START 0613490.1227

W0027-ITC-036331

INTERNATIONAL TECHNOLOGY CORPORATION

0045391

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

Dear J.A. Lerch

Thank you for purchasing analytical testing services from IT Corporation. It is our intention to supply our clients with data packages which not only meet the industry's highest standards for quality, but are also easy to use. Features which we point out are:

1. A Data Summary Packet which allows you to review your data without searching through the complete data package.

   Your Data Summary Packet contains the following items:

   - Case Narrative: listing of sample identifications. analyses performed, explanation of any problem associated with samples, corrective action taken.
   - Quality control sample identifications and analyses performed.
   - Data summary.

2. A data package which meets the specific requirements you requested and is easy to use as well. The package is organized in accordance with the Table of Contents which you will find at the beginning of each section. Sections are separated by color-coded tabs, making it easy to find individual analytical parameters which may be of particular interest to you. The data package is custody-sealed at the laboratory - your assurance that parts of the package are not missing.

We are constantly searching for ways to improve our service to you. This current product has many of the features which you have told us are important to you. Your suggestions regarding additional improvements will be appreciated.

Please contact me with any questions or suggestions.

Sincerely,

Sheree Schneider/sp

Sheree' Schneider
Project Manager

Regional Office
5815 Middlebrook Pike ▪ Knoxville, Tennessee 37921 ▪ 615-588-6401
IT Corporation is a wholly owned subsidiary of International Technology Corporation

i 6/10/96 M.H.

9613490.1228

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-94-0107
Record of Disposition No.

DATE: May 2, 1994 | LABORATORY: IT/TMA

PROJECT TITLE/NO.: 200-BP-5/94-130 | NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS:

All samples which were not analyzed prior to this notification.

DESCRIPTION OF EVENT:

The analysis for sulfate by methods EPA 300.0 and EPA 375.4 was requested on the Sampling Authorization Form (SAF). This redundancy in analysis is not necessary.

DISPOSITION OF SAMPLES:

Discontinue analysis for sulfate by EPA 375.4.

APPROVAL SIGNATURES:

R. C. Smith/ [signature] 5/4/94
OSM Project Coordinator (Print/Sign Name) Date

D. B. Erb/ [signature] 5/3/94
Technical Representative (Print/Sign Name) Date

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

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

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

May 26, 1994

Job Number: 351; 379; 381; 382

This is the Certificate of Analysis for the following samples:

SDG:	W0027
Client Project ID:	Westinghouse Hanford
Date Received by Lab:	April 13, 1994; April 15, 1994, April 16, 1994
Number of Samples:	Twenty (20)
Sample Type:	Water

I. Introduction

On April 13, April 15, April 16, 1994, twenty (20) water 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.

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.

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.

Reviewed and Approved:

Sheree' A. Schneider
Project Manager

RECORD COPY

IT Corporation
May 26, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 351; 379; 381; 382

II. Analytical Results/Methodology (Continued)

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

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

The alkalinity of the samples was determined using EPA method 310.1.

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

The samples were analyzed for sulfate based on EPA method 375.4.

The total dissolved solids (TDS) content of the samples was determined using EPA method 160.1.

III. Quality Control

The samples for work order #351 were digested on May 3, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed from May 5 through May 14, 1994; the remaining metals were analyzed by ICP on May 4, 1994. All run QC was acceptable. Linear range for silicon was determined on May 24, 1994.

The samples for work order #379 were digested on May 3, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed from May 5 through May 14, 1994; the remaining metals were analyzed by ICP on May 5 and May 6, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample numbers BOBNJ5 and BOBNJ6. Spike recovery (accuracy) results were within acceptance limits for all requested parameters. Duplicate RPD (precision) results were within acceptance limits for all requested parameters. Blank spikes were performed for cyanide, due to insufficient sample volume.

The samples for work order #381 were digested on May 4, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed from May 9 through May 16, 1994; the remaining metals were analyzed by ICP from May 5 through May 19, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample numbers BOBNM1 and BOBNM2. Spike recovery (accuracy) results were within acceptance limits for all requested parameters for both samples. As the silicon concentration was greater than four times (4X) the spike added, spiking criteria did not apply for this analyte. Duplicate RPD (precision) results were within acceptance limits for all requested parameters for both samples except for iron on sample BOBNM1. Poor precision for iron appears to be attributable to contamination during the sample digestion procedure.

