank

Lab Name: ITAS KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: W0622 SAS No.: SDG No.: W0083
Matrix (soil/water): SOIL Lab Sample ID: AB0328
Level (low/med): LOW Date Received: 06/07/94
% Solids: 99.8

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	98.4			P	
7440-36-0	Antimony	10.0	U		P	
7440-38-2	Arsenic	0.40	U		F	
7440-39-3	Barium	0.99	B		P	
7440-41-7	Beryllium	0.20	U		P	
7440-43-9	Cadmium	1.0	U		P	
7440-70-2	Calcium	42.8	B		P	u
7440-47-3	Chromium	2.2			P	
7440-48-4	Cobalt	2.0	U		P	
7440-50-8	Copper	2.0	U		P	
7439-89-6	Iron	177			P	
7439-92-1	Lead	1.1			F	u
7439-95-4	Magnesium	14.7	B		P	
7439-96-5	Manganese	1.1	B		P	u
7439-97-6	Mercury	0.10	U		CV	
7440-02-0	Nickel	4.0	U		P	
7440-09-7	Potassium	200	U		P	
7782-49-2	Selenium	0.40	U		F	
7440-22-4	Silver	1.0	U		P	
7440-23-5	Sodium	20.8	B		P	
7440-28-0	Thallium	0.40	U		F	
7440-62-2	Vanadium	2.0	U		P	
7440-66-6	Zinc	2.5	B	*	P	
5955-70-0	Cyanide				NR	

Color Before: WHITE Clarity Before: Texture: MEDIUM
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBX94

Lab Name: ITAS_KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO622 SAS No.: SDG No.: W0083

Matrix (soil/water): SOIL Lab Sample ID: AB0329

Level (low/med): LOW Date Received: 06/07/94

% Solids: 99.8

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum				NR	
7440-36-0	Antimony				NR	
7440-38-2	Arsenic				NR	
7440-39-3	Barium				NR	
7440-41-7	Beryllium				NR	
7440-43-9	Cadmium				NR	
7440-70-2	Calcium				NR	
7440-47-3	Chromium				NR	
7440-48-4	Cobalt				NR	
7440-50-8	Copper				NR	
7439-89-6	Iron				NR	
7439-92-1	Lead				NR	
7439-95-4	Magnesium				NR	
7439-96-5	Manganese				NR	
7439-97-6	Mercury				NR	
7440-02-0	Nickel				NR	
7440-09-7	Potassium				NR	
7782-49-2	Selenium				NR	
7440-22-4	Silver				NR	
7440-23-5	Sodium				NR	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium				NR	
7440-66-6	Zinc				NR	
5955-70-0	Cyanide	1.00	U		AS	UJ

Color Before: WHITE Clarity Before: Texture: MEDIUM

Color After: Clarity After: Artifacts:

Comments:

CYANIDE ONLY.

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBJ16
299-419-343

Lab Name: ITAS_KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: WO622 SAS No.: SDG No.: W0083
Matrix (soil/water): SOIL Lab Sample ID: AB0334
Level (low/med): LOW Date Received: 06/07/94
% Solids: 83.4

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	7690			P	
7440-36-0	Antimony	12.0	U		P	
7440-38-2	Arsenic	0.48	U	W	F	UJ
7440-39-3	Barium	50.3			P	
7440-41-7	Beryllium	0.58	B		P	
7440-43-9	Cadmium	1.2	U		P	
7440-70-2	Calcium	9680			P	
7440-47-3	Chromium	16.2			P	
7440-48-4	Cobalt	9.7	B		P	
7440-50-8	Copper	11.3			P	
7439-89-6	Iron	21000			P	
7439-92-1	Lead	6.5			F	
7439-95-4	Magnesium	4630			P	
7439-96-5	Manganese	310			P	
7439-97-6	Mercury	0.12	U		CV	
7440-02-0	Nickel	16.2			P	
7440-09-7	Potassium	652	B		P	
7782-49-2	Selenium	0.48	U	W	F	UJ
7440-22-4	Silver	1.2	U		P	
7440-23-5	Sodium	124	B		P	
7440-28-0	Thallium	0.48	U	W	F	UJ
7440-62-2	Vanadium	44.8			P	
7440-66-6	Zinc	27.2		*	P	
5955-70-0	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: MEDIUM
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBJ16

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: W0622 SAS No.: SDG No.: W0083

Matrix (soil/water): SOIL Lab Sample ID: AB0335

Level (low/med): LOW Date Received: 06/07/94

% Solids: 83.4

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum				NR	
7440-36-0	Antimony				NR	
7440-38-2	Arsenic				NR	
7440-39-3	Barium				NR	
7440-41-7	Beryllium				NR	
7440-43-9	Cadmium				NR	
7440-70-2	Calcium				NR	
7440-47-3	Chromium				NR	
7440-48-4	Cobalt				NR	
7440-50-8	Copper				NR	
7439-89-6	Iron				NR	
7439-92-1	Lead				NR	
7439-95-4	Magnesium				NR	
7439-96-5	Manganese				NR	
7439-97-6	Mercury				NR	
7440-02-0	Nickel				NR	
7440-09-7	Potassium				NR	
7782-49-2	Selenium				NR	
7440-22-4	Silver				NR	
7440-23-5	Sodium				NR	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium				NR	
7440-66-6	Zinc				NR	
5955-70-0	Cyanide	1.2	U		AS	UJ

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: Clarity After: Artifacts:

Comments:

CYANIDE ONLY.

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBX97

699-38-68A

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0647 SAS No.: _____ SDG No.: W0083_

Matrix (soil/water): SOIL_ Lab Sample ID: AB0614

Level (low/med): LOW__ Date Received: 06/14/94

% Solids: _89.0

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum_	4360			P_	
7440-36-0	Antimony_	11.2	U		P_	
7440-38-2	Arsenic__	0.49	B		F_	
7440-39-3	Barium___	40.5	B		P_	
7440-41-7	Beryllium	0.23	B		P_	
7440-43-9	Cadmium__	1.1	U		P_	
7440-70-2	Calcium__	2490			P_	
7440-47-3	Chromium_	9.4			P_	
7440-48-4	Cobalt___	5.3	B		P_	
7440-50-8	Copper___	9.0			P_	
7439-89-6	Iron____	8410			P_	
7439-92-1	Lead____	~~2.2~~ 2.3 ~~2.2~~			F_	
7439-95-4	Magnesium	2830			P_	
7439-96-5	Manganese	153			P_	
7439-97-6	Mercury__	0.11	U		CV	
7440-02-0	Nickel___	11.3			P_	
7440-09-7	Potassium	578	B		P_	
7782-49-2	Selenium_	0.43	U		F_	
7440-22-4	Silver___	1.1	U		P_	
7440-23-5	Sodium___	275	B		P_	
7440-28-0	Thallium_	0.43	U	W	F_	US
7440-62-2	Vanadium_	15.8			P_	
7440-66-6	Zinc____	21.1		*	P_	
5955-70-0	Cyanide__				NR	

Color Before: BROWN_____ Clarity Before: N/A___ Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBX97

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO647 SAS No.: _____ SDG No.: W0083_

Matrix (soil/water): SOIL_ Lab Sample ID: AB0615

Level (low/med): LOW__ Date Received: 06/14/94

% Solids: _89.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_				NR
7440-36-0	Antimony_				NR
7440-38-2	Arsenic__				NR
7440-39-3	Barium___				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium__				NR
7440-70-2	Calcium__				NR
7440-47-3	Chromium_				NR
7440-48-4	Cobalt___				NR
7440-50-8	Copper___				NR
7439-89-6	Iron____				NR
7439-92-1	Lead____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury__				NR
7440-02-0	Nickel___				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-22-4	Silver___				NR
7440-23-5	Sodium___				NR
7440-28-0	Thallium_				NR
7440-62-2	Vanadium_				NR
7440-66-6	Zinc____				NR
5955-70-0	Cyanide__	1.1	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBX98
699-38-68A

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: W0647 SAS No.: SDG No.: W0083
Matrix (soil/water): SOIL Lab Sample ID: AB0608
Level (low/med): LOW Date Received: 06/14/94
% Solids: 81.1

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	4850			P	
7440-36-0	Antimony	12.3	U		P	
7440-38-2	Arsenic	0.49	U		F	
7440-39-3	Barium	47.2	B		P	
7440-41-7	Beryllium	0.32	B		P	
7440-43-9	Cadmium	1.2	U		P	
7440-70-2	Calcium	2680			P	
7440-47-3	Chromium	15.5			P	
7440-48-4	Cobalt	5.0	B		P	
7440-50-8	Copper	11.9			P	
7439-89-6	Iron	10900			P	
7439-92-1	Lead	2.4			F	
7439-95-4	Magnesium	3340			P	
7439-96-5	Manganese	193			P	
7439-97-6	Mercury	0.12	U		CV	
7440-02-0	Nickel	15.0			P	
7440-09-7	Potassium	644	B		P	
7782-49-2	Selenium	0.49	U		F	
7440-22-4	Silver	1.2	U		P	
7440-23-5	Sodium	281	B		P	
7440-28-0	Thallium	0.49	U	W	F	UJ
7440-62-2	Vanadium	23.9			P	
7440-66-6	Zinc	35.0		*	P	
5955-70-0	Cyanide				NR	

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN

ILM02.1

11/10/94

01

9613476.1735

0000155

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBX98

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: W0647 SAS No.: SDG No.: W0083
Matrix (soil/water): SOIL Lab Sample ID: AB0674
Level (low/med): LOW Date Received: 06/14/94
% Solids: 81.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
5955-70-0	Cyanide	1.2	U		AS

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE_ONLY.

FORM I - IN

ILM02.1
S 7/15/94
11/10/94

01

9613476.1736

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total cyanide in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for anions by ion chromatography using EPA method 300.0.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J & W DB-624 capillary column on a Finnigan INCOS 500 GC/MS/DS. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All QC results met method specified limits. The samples were extracted outside of holding time in accordance to ROD 94-00148.

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All QC results met method specified limits. The samples were extracted outside of holding time in accordance to ROD 94-00148.