IT Corporation
May 26, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 351; 379; 381; 382

III. Quality Control (Continued)

The samples for work order # 382 were digested on May 3, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed from May 6 through May 16, 1994; the remaining metals were analyzed by ICP on May 6, 1994. All run QC was acceptable.

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.

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.

Matrix spike/matrix spike duplicate analyses for anions, nitrate/nitrite and sulfate were performed on samples BOBNJ5 and BOBNM1 with acceptable results.

A duplicate analysis was performed for alkalinity on sample BOBNJ5 with acceptable results.

A duplicate analysis was performed for total dissolved solids on sample BOBNL7 with acceptable results.

IT Corporation
May 26, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 351; 379; 381; 382

III. Quality Control (Continued)

Table 1 is a cross reference between client sample IDs, laboratory sample IDs, matrix and tests.

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA6269	W404200-01	BOBNL7	Water	METALS (GFAA/ICP)
AA6270	"	"	"	ANIONS
AA6271	"	"	"	NO3NO2
AA6272	"	"	"	ALKALINITY
AA6273	"	"	"	TDS
AA6274	"	"	"	SULFATE
AA6275	"	"	"	CYANIDE
AA6327	W404200-02	BOBNL8	"	METALS (GFAA/ICP)
AA6695 OS/MS/MSD	W404257-01	BOBNJ5	"	METALS (GFAA/ICP)
AA6696 OS/MS/MSD	"	"	"	ANIONS
AA6697 OS/MS/MSD	"	"	"	NO3NO2
AA6698 OS/DUP	"	"	"	ALKALINITY
AA6699 OS/DUP	"	"	"	TDS
AA6700 OS/MS/MSD	"	"	"	SULFATE
AA6701 OS/MS/MSD	"	"	"	CYANIDE
AA6737	W404257-03	BOBNJ7	"	METALS (GFAA/ICP)
AA6738	"	"	"	ANIONS
AA6739	"	"	"	NO3NO2
AA6740	"	"	"	ALKALINITY
AA6741	"	"	"	TDS
AA6742	"	"	"	SULFATE
AA6743	"	"	"	CYANIDE
AA6744	W404257-05	BOBNK3	"	METALS (GFAA/ICP)
AA6745	"	"	"	ANIONS
AA6746	"	"	"	NO3NO2
AA6747	"	"	"	ALKALINITY
AA6748	"	"	"	TDS
AA6749	"	"	"	SULFATE
AA6750	"	"	"	CYANIDE

IT Corporation
May 26, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 351; 379; 381; 382

III. Quality Control (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
N/A	W404257-07	BOBNK5	Water	METALS (GFAA/ICP)
AA6752	"	"	"	ANIONS
AA6753	"	"	"	NO3NO2
AA6754	"	"	"	ALKALINITY
AA6755	"	"	"	TDS
AA6756	"	"	"	SULFATE
AA6757	"	"	"	CYANIDE
AA6758	W404257-09	BOBNN7	"	METALS (GFAA/ICP)
AA6760	"	"	"	NO3NO2
AA6761	"	"	"	ALKALINITY
AA6762	"	"	"	TDS
AA6763	"	"	"	ANIONS
AA6764	"	"	"	CYANIDE
AA6765 OS/MS/MSD	W404257-02	BOBNJ6	"	METALS (GFAA/ICP)
AA6766	W404257-04	BOBNJ8	"	METALS (GFAA/ICP)
AA6767	W404257-06	BOBNK4	"	METALS (GFAA/ICP)
AA6768	W404257-08	BOBNK6	"	METALS (GFAA/ICP)
AA6769	W404257-10	BOBNN8	"	METALS (GFAA/ICP)
AA6776 OS/MS/MSD	W404198-01	BOBNM1	"	METALS (GFAA/ICP)
AA6777 OS/MS/MSD	"	"	"	ANIONS
AA6778 OS/MS/MSD	"	"	"	NO3NO2
AA6779 OS/DUP	"	"	"	ALKALINITY
AA6780 OS/DUP	"	"	"	TDS
AA6781 OS/MS/MSD	"	"	"	SULFATE
AA6782 OS/MS/MSD	"	"	"	CYANIDE
AA6783	W404198-03	BOBNL3	"	METALS (GFAA/ICP)
AA6784	"	"	"	ANIONS
AA6785	"	"	"	NO3NO2
AA6786	"	"	"	ALKALINITY
AA6787	"	"	"	TDS
AA6788	"	"	"	SULFATE
AA6789	"	"	"	CYANIDE