Data were reported with qualifiers as follows:

U - Compound analyzed for but not detected; value given is quantitation limit.
E - Compound exceeded calibration range.
D - Compound analyzed at a secondary dilution factor.
J - Compound detected but below quantitation limit; value estimated.
S - Spiked compound.
B - Compound found in method blank.
A - Suspected aldol condensation product.
Y - Indistinguishable isomer in tentatively identified compounds.
N - Presumptive evidence of compound presence.

11/10/94

020

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

III. Quality Control (Continued)

The samples for work order #622 were digested on July 5, 1994 for ICP and June 22, 1994 for GFAA. The CVAA analysis for mercury was performed on June 27, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from June 22 through June 28, 1994; the remaining metals were analyzed by ICP on July 5, 1994. All run QC was acceptable. Samples are batched with QC from work order #647.

The samples for work order #649 were digested on June 15, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on June 21, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from June 16 through June 22, 1994; the remaining metals were analyzed by ICP on July 6, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number BOBX97. Spike recovery (accuracy) results were within acceptance limits for all parameters. Duplicate RPD (precision) results were within acceptance limits for all parameters except for zinc which exhibited a slight variation due to probable sample nonhomogeneity for this analyte.

Data were reported with qualifiers as follows:

"C" Qualifiers

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
B - Value greater than instrument detection limit, but less than contract required quantitation limit.

"Q" Qualifiers

* - Duplicate analysis outside control limits.
N - Spiked sample recovery outside control limits.
W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
S - The reported value was determined by method of standard additions.

"M" Qualifiers

P - Analysis performed by ICP.
V - Analysis performed by CVAA.
F - Analysis performed by GFAA.
C - Cyanide analysis by manual distillation/colorimetric determination.

AKS 11/10/94

021

682-1-89

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

III. Quality Control (Continued)

Miscellaneous

D - Duplicate.
S - Spike.
NR - Not required.
G - Native analyte > 4 times spike added, therefore, acceptance criteria do not apply.
X - Detection limits higher than normal due to sample matrix interferences.

The samples were analyzed for nitrate/nitrite on June 28, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All quality control results were acceptable.

The samples were analyzed for fluoride, chloride, phosphate, nitrate, nitrite and sulfate by EPA method 300.0 from June 27 through June 29, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBX97. All quality control results were acceptable.

11/10/94
022

682-1-89

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AB0326	406042-01A	BOBX94	VOC
AB0327	406042-01B	"	SVOC
AB0328	406042-01C	"	METALS-T
AB0329	406042-01D	"	CYANIDE
AB0330	406042-01E	"	ANIONS
AB0331	406042-01F	"	NO_3NO_2
AB0344	406042-02A	BOBX95	VOC
AB0345	406042-03A	BOBX96	VOC
AB0332	406042-04A	BOBJ16	VOC
AB0333	406042-04B	"	SVOC
AB0334	406042-04C	"	METALS-T
AB0335	406042-04D	"	CYANIDE
AB0336	406042-04E	"	ANIONS
AB0337	406042-04F	"	NO_3NO_2
AB0338	406042-05A	BOBX93	VOC
AB0339	406042-05B	"	SVOC
AB0340	406042-05C	"	METALS-T
AB0341	406042-05D	"	CYANIDE
AB0342	406042-05E	"	ANIONS
AB0343	406042-05F	"	NO_3NO_2

11/10/94

023

682-1-89

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AB0606	406264-01A	BOBX98	VOC
AB0607	406264-01B	"	SVOC
AB0608	406264-01C	"	METALS-T
AB0674	406264-01D	"	CYANIDE
AB0610	406264-01E	"	ANIONS
AB0611	406264-01F	"	NO_3NO_2
AB0612	406264-02A	BOBX97	VOC
AB0613	406264-02B	"	SVOC
AB0614	406264-02C	"	METALS-T
AB0615	406264-02D	"	CYANIDE
AB0616	406264-02E	"	ANIONS
AB0617	406264-02F	"	NO_3NO_2
AB0618	406264-03A	BOBX99	VOC
AB0619	406264-04A	BOBXB0	VOC

11/10/94

024

682-1-89

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 18, 1994
Job Number: 622 & 647
Client Project ID: WHC SAF-94-046 200-UP-1 Soil Sampling - Round 1

IV. Certification

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

Reviewed and Approved:

Sheree A. Schneider

Sheree' A. Schneider
Project Manager

11/10/94 025

682-1-89

OFFICE OF SAMPLE MANAGEMENT RECORD OF DISPOSITION	ROD-94-00148 Record of Disposition No.
DATE: 06/10/94	LABORATORY: IT
PROJECT TITLE/NO.: 200-UP-1 Soil Sampling-Round 1 (SAF 94-046)	NCR NO.: N/A
SAMPLE IDENTIFICATION NUMBERS: B0BJ16, B0BX93, B0BX94, B0BX95, B0BX96	

DESCRIPTION OF EVENT:
On 6/07/94, IT was instructed to postpone the analysis of samples received on 6/04/94 until further notice from WHC.

DISPOSITION OF SAMPLES:
Per the technical representative, IT is to cancel the analysis of samples B0BX95, and B0BX93. The analysis of B0BJ16, B0BX94, and B0BX96 is to continue.

APPROVAL SIGNATURES:

J.A. Lerch — 6/10/94
HASM Project Coordinator (Print/Sign Name) — Date

B.E. Innis
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

11/16/94

9613476.1744

0000009

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WO#642

WORK ORDER NUMBER: 4062642,3,4 DATE INITIATED: 6/13/94

INITIATED BY: TGilmore

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 6/13/94 1045

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
B0BX97		CN
B0BX99		Voa
B0BXB0		Voa

Samples were received with the following deficiencies:

- ☐ 1. Not enough sample received for proper analysis.
- ☐ 2. Sample received without proper preservative.
- ☐ 3. No sample received in container.
- ☐ 4. Sample received without a RFA/COC form.
- ☐ 5. No sample ID on container.
- ☐ 6. Sample received broken or leaking.
- ☐ 7. Holding time exceeded at receipt.
- ☐ 8. Custody tape broken.
- ☐ 9. COC not relinquished by client.
- ☐ 10. Sample information on container does not match sample information on the paper work (Explain below).
- ☐ 11. All shipping containers (coolers) on waybill not received with shipment.
  - ☐ RFA/COC received
  - ☐ RFA/COC not received
- ☒ 12. Other (Explain below).

NOTES: container has no lable. All other containers are accounted for and match COC. B0BX99, B0BXB0 were not screened. Voa Samples supplied without separate aliquot.

SUPERVISOR REVIEW:

PROJECT MANAGER REVIEW:

TELEPHONED TO: ON BY

TELEFAXED TO: ON BY

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

11/10/94

FORM NO. LS-023, 3/92, Rev. 0

027

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#622

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: 6105-015	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0-	Bill of Lading/Air Bill No.:
Possible Sample Hazards/Remarks: NONE OBSERVED		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4	COOL 4		
Type of Container	aGs	aG	G	G	G	G	P/G	P/G			aGs	aGs	aGs		
No. of Container(s)	1	1	1	1	1	1	1	1			1	1	1		
Volume	125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml			125ml	250ml	40ml		
SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)	*1	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		
406042	05A	B	C	D	E	F	40604303								

Sample No.	Matrix*	Date Sampled	Time Sampled														
BOBK93	S	6-2-94	1245	X	X	X	X	X	X	X	X					X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
W. V. Setzer	6/2/94 1405	A. Simpson	6/2/94 1405
Karen C. Roberts for Amy Simpson	6-3-94 0957		

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540) [illegible] relinquished custody [illegible] due to illness of the shipping [illegible]. Samples stored at shipping [illegible] refrigerator prior to delivery to the laboratory. [illegible] 6-3-94

LOWEST HOLDING TIME = 7DAYS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION

Received By	Title	Date/Time
Tom [illegible]	ITAS	6/3/94 1430

FINAL SAMPLE DISPOSITION

Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

9413.9413.96

027-0000

6/6/94

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#622

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: GWS-015	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0-	Bill of Lading/Air Bill No.:
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4	COOL 4		
Type of Container	aGs	aG	G	G	G	G	P/G	P/G			aGs	aGs	aGs		
No. of Container(s)	1	1	1	1	1	1	1	1			1	1	1		
Volume	125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml			125ml	250ml	40ml		
SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)	*1	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		
406042	A	B	C	D	E	F	406043								

Sample No.	Matrix*	Date Sampled	Time Sampled														
~~BOBX93~~	S			X	X	X	X	X	X	X	X					X	WVS 5-31-94
BOBX94 01	S	5-31-94	1010	X	X	X	X	X	X	X 01	X					X	
BOBX95 2	S	5-31-94	0940											X 02A			
BOBX96 3	S	5-31-94	0730										X 03A				
~~BOBX97~~	S			X	X	X	X	X	X	X	X					X	WVS 5/31/94
BOBJ16 4	S	6-1-94	1043	X	X	X	X	X	X	X	02 X					X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
W. V. Setzer	6-1-94 1409	A. Sampson	6/1/94 1469
Relinquished By: Loren C. Rogers for Amy Sampson	Date/Time: 6-3-94 0945	Received By: [illegible]	Date/Time: 6/3/94
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540). Ultimate custodian relinquished custody of samples for processing due to lateness of the shipping for final custodian. Samples stored at shipping [illegible] in locked refrigerator prior to delivery to the laboratory [illegible] 6-3-94.

LOWEST HOLDING TIME = 7DAYS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION	Received By: [illegible]	Title: IVAS	Date/Time: 6/3/94 1430
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

0000028

9412196

029 620

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#647

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: ER-1D	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0- 0594-38	Bill of Lading/Air Bill No.
Possible Sample Hazards/Remarks: NONE OBSERVED		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE	Rof 3C LCS 6/9/94	

Sample No.	Matrix*	Date Sampled	Time Sampled	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)					VOA TRIP	VOA FIELD	ACTIVIY SCAN		
Preservative				COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4	COOL 4		
Type of Container				aGs	aG	G	G	G	G	P/G	P/G			aGs	aGs	aGs		
No. of Container(s)				1	1	1	1	1	1	1	1			1	1	1		
Volume				125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml			125ml	250ml	40ml		
SAMPLE ANALYSIS				406264														
				6/13/94 A	B	C	D	E	F	*1	*1							
BOBX98	01	S	6-9-94	0940	✓	✓	✓	✓	✓	✓	01 ✓	✓					✓	
BOBX97	2	S	6-9-94	0940	✓	✓	✓	✓	✓	✓	02 ✓	✓					✓	
BOBX99	3A	S	6-9-94	0840										✓				
BOBXB0	4A	S	6-9-94	0900											✓			

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	W. V. Setzer	6-9-94 1205	Received By: L Sweeney L Sweeney	1205 6/9/94
Relinquished By: L Sweeney L Sweeney		1300 6/9/94	Received By: A J Simpson	6/9/94 1300
Relinquished By: A J Simpson		6/13/94 1035	Received By: R Reintzer IT	6-13-94 1045
Relinquished By			Received By	

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540)

SDG W0083

LOWEST HOLDING TIME = 7DAYS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

6/10/94

000029

9413196

9613476.1748

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-1		DATA PACKAGE: W0083-ITC-094	
VALIDATOR: S. Schulzt	LAB: IT		DATE: 11/9/94
CASE: W0622, W0647		SDG: W0083	

ANALYSES PERFORMED

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

SAMPLES/MATRIX B0BX94, B0BJ16, B0BX97, B0BX98 Soil

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: CN holding time exceeded in B0BX94, B0BJ16.

032

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: Mn, Ca, Pb, detected in lab blanks. Associated results qualified
Al, Ba, Cr, Fe, Mg, Na, Zn detected in equip blank.

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:

033

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: Zinc noted in narrative as exceeding RPD limit, but soil limit is 35%, Zinc RPD is 21.3%, no qualification required

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: Analytical spike recovery of As, Se, Tl <85% in B0BJ16, Tl recovery <85% in B0B3X98, 97. Associated results qualified UJ.

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:

034

HOLDING TIME SUMMARY

SDG: W0083-ITC-094 VALIDATOR: L. Salulah DATE: 11/9/94 PAGE 1 OF 2

COMMENTS: Inorganics

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOBX94	ICP	5/31/94	~~6/22/94~~ 7/5/94	7/5/94	~~36~~ 35	~~36~~ 35	none
BOBJ16	↓	6/1/94	↓	↓	~~35~~ 34	~~35~~ 34	↓
BOBX97	↓	6/9/94	6/15/94	7/6/94	6	27	↓
BOBX98	↓	6/9/94	↓	↓	6	27	↓
BOBX94	CV-Hg	5/31/94	6/27/94	6/27/94	28	28	↓
BOBJ16	↓	6/1/94	↓	↓	27	27	↓
BOBX97,98	↓	6/9/94	↓	↓	18	18	↓
BOBX94	CN	5/31/94	6/21/94	6/23/94	~~22~~ 21	~~24~~ 23	UJ
BOBJ16	↓	6/1/94	↓	↓	20	22	UJ
BOBX97,98	↓	6/9/94	↓	↓	12	14	none
BOBX94	GFAA-As	5/31/94	6/22/94	6/22/94	22	22	none
BOBJ16	↓	6/1/94	↓	↓	21	21	↓
BOBX97,98	↓		6/15/94	↓	14	21	↓
BOBX94	GFAA-Pb	5/31/94	6/22/94	6/28/94	22	28	↓
BOBJ16	↓	6/1/94	↓	↓	21	27	↓
BOBX97,98	↓	6/9/94	6/15/94	6/20/94	6	11	↓

HOLDING TIME SUMMARY

SDG: W0083-ITC-094 | VALIDATOR: S. Schulzt | DATE: 11/9/94 | PAGE 2 OF 5

COMMENTS: Inorganics

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0BX94	GFAA-Se	5/31/94	6/22/94	6/27/94	22	27	none
B0BJ16	↓	6/1/94	↓	6/28/94	21	27	↓
B0BX97,98	↓	6/9/94	6/15/94	6/17/94	6	8	↓
B0BX94	GFAA-Tl	5/31/94	6/22/94	6/23/94	22	23	↓
B0BJ16	↓	6/1/94	↓	↓	21	22	↓
B0BX97,98	↓	6/9/94	6/15/94	6/22/94	6	13	↓
B0BX94							
B0BJ16							
B0BX97,98							
B0BX94							
B0BJ16							
B0BX97,98							

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U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___

Lab Code: ITSTU_ Case No.: W0622 SAS No.: _____ SDG No.: W0083_

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	Preparation Blank PBS0621 ~~PBS0622A~~ (CN) APBS0622A (0996) CPBS0627A (1479) PBS0705A (1598)	C	M
Aluminum	40.0	U	40.0	U	40.0	U	40.0	U	8.000	U	P
Antimony	50.0	U	50.0	U	50.0	U	50.0	U	10.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Barium	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	0.200	U	P
Cadmium	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Calcium	20.0	U	20.0	U	20.0	U	20.0	U	16.442	B	P
Chromium	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Cobalt	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Copper	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Iron	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	0.520	B	F
Magnesium	30.0	U	30.0	U	30.0	U	30.0	U	6.000	U	P
Manganese	2.0	U	2.0	B	2.0	U	2.0	U	0.400	U	P
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.100	U	CV
Nickel	20.0	U	20.0	U	20.0	U	20.0	U	4.000	U	P
Potassium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	200.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Silver	5.2	B	5.0	U	5.0	U	5.0	U	1.000	U	P
Sodium	100.0	U	100.0	U	100.0	U	100.0	U	20.000	U	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Vanadium	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Zinc	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Cyanide	10.0	U	10.0	U	10.0	U			1.000	U	AS

FORM III - IN ILM02.1

11/10/94

ACCURACY DATA SUMMARY

SDG: W0083JTC-09	VALIDATOR: S. Schulat	DATE: 11/9/91	PAGE 1 OF 1	
COMMENTS: Inorganics, Analytical Spike				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B0BJ16	Arsenic	77.1	B0BJ16	UJ
B0BJ16	Selenium	81		
B0BJ16	Thallium	73.5		
B0BX98	Thallium	76.6	B0BX98	UJ
B0BX97	Thallium	76.9	B0BX97	UJ

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W0083-ITC-094

RECORD COPY

MEMORANDUM

DEC 1994

TO: 200-UP-1 Round 1 Soil Project QA Record December 7, 1994

FR: Thomas Stapp, Golder Associates Inc.

RE: RADIOCHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE W0083-ITC-094 (943-1610.034 094RAD.UP1)

INTRODUCTION

This memo presents the results of data validation on data package W0083-ITC-094 prepared by International Technology Laboratory. Sample information is provided in the following table.

SAMPLE ID	COMMENTS	MEDIA	ANALYSIS
B0BX94	EQUIPMENT BLANK	SOIL	RADIOCHEMISTRY
B0BJ16		SOIL	
B0BX98*	DUPLICATE OF B0BX97	SOIL	SEE ATTACHMENT 4
B0BX97		SOIL	
* Indicates the sample results which were 100% recalculated.			

Data validation was conducted to level D in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1993). Attachments 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

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

Precision. Goals for precision were met.

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

Sample Result Verification. All sample results were supported in the raw data with the exception of carbon-14 which was not reported due to a deficiency of carbon in the samples.

Detection Limits. Detection limit goals were met for all results.

Revised 12-7-94

001

Completeness. The data package was complete for all requested analyses. A total of four samples were validated in this data package with a total of 106 determinations reported, 105 of which were deemed valid. This results in a completeness of 99 percent, which meets normal work plan objectives of 90 percent.

MAJOR DEFICIENCIES

The following major deficiency was identified during data validation which required qualification of data as unusable.

Continuing Calibration

- The strontium-90 detector efficiency check data for sample B0BJ16 was unacceptable. Attachments 2 and 5 provide a summary of the sample affected, qualification applied, and supporting documentation.

MINOR DEFICIENCIES

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

Laboratory Blanks

- Radium-224/226/228 and europium-152 were detected in the method blank. Attachments 2 and 5 provide a summary of the samples affected, qualification applied, and supporting documentation.

Laboratory Control Sample

- The laboratory control sample recovery for neptunium-237 was unacceptable. Attachments 2 and 5 provide a summary of the samples affected, qualification applied, and supporting documentation.

Tracer Recovery

- The chemical tracer recovery for plutonium-238/239 analysis was unacceptable. Attachments 2 and 5 provide a summary of the samples affected, qualification applied, and supporting documentation.

FIELD QC

- Sample B0BX98 is identified as the field duplicate of sample B0BX97. All relative percent differences were acceptable with the exception of uranium-238 and gross alpha however, no qualification is required.

- Sample B0BX94 was identified as an equipment blank. Positive results were detected for uranium-234/238 (alpha spectroscopy), potassium-40, radium-224/226/228, and uranium-238 (gamma analysis). Attachment 3 provides a summary of the results.

Revised 12-7-94

REFERENCES

WHC 1993, Data Validation Procedures for Radiochemical Analyses, WHC-SD-EN-SPP-001, Rev. 1, 1993. Westinghouse Hanford Company, Richland, Washington.

WHC 1994, Environmental and Waste Characterization Analytical Data Validation, Purchase Order MSH-SWV-315905; Validation Statement of Work, Revision 1.0, September 7, 1994, Westinghouse Hanford Company, Richland, Washington.

Revised 12-7-94

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ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

ATTACHMENT 1

GLOSSARY OF RADIOCHEMISTRY DATA REPORTING QUALIFIERS

U - Indicates the constituent was analyzed for, but was not detected at a concentration above the minimum detectable activity (MDA). The concentration reported is the MDA corrected for sample aliquot size, dilution factors 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 was not detected at a concentration above the MDA. Due to a quality control deficiency identified during data validation, the concentration reported may not accurately reflect the sample MDA. The associated data should be considered usable for decision making purposes.