IT Corporation
May 26, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 351; 379; 381; 382

III. **Quality Control** (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA6790 OS/MS/MSD	W404198-02	BOBNM2	Water	METALS (GFAA/ICP)
AA6791	W404198-04	BOBNL4	"	METALS (GFAA/ICP)
AA6792	404286-01	BOBNJ1	"	METALS (GFAA/ICP)
AA6793	"	"	"	ANIONS
AA6794	"	"	"	NO3NO2
AA6795	"	"	"	ALKALINITY
AA6796	"	"	"	TDS
AA6797	"	"	"	SULFATE
AA6798	"	"	"	CYANIDE
AA6799	404286-03	BOBNH9	"	METALS (GFAA/ICP)
AA6800	"	"	"	ANIONS
AA6801	"	"	"	NO3NO2
AA6802	"	"	"	ALKALINITY
AA6803	"	"	"	TDS
AA6804	"	"	"	SULFATE
AA6806	404286-02	BOBNJ2	"	METALS (GFAA/ICP)
AA6807	404286-04	BOBNJ0	"	METALS (GFAA/ICP)

IT Corporation
May 26, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 351; 379; 381; 382

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
Project Manager

9613490.1236

000000 7A

WO #351

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER: 4042000Z2 DATE INITIATED: 4/12/94

INITIATED BY: T Gilmore

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 4/12/94 1230

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
BGBN18		Metals

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 is glass, COC shows Poly

SUPERVISOR REVIEW: _____

PROJECT MANAGER REVIEW: _____

TELEPHONED TO: _____ ON _____ BY _____

TELEFAXED TO: _____ ON _____ BY _____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

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

INTERNATIONAL TECHNOLOGY CORPORATION

CUR # 1477

Work Order No.: 375

Condition Upon Receipt Variance Report
ITAS - Knoxville Laboratory/Middlebrook Facility

Client: ITAS- Richland Date: 4-15-94

Project No: Westinghouse Hanford Initiated by: KAK

Analysis Requested: Anions + Metals RFA/COC Numbers: 340373

Client Sample Numbers Affected: W0425709B + W0425707A

Condition/Variance (Check all that apply):

1. ☐ Not enough sample received for proper analysis. Received approximately: _____
2. ☑ Sample received broken/leaking.
3. ☐ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C. Record temperature: _____
   - ☐ pH _____
   - ☐ other: _____
4. ☐ Sample received in improper container.
5. ☐ Sample received without proper paperwork. Explain: _____
6. ☐ Paperwork received without sample.
7. ☐ No sample ID on sample container.
8. ☐ Custody tape disturbed/broken/missing.
9. ☐ Sample splits performed by lab.
10. ☐ Volatile sample received with approximately _____ mm headspace.
11. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
12. ☐ All coolers on airbill not received with shipment.
13. ☐ Other (explain below): _____

Notes: _____

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". Comments: _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: Kenya K Klemm Date: 5/19/94

Project Management Review: _____ Date: _____

9613490.1238

0000007C

WO 381

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER: 40419804A DATE INITIATED: 4/12/94

INITIATED BY: T Gilmore

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 4/12/94 1230

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
B0BNL4		Metals

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 is glass, COC states Poly.

SUPERVISOR REVIEW: _____

PROJECT MANAGER REVIEW: _____

TELEPHONED TO: _____ ON _____ BY _____

TELEFAXED TO: _____ ON _____ BY _____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

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

CAR# 1479

Work Order No.: 381

Condition Upon Receipt Variance Report

ITAS - KNOXVILLE Laboratory

Client: IT Richland Date: 4/19/94

Project No: Westinghouse Hanford Initiated by: R. Charles

Analysis Requested: CN RFA/COC Numbers:

Client Sample Numbers Affected: W404198-01 & 03

Condition/Variance (Check all that apply):

1. ☐ Not enough sample received for proper analysis. Received approximately:
2. ☐ Sample received broken/leaking.
3. ☒ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C. Record temperature:
   - ☐ pH 01 pH=11 03 pH=10 for CN
   - ☐ other:
4. ☐ Sample received in improper container.
5. ☐ Sample received without proper paperwork. Explain:
6. ☐ Paperwork received without sample.
7. ☐ No sample ID on sample container.
8. ☐ Custody tape disturbed/broken/missing.
9. ☐ Sample splits performed by lab.
10. ☐ Volatile sample received with approximately _____ mm headspace.
11. ☐ Sample ID on container does not match sample ID on paperwork. Explain:
12. ☐ All coolers on airbill not received with shipment.
13. ☐ Other (explain below):