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

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ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

WHC-SD-EN-SPP-002, REV.2

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: W0083-ITC-094	REVIEWER: T. STAPP	DATE: 11-09-94	PAGE 1 OF 1
COMMENTS: RADIOCHEMISTRY			
COMPOUND/ANALYTE	QUALIFIER	SAMPLES AFFECTED	REASON
NEPTUNIUM-237	UJ	ALL	LABORATORY CONTROL SAMPLE RECOVERY <70% BUT >30%
RADIUM-224/226/228	J	B0BX94	DETECTED IN BLANK
EUROPIUM-152	J	B0BJ16, B0BX97	DETECTED IN BLANK
PLUTONIUM-238/239	UJ	B0BJ16	TRACER RECOVERY <20% BUT >5%
STRONTIUM-90	UR	B0BJ16	CONTINUING CALIBRATION OUT OF CONTROL LIMITS

Revised
12-7-94

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ATTACHMENT 3

QUALIFIED DATA SUMMARY and ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0083-ITC-094

	Samp#	B0BJ16		B0BX94		B0BX97		B0BX98	
	Date	6-1-94		5-31-94		6-9-94		6-9-94	
	Location	299-W19-34B		699-38-68A		699-38-68A		699-38-68A	
	Depth	332.00 - 334.00		---		285.00 - 287.00		285.00 - 287.00	
	Type	SOIL		SOIL		SOIL		SOIL	
	Comments			EQUIP.BLANK				DUPLICATE	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q
AMERICIUM-241	PCI/G	0.029	U	0.025	U	0.024	U	0.016	U
CURIUM-242	PCI/G	0.049	U	0.050	U	0.028	U	0.028	U
CURIUM-244	PCI/G	0.054	U	0.058	U	0.024	U	0.024	U
NEPTUNIUM-237	PCI/G	0.017	UJ	0.017	UJ	0.017	UJ	0.021	UJ
PLUTONIUM-238	PCI/G	0.064	UJ	0.018	U	0.024	U	0.016	U
PLUTONIUM-239/240	PCI/G	0.113	UJ	0.037	U	0.026	U	0.029	U
URANIUM-234	PCI/G	0.825		0.089		0.467		0.583	
URANIUM-235	PCI/G	0.081		0.029	U	0.029	U	0.037	U
URANIUM-238	PCI/G	0.895		0.075		0.550		0.512	
COBALT-58	PCI/G	0.009	U	0.005	U	0.009	U	0.009	U
COBALT-60	PCI/G	0.009	U	0.004	U	0.009	U	0.009	U
CESIUM-137	PCI/G	0.008	U	0.004	U	0.008	U	0.010	
EUROPIUM-152	PCI/G	0.094	J	0.023	U	0.092	J	0.039	U
EUROPIUM-154	PCI/G	0.028	U	0.013	U	0.031	U	0.029	U
EUROPIUM-155	PCI/G	0.046		0.013		0.022	U	0.022	U
IRON-59	PCI/G	0.026	U	0.012	U	0.024	U	0.023	U
IODINE-129	PCI/G	0.904	U	0.509	U	0.796	U	0.856	U
POTASSIUM-40	PCI/G	11.200		0.511		14.900		14.300	
MANGANESE-54	PCI/G	0.012		---		0.011		---	
RADIUM-224	PCI/G	0.919		0.134	J	0.532		0.525	
RADIUM-226	PCI/G	0.562		0.093	J	0.390		0.373	
RADIUM-228	PCI/G	0.921		0.112	J	0.553		0.504	
URANIUM-238DLP	PCI/G	0.815		0.164		0.262		0.457	
GROSS ALPHA	PCI/G	15.600		5.330	U	6.800		10.900	
GROSS BETA	PCI/G	22.100		3.660	U	17.000		22.300	
STRONTIUM-90	PCI/G	0.338	UR	0.123	U	0.147	U	0.157	U
TECHNETIUM-99	PCI/G	0.597		0.496	U	0.496	U	0.496	U

The decimal places shown do not reflect the precision reported by the laboratory

Verified RS 12-7-94

Revised RS 12-7-94

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IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

Verified 11-9-94

SAMPLE RESULTS

BOREHOLE: 299-W19-34B
INTERVAL: 332' - 334'

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40604302	MATRIX:	SOIL
CLIENT ID:	B0BJ16	DATE RECEIVED:	6/3/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	Q	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	~~3.03E-03~~	~~1.03E-02~~	~~1.03E-02~~	2.85E-02	U	pCi/g	71.80%	RD3302
CM-242	~~-1.71E-03~~	~~1.28E-02~~	~~1.28E-02~~	4.86E-02	U	pCi/g	71.80%	RD3302
CM-244	~~-4.47E-03~~	~~1.52E-02~~	~~1.52E-02~~	5.38E-02	U	pCi/g	71.80%	RD3302
NP-237	~~1.22E-02~~	~~1.44E-02~~	~~1.47E-02~~	1.67E-02	UJ	pCi/g	100.00%	RD3208
PU-238	~~0.00E+00~~	~~0.00E+00~~	~~7.11E-02~~	6.42E-02	UJ	pCi/g	17.60%	RD3209
PU239/40	~~-4.74E-03~~	~~9.47E-03~~	~~9.55E-03~~	1.13E-01	UJ	pCi/g	17.60%	RD3209
U-234	8.25E-01	1.44E-01	1.82E-01	3.72E-02		pCi/g	66.40%	RD3234
U-235	8.06E-02	4.53E-02	4.66E-02	2.87E-02		pCi/g	66.40%	RD3234
U-238DA	8.95E-01	1.50E-01	1.93E-01	3.35E-02		pCi/g	66.40%	RD3234
CO-58	~~9.60E-04~~	~~5.71E-03~~	~~5.71E-03~~	9.46E-03	U	pCi/g	N/A	RD3219
CO-60	~~-4.57E-03~~	~~5.83E-03~~	~~5.85E-03~~	9.06E-03	U	pCi/g	N/A	RD3219
CS-137DA	~~0.00E+00~~	~~4.87E-03~~	~~4.87E-03~~	8.20E-03	U	pCi/g	N/A	RD3219
EU-152	9.42E-02 J	2.39E-02	2.57E-02	4.70E-02		pCi/g	N/A	RD3219
EU-154	~~-1.70E-02~~	~~1.74E-02~~	~~1.75E-02~~	2.83E-02	U	pCi/g	N/A	RD3219
EU-155	4.56E-02	1.68E-02	1.74E-02	2.70E-02		pCi/g	N/A	RD3219
FE-59	~~8.47E-03~~	~~1.56E-02~~	~~1.56E-02~~	2.61E-02	U	pCi/g	N/A	RD3219
I-129LP	~~-1.10E-02~~	~~5.22E-01~~	~~5.22E-01~~	9.04E-01	U	pCi/g	N/A	RD3219
K-40	1.12E+01	2.48E-01	1.15E+00	N/A		pCi/g	N/A	RD3219
MN-54	1.23E-02	7.28E-03	7.38E-03	N/A		pCi/g	N/A	RD3219
RA-224DA	9.19E-01	1.86E-02	9.37E-02	N/A		pCi/g	N/A	RD3219
RA-226DA	5.62E-01	2.49E-02	6.14E-02	N/A		pCi/g	N/A	RD3219
RA-228DA	9.21E-01	4.80E-02	1.04E-01	N/A		pCi/g	N/A	RD3219
U-238DLP	8.15E-01	3.03E-01	3.13E-01	N/A		pCi/g	N/A	RD3219
ALPHA	1.56E+01	5.63E+00	5.88E+00	5.22E+00		pCi/g	100.00%	RD3214
BETA	2.21E+01	3.42E+00	3.71E+00	3.74E+00		pCi/g	100.00%	RD3214

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IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40604302	MATRIX:	SOIL
CLIENT ID:	B0BJ16	DATE RECEIVED:	6/3/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	~~-4.95E-03~~	~~1.26E-01~~	~~1.26E-01~~	3.38E-01 UR	pCi/g	32.50%	RD3204
TC-99	5.97E-01	2.30E-01	1.01E+00	4.96E-01	pCi/g	100.00%	ITAS-IT-RS-0001

Number of Results: 27

Verified 11-9-94

9613476.1767

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

Verified 11-9-94

SAMPLE RESULTS

BOREHOLE : 699-38-68A
INTERVAL : 285'-287'

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40626502	MATRIX:	SOIL
CLIENT ID:	B0BX97	DATE RECEIVED:	6/13/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT Q	UNIT	YIELD	METHOD NUMBER
AM-241	~~4.36E-03~~	~~1.05E-02~~	~~1.05E-02~~	2.37E-02	U	pCi/g	80.10%	RD3302
CM-242	~~-9.69E-04~~	~~1.37E-03~~	~~1.38E-03~~	2.77E-02	U	pCi/g	80.10%	RD3302
CM-244	~~4.38E-03~~	~~1.05E-02~~	~~1.05E-02~~	2.38E-02	U	pCi/g	80.10%	RD3302
NP-237	~~7.98E-03~~	~~1.18E-02~~	~~1.19E-02~~	1.67E-02	UJ	pCi/g	100.00%	RD3208
PU-238	~~-1.12E-03~~	~~2.24E-03~~	~~2.25E-03~~	0.0237 ~~2.69E-02~~	UR	pCi/g	74.30%	RD3209
PU239/40	~~0.00E+00~~	~~0.00E+00~~	~~1.68E-02~~	0.0263 ~~1.52E-02~~	UR	pCi/g	74.30%	RD3209
U-234	4.67E-01	1.04E-01	1.20E-01	2.85E-02		pCi/g	72.80%	RD3234
U-235	~~1.01E-02~~	~~1.62E-02~~	~~1.63E-02~~	2.85E-02	U	pCi/g	72.80%	RD3234
U-238DA	5.50E-01	1.13E-01	1.34E-01	3.80E-02		pCi/g	72.80%	RD3234
CO-58	~~3.20E-03~~	~~5.21E-03~~	~~5.22E-03~~	8.85E-03	U	pCi/g	N/A	RD3219
CO-60	~~5.24E-04~~	~~5.65E-03~~	~~5.65E-03~~	9.33E-03	U	pCi/g	N/A	RD3219
CS-137DA	~~3.60E-03~~	~~4.85E-03~~	~~4.86E-03~~	7.94E-03	U	pCi/g	N/A	RD3219
EU-152	9.22E-02 J	2.39E-02	2.56E-02	4.67E-02		pCi/g	N/A	RD3219
EU-154	~~-4.45E-03~~	~~1.89E-02~~	~~1.89E-02~~	3.05E-02	U	pCi/g	N/A	RD3219
EU-155	~~-1.37E-02~~	~~1.35E-02~~	~~1.36E-02~~	2.24E-02	U	pCi/g	N/A	RD3219
FE-59	~~-6.09E-03~~	~~1.47E-02~~	~~1.47E-02~~	2.39E-02	U	pCi/g	N/A	RD3219
I-129LP	~~-2.44E-01~~	~~4.73E-01~~	~~4.74E-01~~	7.96E-01	U	pCi/g	N/A	RD3219
K-40	1.49E+01	2.75E-01	1.51E+00	N/A		pCi/g	N/A	RD3219
MN-54	1.07E-02	5.59E-03	5.69E-03	N/A		pCi/g	N/A	RD3219
RA-224DA	5.32E-01	1.52E-02	5.53E-02	N/A		pCi/g	N/A	RD3219
RA-226DA	3.90E-01	2.13E-02	4.45E-02	N/A		pCi/g	N/A	RD3219
RA-228DA	5.53E-01	4.61E-02	7.20E-02	N/A		pCi/g	N/A	RD3219
U-238DLP	2.62E-01	1.98E-01	2.00E-01	N/A		pCi/g	N/A	RD3219
ALPHA	6.80E+00	4.04E+00	4.10E+00	5.45E+00		pCi/g	100.00%	RD3214
BETA	1.70E+01	3.13E+00	3.32E+00	3.91E+00		pCi/g	100.00%	RD3214