Notes:

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". Comments: _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: Kimy C. Klimm Date: 5/19/94

Project Management Review: _____ Date: _____

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

9613490.1240

WO 391 0000007E

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER: 4041802A DATE INITIATED: 4/12/94

INITIATED BY: T Gilmore

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 4/12/94 1230

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
B0BNM2		Metals

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 is glass, COC states Poly

SUPERVISOR REVIEW: _____

PROJECT MANAGER REVIEW: _____

TELEPHONED TO: _____ ON _____ BY _____

TELEFAXED TO: _____ ON _____ BY _____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

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

9613490.1241

WO 381 00000 F

INTERNATIONAL TECHNOLOGY CORPORATION

copied to W. Price
04/13/94 1400
SW

Work Order No.:

Condition Upon Receipt Variance Report
ITAS - St. Louis Laboratory

Client: Date: 04-13-94 0900

Project No: Initiated by: Sue Schlatter

Analysis Requested: Refer to RFA/COC RFA/COC Numbers: 340367

Client Sample Numbers Affected: Entire Login

Condition/Variance (Check all that apply): Circle Number to Denote that Item was Evaluated. "NA" = "Not Applicable".

1. NA Not enough sample received for proper analysis.
   Received approximately:
2. ☐ Sample received broken/leaking.
3. ☐ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C
     Record temperature: temp bottle 0° / samples 2°
   - ☐ pH
   - ☐ other: W4041981G had pH of 9 / should be 13.
4. ☐ Sample received in improper container. Metals samples are in glass bottles.
5. ☐ Sample received without proper paperwork. Explain:
6. ☐ Paperwork received without sample.
7. ☐ No sample ID on sample container.
8. ☐ Custody tape disturbed/broken/missing.
9. NA Sample splits performed by lab.
10. NA Volatile sample received with approximately _____ mm headspace.
11. ☐ Sample ID on container does not match sample ID on paperwork. Explain:
12. ☐ All coolers on airbill not received with shipment.
13. ☐ Other (explain below):
    Shipping containers not received/surveyed.

Notes:

Corrective Action:

- ☐ Client's Name: Informed verbally on: By:
- ☐ Client's Name: Informed in writing on: By:
- ☐ Sample(s) processed "as is". Comments:
- ☐ Sample(s) on hold until: If released, notify:

Sample Control Supervisor Review: (designate) Date:

Project Management Review: MW Price Date: 4/14/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL7

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO351 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6269
Level (low/med): LOW__ Date Received: 04/13/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	119	B		P
7440-70-2	Calcium	34700			P
7439-89-6	Iron	195			P
7439-95-4	Magnesium	10600			P
7439-96-5	Manganese	3.4	B		P
7440-09-7	Potassium	5920			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	31700			P
7440-31-5	Silicon	15900			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____
Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:
TOTAL_____

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL7

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO351 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6275
Level (low/med): LOW__ Date Received: 04/13/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
7440-31-5	Silicon				NR
	Bismuth				NR
5955-70-0	Cyanide	104			AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
CYANIDE_ONLY._____

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL8

Lab Name: ITAS KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: WO351 SAS No.: SDG No.: W0027
Matrix (soil/water): WATER Lab Sample ID: AA6327
Level (low/med): LOW Date Received: 04/13/94
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.8	B		P
7440-70-2	Calcium	41800			P
7439-89-6	Iron	51.2	B		P
7439-95-4	Magnesium	12800			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	7030			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	38500			P
7440-31-5	Silicon	20200			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
DISSOLVED

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ5

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO379 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6695
Level (low/med): LOW__ Date Received: 04/15/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	67.5	B		P
7440-70-2	Calcium	37700			P
7439-89-6	Iron	27.9	B		P
7439-95-4	Magnesium	11600			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	5280			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	20600			P
7440-31-5	Silicon	17400			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____
Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:
TOTAL

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ5

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO379 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6701

Level (low/med): LOW Date Received: 04/15/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
7440-31-5	Silicon				NR
	Bismuth				NR
5955-70-0	Cyanide	10.0	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.