Revise 12-7-9

9613476.1768

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40626502	MATRIX:	SOIL
CLIENT ID:	B0BX97	DATE RECEIVED:	6/13/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT Q UNIT		YIELD	METHOD NUMBER
STRONTIUM	~~-5.71E-03~~	~~5.41E-02~~	~~5.41E-02~~	1.47E-01	U	pCi/g	80.90%	RD3204
TC-99	~~4.05E-01~~	~~2.20E-01~~	~~9.88E-01~~	4.96E-01	U	pCi/g	100.00%	ITAS-IT-RS-0001

Number of Results: 27

Verified [illegible] 11-9-94

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IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

Verified 11-9-94

SAMPLE RESULTS

BOREHOLE: 699-38-68A FIELD DUPLICATE OF B0BX97
INTERVAL: 285' – 287'

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40626501	MATRIX:	SOIL
CLIENT ID:	B0BX98	DATE RECEIVED:	6/13/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	Q	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	~~0.00E+00~~	~~0.00E+00~~	~~1.80E-02~~	1.62E-02	U	pCi/g	60.50%	RD3302
CM-242	~~-5.60E-04~~	~~1.12E-03~~	~~1.12E-03~~	2.81E-02	U	pCi/g	60.50%	RD3302
CM-244	~~-4.82E-04~~	~~9.63E-04~~	~~9.67E-04~~	2.42E-02	U	pCi/g	60.50%	RD3302
NP-237	~~7.32E-03~~	~~1.18E-02~~	~~1.19E-02~~	2.07E-02	UJ	pCi/g	100.00%	RD3208
PU-238	~~0.00E+00~~	~~0.00E+00~~	~~1.82E-02~~	1.64E-02	U	pCi/g	68.90%	RD3209
PU239/40	~~-1.21E-03~~	~~2.42E-03~~	~~2.42E-03~~	2.89E-02	U	pCi/g	68.90%	RD3209
U-234	5.83E-01	1.38E-01	1.63E-01	4.60E-02		pCi/g	51.10%	RD3234
U-235	~~6.84E-03~~	~~1.64E-02~~	~~1.64E-02~~	3.72E-02	U	pCi/g	51.10%	RD3234
U-238DA	5.12E-01	1.29E-01	1.50E-01	3.72E-02		pCi/g	51.10%	RD3234
CO-58	~~-5.09E-04~~	~~5.28E-03~~	~~5.28E-03~~	8.63E-03	U	pCi/g	N/A	RD3219
CO-60	~~-1.28E-03~~	~~5.35E-03~~	~~5.35E-03~~	8.83E-03	U	pCi/g	N/A	RD3219
CS-137DA	1.05E-02	5.35E-03	5.45E-03	N/A		pCi/g	N/A	RD3219
EU-152	~~3.86E-02~~	~~2.17E-02~~	~~2.20E-02~~	3.93E-02	U	pCi/g	N/A	RD3219
EU-154	~~9.37E-03~~	~~1.71E-02~~	~~1.71E-02~~	2.85E-02	U	pCi/g	N/A	RD3219
EU-155	~~2.17E-02~~	~~1.33E-02~~	~~1.35E-02~~	2.23E-02	U	pCi/g	N/A	RD3219
FE-59	~~-1.23E-02~~	~~1.46E-02~~	~~1.46E-02~~	2.35E-02	U	pCi/g	N/A	RD3219
I-129LP	~~1.76E-01~~	~~4.81E-01~~	~~4.81E-01~~	8.56E-01	U	pCi/g	N/A	RD3219
K-40	1.43E+01	2.53E-01	1.45E+00	N/A		pCi/g	N/A	RD3219
RA-224DA	5.25E-01	1.46E-02	5.45E-02	N/A		pCi/g	N/A	RD3219
RA-226DA	3.73E-01	2.14E-02	4.30E-02	N/A		pCi/g	N/A	RD3219
RA-228DA	5.04E-01	3.51E-02	6.14E-02	N/A		pCi/g	N/A	RD3219
U-238DLP	4.57E-01	2.48E-01	2.53E-01	N/A		pCi/g	N/A	RD3219
ALPHA	1.09E+01	4.95E+00	5.09E+00	5.83E+00		pCi/g	100.00%	RD3214
BETA	2.23E+01	3.46E+00	3.76E+00	3.87E+00		pCi/g	100.00%	RD3214
STRONTIUM	~~6.08E-02~~	~~6.57E-02~~	~~6.73E-02~~	1.57E-01	U	pCi/g	78.20%	RD3208

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IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40626501	MATRIX:	SOIL
CLIENT ID:	B0BX98	DATE RECEIVED:	6/13/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
TC-99	~~4.41E-01~~	~~2.25E-01~~	~~9.92E-01~~	4.96E-01 U Q	pCi/g	100.00%	ITAS-IT-RS-0001

Number of Results: 26

Verified 11-9-94

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IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

BOREHOLE : 699-38-68A EQUIPMENT BLANK
INTERVAL : N/A

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40604301	MATRIX:	SOIL
CLIENT ID:	B0BX94	DATE RECEIVED:	6/3/94

ISOTOPE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	Q	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	~~-4.93E-04~~		~~9.86E-04~~	~~9.90E-04~~	2.48E-02	U	pCi/g	58.80%	RD3302
CM-242	~~-5.38E-03~~		~~3.58E-03~~	~~3.70E-03~~	4.97E-02	U	pCi/g	58.80%	RD3302
CM-244	~~-4.95E-04~~		~~1.82E-02~~	~~1.82E-02~~	5.83E-02	U	pCi/g	58.80%	RD3302
NP-237	~~-3.83E-03~~		~~8.36E-03~~	~~8.40E-03~~	1.68E-02	UJ	pCi/g	100.00%	RD3208
PU-238	~~0.00E+00~~		~~0.00E+00~~	~~1.96E-02~~	1.77E-02	U	pCi/g	63.70%	RD3209
PU239/40	~~3.92E-03~~		~~1.36E-02~~	~~1.36E-02~~	3.69E-02	U	pCi/g	63.70%	RD3209
U-234	8.89E-02		4.49E-02	4.63E-02	3.49E-02		pCi/g	76.60%	RD3234
U-235	~~3.69E-03~~		~~1.10E-02~~	~~1.10E-02~~	2.90E-02	U	pCi/g	76.60%	RD3234
U-238DA	7.47E-02		4.07E-02	4.18E-02	2.71E-02		pCi/g	76.60%	RD3234
CO-58	~~5.22E-04~~		~~3.01E-03~~	~~3.01E-03~~	5.07E-03	U	pCi/g	N/A	RD3219
CO-60	~~-1.63E-03~~		~~2.71E-03~~	~~2.72E-03~~	4.20E-03	U	pCi/g	N/A	RD3219
CS-137DA	~~-1.39E-03~~		~~2.63E-03~~	~~2.64E-03~~	4.15E-03	U	pCi/g	N/A	RD3219
EU-152	~~-1.08E-02~~		~~1.41E-02~~	~~1.42E-02~~	2.26E-02	U	pCi/g	N/A	RD3219
EU-154	~~-1.21E-03~~		~~7.76E-03~~	~~7.76E-03~~	1.33E-02	U	pCi/g	N/A	RD3219
EU-155	1.30E-02		7.52E-03	7.63E-03	1.23E-02		pCi/g	N/A	RD3219
FE-59	~~4.12E-03~~		~~6.43E-03~~	~~6.44E-03~~	1.16E-02	U	pCi/g	N/A	RD3219
I-129LP	~~1.39E-01~~		~~2.65E-01~~	~~2.66E-01~~	5.09E-01	U	pCi/g	N/A	RD3219
K-40	5.11E-01		8.18E-02	9.64E-02	N/A		pCi/g	N/A	RD3219
RA-224DA	1.34E-01	J	7.99E-03	1.56E-02	N/A		pCi/g	N/A	RD3219
RA-226DA	9.29E-02	J	1.26E-02	1.56E-02	N/A		pCi/g	N/A	RD3219
RA-228DA	1.12E-01	J	1.93E-02	2.23E-02	N/A		pCi/g	N/A	RD3219
U-238DLP	1.64E-01		1.59E-01	1.60E-01	N/A		pCi/g	N/A	RD3219
ALPHA	~~4.62E+00~~		~~3.48E+00~~	~~3.52E+00~~	5.33E+00	U	pCi/g	100.00%	RD3214
BETA	~~2.80E+00~~		~~1.88E+00~~	~~1.89E+00~~	3.66E+00	U	pCi/g	100.00%	RD3214
STRONTIUM	~~-8.23E-03~~		~~4.49E-02~~	~~4.49E-02~~	1.23E-01	U	pCi/g	100.00%	RD3204