BOBNJ6

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO379 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6765
Level (low/med): LOW__ Date Received: 04/15/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	51.9	B		P
7440-70-2	Calcium__	36200			P
7439-89-6	Iron____	12.2	B		P
7439-95-4	Magnesium	11200			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	4690	B		P
7782-49-2	Selenium_	2.0	B		F
7440-23-5	Sodium___	19500			P
7440-31-5	Silicon__	16700			P
	Bismuth__	10.0	U		F
5955-70-0	Cyanide__				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____
Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:
DISSOLVED_____

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ7

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO379 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6737
Level (low/med): LOW__ Date Received: 04/15/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	53.1	B		P
7440-70-2	Calcium__	35700			P
7439-89-6	Iron____	81.6	B		P
7439-95-4	Magnesium	15900			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	5160			P
7782-49-2	Selenium_	2.0	U		F
7440-23-5	Sodium___	17500			P
7440-31-5	Silicon__	17000			P
	Bismuth__	10.0	U		F
5955-70-0	Cyanide__				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____
Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:
TOTAL_____

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ7

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO379 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6743
Level (low/med): LOW__ Date Received: 04/15/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_				NR
7440-70-2	Calcium__				NR
7439-89-6	Iron_____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-23-5	Sodium___				NR
7440-31-5	Silicon__				NR
	Bismuth__				NR
5955-70-0	Cyanide__	10.0	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.

BOBNJ8

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO379 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6766

Level (low/med): LOW Date Received: 04/15/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	64.3	B		P
7440-70-2	Calcium	35000			P
7439-89-6	Iron	45.4	B		P
7439-95-4	Magnesium	15300			P
7439-96-5	Manganese	2.8	B		P
7440-09-7	Potassium	5460			P
7782-49-2	Selenium	2.1	B		F
7440-23-5	Sodium	21300			P
7440-31-5	Silicon	16100			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

DISSOLVED

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK3

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO379 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6744
Level (low/med): LOW__ Date Received: 04/15/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	40.0	U		P
7440-70-2	Calcium__	35200			P
7439-89-6	Iron____	123			P
7439-95-4	Magnesium	10000			P
7439-96-5	Manganese	2.3	B		P
7440-09-7	Potassium	5830			P
7782-49-2	Selenium_	2.5	B		F
7440-23-5	Sodium___	21000			P
7440-31-5	Silicon__	17300			P
	Bismuth__	10.0	U		F
5955-70-0	Cyanide__				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____
Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:
TOTAL_____

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK3

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___

Lab Code: ITSTU_ Case No.: WO379 SAS No.: _____ SDG No.: W0027_

Matrix (soil/water): WATER Lab Sample ID: AA6750

Level (low/med): LOW__ Date Received: 04/15/94

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
7440-31-5	Silicon				NR
	Bismuth				NR
5955-70-0	Cyanide	10.0	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.

BOBNK4

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO379 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6767

Level (low/med): LOW Date Received: 04/15/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	37500			P
7439-89-6	Iron	15.5	B		P
7439-95-4	Magnesium	10800			P
7439-96-5	Manganese	2.2	B		P
7440-09-7	Potassium	5430			P
7782-49-2	Selenium	2.8	B		F
7440-23-5	Sodium	23100			P
7440-31-5	Silicon	18500			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNKS

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO379 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6768D

Level (low/med): LOW Date Received: 04/15/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	27800			P
7439-89-6	Iron	77.6	B		P
7439-95-4	Magnesium	7960			P
7439-96-5	Manganese	57.6			P
7440-09-7	Potassium	6070			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	12300			P
7440-31-5	Silicon	22700			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

DISSOLVED

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

~~BOBNK6~~ ~~BOBNK5~~ JDE 5/24/94 BOBNK5 JDE 5/24/94

Lab Name: ITAS_KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO379 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6757

Level (low/med): LOW Date Received: 04/15/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
7440-31-5	Silicon				NR
	Bismuth				NR
5955-70-0	Cyanide	10.0	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.

BOBNN7

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO379 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6758

Level (low/med): LOW Date Received: 04/15/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	24600			P
7439-89-6	Iron	55.6	B		P
7439-95-4	Magnesium	9340			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	4790	B		P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	22300			P
7440-31-5	Silicon	15800			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

TOTAL

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN7

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO379 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6764

Level (low/med): LOW Date Received: 04/15/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
7440-31-5	Silicon				NR
	Bismuth				NR
5955-70-0	Cyanide	10.0	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.