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Verified RS 11-9-94

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IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	40604301	MATRIX:	SOIL
CLIENT ID:	B0BX94	DATE RECEIVED:	6/3/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
TC-99	~~3.60E-02~~	~~2.13E-01~~	~~9.59E-01~~	4.96E-01 U	pCi/g	100.00%	ITAS-IT-RS-0001

Number of Results: 26

Verified RS 11-9-94

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ATTACHMENT 4

LABORATORY NARRATIVE and CHAIN-OF-CUSTODY DOCUMENTATION

9613476.1774

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

August 1, 1994

Attention: J.A.Lerch

SAF Number	:	94-046
Date SDG Closed	:	June 17, 1994
Number of Samples	:	Four (4)
Sample Type	:	Soil
SDG Number	:	W0083
Data Deliverable	:	Stand Alone

I. Introduction

On June 3 and 13, 1994, four soil samples were received by ITAS-Richland for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the WHC specific IDs:

ITAS-Richland ID	WHC ID	Matrix	Date of Receipt
406043-01A	B0BX94	Soil	6/3/94
406043-02A	B0BJ16	Soil	6/3/94
406265-01A	B0BX98	Soil	6/13/94
406265-02A	B0BX97	Soil	6/13/94

019

11-9-94

Regional Office
2800 George Washington Way • Richland, Washington 99352-1613 • 509-375-3131 • FAX: 509-375-5590

IT Corporation is a wholly owned subsidiary of International Technology Corporation

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II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, the analytical result(s) and the appropriate associated statistical errors.

The requested analyses were:

Alpha Spectroscopy
Americium-241, Curium-244 by method ITAS-RD-3302
Neptunium-237 by method ITAS-RD-3208
Plutonium-238, 239/40 by method ITAS-RD-3209
Uranium-234, 235, 238 by method ITAS-RD-3234
Gamma Spectroscopy
Gamma Scan by method ITAS-RD-3219
Iodine-129 by method ITAS-RD-3219
Gas Proportional Counting
Gross Alpha by method ITAS-RD-3222
Gross Beta by method ITAS-RD-3222
Strontium-90 by method ITAS-RD-3204
Liquid Scintillation Counting
Carbon-14 by method ITAS-RD-3247
Technetium-99 by method ITAS-IT-RS-0001

III. Quality Control

The analytical results for each analysis performed under SDG W0083 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate.

Quality control sample results are reported in the same units as sample results except for Gross Alpha and Gross Beta quality control sample results which are reported in pCi/sample.

IV. Comments

The initial radioactivity screening of the samples classified samples B0BX94 and B0BJ16 as Category II and samples B0BX98 and B0BX97 as Category I.

Analysis of sample B0BX93, received with samples B0BX94 and B0BJ16, was cancelled per WHC ROD 94-00148.

Alpha Spectroscopy

Americium-241, Curium-244 by method ITAS-RD-3302
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BJ16) results are within contractual requirements.

Neptunium-237 by method ITAS-RD-3208
The LCS radiochemical recovery is accepted with a low bias (32%). The batch data are accepted based on an acceptable matrix spike recovery (72%), and acceptable batch blank, sample and sample duplicate (duplicate of sample B0BJ16) results.

Plutonium-238, 239/40 by method ITAS-RD-3209
The tracer yield for sample B0BJ16 was less than 20%, however, the sample results are reported as acceptable because the required detection limit was achieved, the sample result was less than contractual detection limit, the sample was duplicated and the sample duplicate yield is acceptable, and the sample duplicate result is within the 3 sigma error around the sample result. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BJ16) results are accepted and reported.

Uranium-234, 235, 238 by method ITAS-RD-3234
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BJ16) results are accepted and reported.

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219
Cd-109 was detected in all of the samples and QC samples. The Cd-109 results are not reported because they are suspected false positive results caused by x-ray lines produced by energy reflection from the detector shielding. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BX94) results are within contractual requirements.

Iodine-129 by method ITAS-RD-3219
The LCS was biased high (125%) on the initial count. The recount of the LCS indicated a low bias (42%). The original LCS value is accepted and reported. The cause of the LCS recovery fluctuations is under investigation by the Technical Associate Group. None of the batch samples were above the detection limit for I-129. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BX94) results are accepted and reported.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BX94) results are within contractual requirements.

Gross Beta by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BX94) results are within contractual requirements.

Strontium-90 by method ITAS-RD-3204
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BX94) results are within contractual requirements.

Liquid Scintillation Counting

Carbon-14 by method ITAS-RD-3247
Carbon-14 results are not reportable for these samples due to an insufficient presence of carbon in the samples to perform the analysis. The carbon-14 method requires that 2 grams of carbon be present in each sample. The samples produced insufficient carbon dioxide during sample preparation. Two separate attempts were made to extrude carbon from the sample matrices. The sample results are considered unreportable due to a matrix effect (lack of carbon in the matrix).

Technetium-99 by method ITAS-IT-RS-0001
The matrix spike, LCS, batch blank, sample and sample duplicate (duplicate of sample B0BJ16) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Suzanne Gaines

Suzanne Gaines
Project Manager

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: ER-1D	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0- 0594-38	Bill of Lading/Air Bill No.
Possible Sample Hazards/Remarks: NONE OBSERVED		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE Ref 3C LES 6/9/94		

Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4	COOL 4		
Type of Container	aGs	aG	G	G	G	G	P/G	P/G			aGs	aGs	aGs		
No. of Container(s)	1	1	1	1	1	1	1	1			1	1	1		
Volume	125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml			125ml	250ml	40ml		
SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)	*1	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		
4062664	A	B	C	D	E	F	4062665								

Sample No.	Matrix*	Date Sampled	Time Sampled														
BOBX98 01	S	6-9-94	0940	✓	✓	✓	✓	✓	✓	01 ✓	✓					✓	
BOBX97 2	S	6-9-94	0940	✓	✓	✓	✓	✓	✓	02 ✓	✓					✓	
BOBX99 3A	S	6-9-94	0840											✓			
BOBXB0 4A	S	6-9-94	0900												✓		

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	W. V. Setzer	6-9-94 1205	L Sweeney	6/9/94 1205
Relinquished By	L Sweeney	6/9/94 1300	A Simpson	6/9/94 1300
Relinquished By	A Simpson	6/13/94 1035	C Kentzer IT	6-13-94 1045
Relinquished By			Received By	

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540)

SDG W0083

LOWEST HOLDING TIME = 7DAYS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

9615476.1779

02

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: GWS-015	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0-	Bill of Lading/Air Bill No.
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4	COOL 4		
Type of Container	aGs	aG	G	G	G	G	P/G	P/G			aGs	aGs	aGs		
No. of Container(s)	1	1	1	1	1	1	1	1			1	1	1		
Volume	125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml			125ml	250ml	40ml		
SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F,CL SO4,NO2 NO3,PO4	NO2,NO3 EPA(353.2)	*1	*1			VOA TRIP	VOA FIELD	ACTIVIY SCAN		
	A	B	C	D	E	F	406043								

406042

Sample No.	Matrix*	Date Sampled	Time Sampled	A	B	C	D	E	F								
~~BOBX93~~	~~S~~			~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~					~~X~~	WVS 5-31-94
BOBX94 01	S	5-31-94	1010	X	X	X	X	X	X	X 01	X					X	
BOBX95 2	S	5-31-94	0940												X 02A		
BOBX96 3	S	5-31-94	0730											X 03A			
~~BOBX97~~	~~S~~			~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~					~~X~~	WVS 5/31/94
BOBJ16 4	S	6-1-94	1043	X	X	X	X	X	X	X	02 X					X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
W. V. Setzer	6-1-94 1409	A Sampson 6/1/94	1409
Relinquished By: Joseph C. Rogers for Amy Sampson	Date/Time: 6-3-94 0945	Received By: [illegible] 6/3/94	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540) alternate custodian relinquished custody of samples for custodian due to illness of the shipping facility custodian. Samples stored at shipping facility in locked refrigerator prior to delivery to the laboratory [illegible] 6-3-94.

LOWEST HOLDING TIME = 7DAYS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION	Received By	Title	Date/Time
	[illegible]	ITAS	6/3/94 1430

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

9413176.1280

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. V. SETZER	Company Contact: W. V. SETZER	Telephone No.: (509) 376-2413
Project Designation: 200 UP-1	Sampling Location: 699-38-68A	SAF No.: 94-046
Ice Chest No.: 6W5-015	Field Logbook No.: EFL-1118	Method of Shipment: BY DOE VEHICLE
Shipped To: INTERNATIONAL TECHNOLOGIES	Offsite Property No.: W94-0-	Bill of Lading/Air Bill No.:

Possible Sample Hazards/Remarks: NONE OBSERVED

Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE

SAMPLE ANALYSIS 406042

Sample No.	Matrix*	Date Sampled	Time Sampled	VOA (CLP) 05A	SEMIVOA (CLP) B	ICP MTL GFAA METALS Hg (CLP) C	Cn (CLP) D	ANIONS IC-F,CL SO4,NO2 NO3,PO4 E	NO2,NO3 EPA(353.2) F	*1 40604303	*1	VOA TRIP	VOA FIELD	ACTIVIY SCAN
Preservative				COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4
Type of Container				aGs	aG	G	G	G	G	P/G	P/G	aGs	aGs	aGs
No. of Container(s)				1	1	1	1	1	1	1	1	1	1	1
Volume				125ml	500ml	500ml	250ml	250ml	125ml	1000ml	500ml	125ml	250ml	40ml
BORX93	S	6-2-94	1245	X	X	X	X	X	X	X	X			X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: W. V. Setzer	Date/Time: 6/2/94 1405	Received By: A. Simpson	Date/Time: 6/2/94 1405
Relinquished By: Karen Hoppe for Amy Simpson	Date/Time: 6394 0957	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

*1- GROSS ALPHA,BETA(EP-60,070,170) Am-241,Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137,Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540) alternate custodian relinquished custody of samples for custodian due to illness of the shipping facility custodian. Samples stored at shipping facility in locked refrigerator prior to delivery to the laboratory. 6-3-94

LOWEST HOLDING TIME = 7DAYS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION	Received By	Title	Date/Time
	Tom [illegible]	ITAS	6/3/94 1430

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

9614976.1781

0020

9613476.1782

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200-UP-1 ROUND 1 SOIL.			DATA PACKAGE: W0083-ITC-094		
VALIDATOR: T. Stapp	LAB: ITC Analytical		DATE: 11-8-94		
CASE:			SDG:		

ANALYSES PERFORMED

☒ Gross Alpha/Beta	☒ Strontium-90	☒ Technetium-99	☒ Alpha Spectroscopy	☒ Gamma Spectroscopy	
☐ Total Uranium	☐ Radium-22	☐ Tritium	☒ I-129		

SAMPLES/MATRIX

BOBX94 / SOIL
BOBJ16
BOBX98
BOBX97

1. Completeness . . . . . ☐ N/A

Technical verification forms present? . . . . . (Yes) No N/A

Comments:

2. Initial Calibration . . . . . ☐ N/A

Instruments/detectors calibrated within one year of sample analysis? . . . Note ① . . . . . Yes (No) N/A

Initial calibration acceptable? . . . . . (Yes) No N/A

Standards NIST traceable? . . . . . (Yes) No N/A

Standards Expired? . . . . . Yes (No) N/A

Comments: ① Initial calibration for Am-241, Cm-242/244, Np-237, Pu-238/239, U-234/235/238, Gamma, I-129, and gross α/β detectors not performed within one year of sample analysis, however continuing calib. criteria is acceptable and no qualification applies.

Revised 12-7-94

3. Continuing Calibration . . . . . ☐ N/A

Calibration checked within one week of sample analysis? . . . (Yes) No N/A
Calibration check acceptable? NOTE ① . . . . . Yes (No) N/A
Calibration check standards NIST traceable? . . . . . (Yes) No N/A
Calibration check standards expired? . . . . . Yes (No) N/A

Comments: ① Sr-90 analysis efficiency check data for July 6 '94 on detector # 46 was out of control limits qualifying sample BOBJ16 results as rejected (R/UR).

4. Blanks . . . . . ☐ N/A

Method blank analyzed? . . . . . (Yes) No N/A
Method blank results acceptable? . . . . . Yes (No) N/A
Analytes detected in method blank? NOTE ① . . . . . (Yes) No N/A
Field blank(s) analyzed? . . . NOTE ② . . . . . (Yes) No N/A
Field blank results acceptable? . . . . . Yes (No) N/A
Analytes detected in field blank(s)? . . NOTE ③ . . . . (Yes) No N/A
Transcription/Calculation Errors? . . . . . Yes (No) N/A

Comments: ① See Blank Results Summary page. ② Sample BOBX94 is identified as an Equipment Blank. ③ See Sample results FORM 1 for positive results however qualification of associated Samples is not required per DV procedures.

5. Matrix Spikes . . . . . ☐ N/A

Matrix spike analyzed? . . . . . (Yes) No N/A
Spike recoveries acceptable? . . . . . (Yes) No N/A
Spike source traceable? . . . . . (Yes) No N/A
Spike source expired? . . . . . Yes (No) N/A
Transcription/Calculation Errors? . . . . . Yes (No) N/A

Comments:

029

6. Laboratory Control Samples . . . . . ☐ N/A

LCS analyzed? . . . . . Yes No N/A
LCS recoveries acceptable? . . . . NOTE ① . . . . . Yes No N/A
LCS traceable? . . . . . Yes No N/A
Transcription/Calculation Errors? . . . . . Yes No N/A

Comments: ① See LCS Recovery Summary page.

7. Chemical Recovery . . . . . ☐ N/A

Chemical carrier added? . . . . . Yes No N/A
Chemical recovery acceptable? . . . NOTE ① . . . . . Yes No N/A
Chemical carrier traceable? . . . . . Yes No N/A
Chemical carrier expired? . . . . . Yes No N/A
Transcription/Calculation errors? . . . . . Yes No N/A

Comments: ① Pu-242 yield for Pu238/239 analysis of Sample BOBJ16 was below 20% (@ 18%) but above 5% which qualifies indicated results as estimated (J/UJ).

8. Duplicates . . . . . ☐ N/A

Duplicates Analyzed? . . . . . Yes No N/A
RPD Values Acceptable? . . . . . Yes No N/A
Transcription/Calculation Errors? . . . . . Yes No N/A

Comments:

030

9. Field QC Samples . . . . . ☐ N/A

Field duplicate sample(s) analyzed? . NOTE ① . . . . . (Yes) No N/A
Field duplicate RPD values acceptable? . NOTE ② . . . . Yes (No) N/A
Field split sample(s) analyzed? . . . . . Yes No (N/A)
Field split RPD values acceptable? . . . . . Yes No (N/A)
Performance audit sample(s) analyzed? . . . . . Yes No (N/A)
Performance audit sample results acceptable? . . . . . Yes No (N/A)

Comments: ① Sample BOBX98 is identified as the field duplicate of sample BOBX97.
② RPD values for soil samples exceeded the 35% limit for U-238 by gammaspec and gross alpha for the field duplic. pair however qualification is not required.

10. Holding Times

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

Comments: See holding time Summary pages (B-1).

11. Results and Detection Limits (Levels D & E) . . . . . ☐ N/A

Results reported for all required sample analyses? NOTE ①. Yes (No) N/A
Results supported in raw data? . . . . . (Yes) No N/A
Results Acceptable? . . . . . (Yes) No N/A
Transcription/Calculation errors? . . . . . Yes (No) N/A
MDA's meet required detection limits? . . . . . (Yes) No N/A
Transcription/calculation errors? . . . . . Yes (No) N/A

Comments: ① Carbon-14 analysis results were not reported due to insufficient carbon available in the samples for analysis.

031

9613476.1787

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

LABORATORY CONTROL SAMPLE
Summary

LAB NAME:	ITAS-RICHLAND	SDG:	W0083
LAB SAMPLE ID:	L060431S	MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	EXPECTED	RECOVER
AM-241	1.80E+00	1.65E-01	2.86E-01	2.02E-02	pCi/g	96.10%	2.27E+00	79.30% ✓
CM-242	3.31E-03 ✓	1.20E-02	1.20E-02	3.23E-02	pCi/g	96.10%	1.00E-02	33.10% N
CM-244	2.27E-03 ✓	1.35E-02	1.35E-02	3.75E-02	pCi/g	96.10%	1.00E-02	22.70% N
NP-237	1.85E+00	1.75E-01	4.35E-01	1.68E-02	pCi/g	100.00%	5.76E+00	32.12%
PU239/40	3.36E+00	3.36E-01	5.97E-01	4.02E-02	pCi/g	49.70%	3.39E+00	99.12% ✓
U-234	1.48E+00	1.61E-01	2.41E-01	2.57E-02	pCi/g	96.00%	1.62E+00	91.36% ✓
U-238DA	1.72E+00	1.73E-01	2.70E-01	2.45E-02	pCi/g	96.00%	1.70E+00	101.18% ✓
CS-137DA	3.26E-01	2.10E-02	3.88E-02	N/A	pCi/g	N/A	3.50E-01	93.14% ✓
I-129LP	1.13E+01	1.12E+00	1.59E+00	N/A	pCi/g	N/A	9.01E+00	125.42% ✓
K-40	1.79E+01	4.39E-01	1.85E+00	N/A	pCi/g	N/A	1.95E+01	91.79% ✓
RA-226DA	9.31E-01	4.44E-02	1.03E-01	N/A	pCi/g	N/A	1.16E+00	80.26% ✓
RA-228DA	2.01E+00	8.70E-02	2.19E-01	N/A	pCi/g	N/A	1.87E+00	107.49% ✓
U-238DLP	8.50E-01	7.13E-01	7.18E-01	N/A	pCi/g	N/A	1.05E+00	80.95% ✓
ALPHA	3.86E+00	3.96E-01	7.61E-01	1.00E-01	pCi/sa	100.00%	4.52E+00	85.40% ✓
BETA	1.12E+01	1.05E+00	1.31E+00	7.94E-01	pCi/sa	100.00%	1.13E+01	99.12% ✓
STRONTIUM	5.37E+00	2.76E-01	1.36E+00	1.39E-01	pCi/g	88.50%	6.03E+00	89.05% ✓
U-235	0.05574			0.0198	pCi/g		0.07384	75.48%

Number of Results: 16

Sample results of the circled recovery for the isotope indicated are qualified as estimated (J/UJ)

NA - NOT ADDED.

~~0022~~
032 11-9-94

682A-6-93

9613476.1788

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

BLANK RESULTS
SUMMARY

11-9-94

LAB NAME: ITAS-RICHLAND SDG: W0083
LAB SAMPLE ID: L060431B MATRIX: SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	4.64E-02	3.20E-02	3.28E-02	3.46E-02	pCi/g	72.10%	RD3302
CM-242	-7.07E-03	3.53E-03	3.70E-03	4.40E-02	pCi/g	72.10%	RD3302
CM-244	5.25E-03	2.08E-02	2.08E-02	5.41E-02	pCi/g	72.10%	RD3302
NP-237	-1.67E-03	1.49E-03	1.53E-03	2.35E-02	pCi/g	100.00%	RD3208
PU-238	0.00E+00	0.00E+00	2.38E-02	2.15E-02	pCi/g	52.60%	RD3209
PU239/40	0.00E+00	0.00E+00	2.38E-02	2.14E-02	pCi/g	52.60%	RD3209
U-234	7.75E-03	1.99E-02	1.99E-02	4.89E-02	pCi/g	60.20%	RD3234
U-235	-2.77E-03	2.48E-03	2.51E-03	3.91E-02	pCi/g	60.20%	RD3234
U-238DA	5.26E-03	1.40E-02	1.40E-02	3.45E-02	pCi/g	60.20%	RD3234
CO-58	-1.05E-03	2.41E-03	2.42E-03	3.96E-03	pCi/g	N/A	RD3219
CO-60	-1.03E-03	2.18E-03	2.18E-03	3.60E-03	pCi/g	N/A	RD3219
CS-137DA	1.55E-04	1.95E-03	1.95E-03	3.34E-03	pCi/g	N/A VALUE x 5	RD3219
EU-152	2.57E-02	1.05E-02	1.08E-02	2.18E-02	pCi/g	N/A 0.129	RD3219
EU-154	-2.66E-03	6.43E-03	6.44E-03	1.06E-02	pCi/g	N/A	RD3219
EU-155	6.72E-03	6.17E-03	6.20E-03	9.92E-03	pCi/g	N/A	RD3219
FE-59	2.25E-03	5.58E-03	5.58E-03	9.97E-03	pCi/g	N/A	RD3219
I-129LP	-8.23E-03	2.47E-01	2.47E-01	4.50E-01	pCi/g	N/A	RD3219
K-40	5.83E-02	5.35E-02	5.39E-02	N/A	pCi/g	N/A	RD3219
RA-224DA	3.27E-02	6.52E-03	7.29E-03	N/A	pCi/g	N/A 0.164	RD3219
RA-226DA	5.98E-02	9.90E-03	1.16E-02	N/A	pCi/g	N/A 0.299	RD3219
RA-228DA	4.35E-02	8.97E-03	9.97E-03	1.90E-02	pCi/g	N/A 0.218	RD3219
ALPHA	9.97E-03	4.80E-02	4.81E-02	1.20E-01	pCi/sa	100.00%	RD3214
BETA	-8.34E-02	3.33E-01	3.33E-01	8.23E-01	pCi/sa	100.00%	RD3214
STRONTIUM	-2.55E-03	4.93E-02	4.93E-02	1.32E-01	pCi/g	97.20%	RD3204
TC-99	-1.91E-01	2.10E-01	9.41E-01	4.96E-01	pCi/g	100.00%	ITAS-IT-RS-0001

Results less than 5 x the circled value for the isotopes indicated and above the MDA are qualified as estimated (J).

682A-6-93

9700 03

HOLDING TIME SUMMARY

SDG: W0083-ITC-094 | VALIDATOR: T. Stapp | DATE: 11-8-94 | PAGE 2 OF 3

COMMENTS:

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOBX94	U-234/235/238	5-31-94	N/A	7-06-94	N/A	≤180	NONE
BOBJ16		6-01-94		7-06-94			
BOBX98		6-09-94		7-07-94			
BOBX97		6-09-94		7-07-94			
BOBX94	GAMMA	5-31-94		6-27-94		≤180	NONE
BOBJ16		6-01-94		6-27-94			
BOBX98		6-09-94		6-30-94			
BOBX97		6-09-94		6-30-94			
BOBX94	I-129	5-31-94		6-24-94		≤180	NONE
BOBJ16		6-01-94		6-25-94			
BOBX98		6-09-94		6-28-94			
BOBX97		6-09-94		6-28-94			

11-8-94 B-1

11-8-94

HOLDING TIME SUMMARY

SDG: W0083-ITC-094 | VALIDATOR: T. Stapp | DATE: 11-8-94 | PAGE 3 OF 3

COMMENTS:

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOBX94	Grs α/β	5-31-94	N/A	7-02-94	N/A	≤180	NONE
BOBJ16	↓	6-01-94	↓	↓	↓	↓	↓
BOBX98	↓	6-09-94	↓	↓	↓	↓	↓
BOBX97	↓	6-09-94	↓	↓	↓	↓	↓
BOBX94	Sr-90	5-31-94	↓	7-06-94	↓	≤180	NONE
BOBJ16	↓	6-01-94	↓	↓	↓	↓	↓
BOBX98	↓	6-09-94	↓	↓	↓	↓	↓
BOBX97	↓	6-09-94	↓	↓	↓	↓	↓
BOBX94	Tc-99	5-31-94	↓	7-01-94	↓	≤180	NONE
BOBJ16	↓	6-01-94	↓	↓	↓	↓	↓
BOBX98	↓	6-09-94	↓	↓	↓	↓	↓
BOBX97	↓	6-09-94	↓	↓	↓	↓	↓

11-8-94 B-1

11-8-94

9413476.1790

HOLDING TIME SUMMARY

SDG: W0083-ITC-094 | VALIDATOR: T. Stapp | DATE: 11-8-94 | PAGE 1 OF 3

COMMENTS: RADIOCHEMISTRY

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOBX94	Am-/Cm-	5-31-94	N/A	7-15-94	N/A	≤180	NONE
BOBJ16		6-01-94					
BOBX98		6-09-94					
BOBX97		6-09-94					
BOBX94	Np-237	5-31-94		7-10-94		≤180	NONE
BOBJ16		6-01-94					
BOBX98		6-09-94					
BOBX97		6-09-94					
BOBX94	Pu238/239	5-31-94		7-15-94		≤180	NONE
BOBJ16		6-01-94					
BOBX98		6-09-94					
BOBX97		6-09-94		11-16-94			

11-8-94 B-1

11-8-94

12-7-94

Revised 12-7-94

0.36

W0083-ITC-094

Americium/Curium	
HEIS No.:	B0BX98
Lab ID:	40626501
Aliquot:	2.00E+00
Am241 net cpm:	0.0000
Am241 bkg cpm:	0.0000
Spl count time:	200
Bkg count time:	2500
Eff d/c:	3.225
Decay:	1
Yield:	0.605
Am241 calc:	0.00E+00
Am241 rptd:	0.00E+00
Am241 MDA calc:	1.63E-02
Am241 MDA rptd:	1.62E-02
Cm244 net cpm:	-0.0004
Cm244 bkg cpm:	0.0004
Cm244 decay:	1.004
Cm244 calc:	-4.82E-04
Cm244 rptd:	-4.82E-04
Cm244 MDA calc:	2.42E-02
Cm244 MDA rptd:	2.42E-02
Cm242 net cpm:	-0.0004
Cm242 bkg cpm:	0.0004
Cm242 decay:	1.166
Cm242 calc.:	-5.60E-04
Cm242 rptd:	-5.59E-04
Cm242 MDA calc:	2.82E-02
Cm242 MDA rptd:	2.81E-02

Neptunium	
HEIS No.:	B0BX98
Lab ID:	40626501
Aliquot:	2.00E+00
Np237 net cpm:	0.0088
Np237 bkg cpm:	0.0012
Spl count time:	200
Bkg count time:	2500
Eff d/c:	3.7
Decay:	1
Yield:	1
Np237 calc:	7.32E-03
Np237 rptd:	7.32E-03
Np237 MDA calc:	2.08E-02
Np237 MDA rptd:	2.07E-02

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Plutonium	
HEIS No.:	B0BX98
Lab ID:	40626501
Aliquot:	2.00E+00
Pu238 net cpm:	0
Pu238 bkg cpm:	0
Spl count time:	200
Bkg count time:	1000
Pu238 Eff d/c:	3.703
Decay:	1.001
Yield:	0.689
Pu238 calc:	0.00E+00
Pu238 rptd:	0.00E+00
Pu238 MDA calc:	1.64E-02
Pu238 MDA rptd:	1.64E-02
Pu239 net cpm:	-0.001
Pu239 bkg cpm:	0.001
Pu239 d/c:	3.7
Pu239 decay:	1
Pu239 calc:	-1.21E-03
Pu239 rptd:	-1.21E-03
Pu239 MDA calc:	2.89E-02
Pu239 MDA rptd:	2.89E-02

Uranium	
HEIS No.:	B0BX98
Lab ID:	40626501
Aliquot:	2.00E+00
U-234 net cpm:	0.358
U-234 bkg cpm:	0.002
Spl count time:	200
Bkg count time:	2500
Eff d/c:	3.7
Decay:	1
Yield:	0.511
U-234 calc:	5.83E-01
U-234 rptd:	5.83E-01
U-234 MDA calc:	4.60E-02
U-234 MDA rptd:	4.60E-02
U-235 net cpm:	0.0042
U-235 bkg cpm:	0.0008
U-235 decay:	1
U-235 calc:	6.84E-03
U-235 rptd:	6.84E-03
U-235 MDA calc:	3.72E-02
U-235 MDA rptd:	3.72E-02
U-238 net cpm:	0.3142
U-238 bkg cpm:	0.0008
U-238 decay:	1
U-238 calc.:	5.12E-01
U-238 rptd:	5.12E-01
U-238 MDA calc:	3.72E-02
U-238 MDA rptd:	3.72E-02

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Gross Alpha	
HEIS No.:	B0BX98
Lab ID:	40626501
Aliquot:	5.04E-02
Net counts:	0.242
Bkg counts:	0.048
Spl count time:	100
Bkg count time:	500
d/c:	5.056
Calc.:	1.09E+01
Rptd:	1.09E+01
MDA calc:	5.83E+00
MDA rptd:	5.83E+00

Gross Beta	
HEIS No.:	B0BX98
Lab ID:	40626501
Aliquot:	2.50E-01
Net counts:	4.272
Bkg counts:	1.088
Spl count time:	50
Bkg count time:	500
d/c:	2.897
Calc.:	2.23E+01
Rptd:	2.23E+01
MDA calc:	3.87E+00
MDA rptd:	3.87E+00

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Strontium 90	
HEIS No.:	B0BX98
Sample:	40626501
Sep date:	7/05/94
Sep time:	23:00
Count date:	7/06/94
Count time:	09:55
Hours:	10.916666
Sample amt:	5.94E+00
Net, cpm:	0.324
Count time:	50
Bkg, cpm:	1.096
Count time:	500
D/C 1:	2.175
D/C 2:	1.833
D/C 3:	1.926
Yield:	0.782
Calc:	6.07E-02
Rptd:	6.08E-02
MDA, Calc:	1.57E-01
MDA, rptd:	1.57E-01

Technetium-99	
HEIS No.:	B0BX98
Sample:	40626501
Bkg cpm:	23.34
Spl, amt:	2.00E+00
Spl cpm:	25.01
Count time:	125
Spl dpm:	27.98
d/c:	1.119
Yield:	1
Blk, dpm:	2.60E+01
Blk, d/c:	1.078
Calc:	4.41E-01
Rptd:	4.41E-01
MDA, calc:	4.93E-01
MDA, rptd:	4.96E-01