BOBNN8

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO379 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6769
Level (low/med): LOW__ Date Received: 04/15/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	59.1	B		P
7440-70-2	Calcium__	23000			P
7439-89-6	Iron____	26.4	B		P
7439-95-4	Magnesium	8860			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	3640	B		P
7782-49-2	Selenium_	2.0	U	W	F
7440-23-5	Sodium___	21400			P
7440-31-5	Silicon__	14900			P
	Bismuth__	10.0	U		F
5955-70-0	Cyanide__				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____
Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNM1

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO381 SAS No.: _____ SDG No.: W0027_

Matrix (soil/water): WATER Lab Sample ID: AA6776

Level (low/med): LOW__ Date Received: 04/16/94

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	66700			P
7439-89-6	Iron	887		*	P
7439-95-4	Magnesium	19800			P
7439-96-5	Manganese	9.8	B		P
7440-09-7	Potassium	6230			P
7782-49-2	Selenium	9.1			F
7440-23-5	Sodium	29900			P
7440-31-5	Silicon	12300			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNM1

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO381 SAS No.: _____ SDG No.: W0027_

Matrix (soil/water): WATER Lab Sample ID: AA6782

Level (low/med): LOW__ Date Received: 04/16/94

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
7440-31-5	Silicon				NR
	Bismuth				NR
5955-70-0	Cyanide	98.0			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.

BOBNM2

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO381 SAS No.: _____ SDG No.: W0027_

Matrix (soil/water): WATER Lab Sample ID: AA6790

Level (low/med): LOW Date Received: 04/16/94

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	51.4	B		P
7440-70-2	Calcium	74900			P
7439-89-6	Iron	71.6	B		P
7439-95-4	Magnesium	22100			P
7439-96-5	Manganese	2.5	B		P
7440-09-7	Potassium	7010			P
7782-49-2	Selenium	9.0			F
7440-23-5	Sodium	32400			P
7440-31-5	Silicon	14100			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL3

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO381 SAS No.: _____ SDG No.: W0027_

Matrix (soil/water): WATER Lab Sample ID: AA6789

Level (low/med): LOW Date Received: 04/16/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
7440-31-5	Silicon				NR
	Bismuth				NR
5955-70-0	Cyanide	24.0			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.

BOBNL3

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO381 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6783

Level (low/med): LOW Date Received: 04/16/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	55.0	B		P
7440-70-2	Calcium	45800			P
7439-89-6	Iron	385		*	P
7439-95-4	Magnesium	12300			P
7439-96-5	Manganese	48.4			P
7440-09-7	Potassium	7690			P
7782-49-2	Selenium	5.7			F
7440-23-5	Sodium	33200			P
7440-31-5	Silicon	15100			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL4

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO381 SAS No.: _____ SDG No.: W0027_

Matrix (soil/water): WATER Lab Sample ID: AA6791

Level (low/med): LOW__ Date Received: 04/16/94

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	47800			P
7439-89-6	Iron	125			P
7439-95-4	Magnesium	12800			P
7439-96-5	Manganese	47.2			P
7440-09-7	Potassium	8250			P
7782-49-2	Selenium	5.8			F
7440-23-5	Sodium	34400			P
7440-31-5	Silicon	15700			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

DISSOLVED.

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNH9

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO382 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6799

Level (low/med): LOW Date Received: 04/16/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	26700			P
7439-89-6	Iron	82.0	B		P
7439-95-4	Magnesium	8160			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	6040			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	20200			P
7440-31-5	Silicon	23600			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNH9

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO382 SAS No.: _____ SDG No.: W0027_

Matrix (soil/water): WATER Lab Sample ID: AA6805

Level (low/med): LOW__ Date Received: 04/16/94

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_				NR
7440-70-2	Calcium__				NR
7439-89-6	Iron____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-23-5	Sodium___				NR
7440-31-5	Silicon__				NR
	Bismuth__				NR
5955-70-0	Cyanide__	30.0			AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY._____

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1

EPA SAMPLE NO.

INORGANIC ANALYSES DATA SHEET

BOBNJD ~~BOBNH9~~ 5W 194

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO382 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6807

Level (low/med): LOW Date Received: 04/16/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	27800			P
7439-89-6	Iron	23.1	B		P
7439-95-4	Magnesium	8500			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	6220			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	20800			P
7440-31-5	Silicon	25300			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

DISSOLVED.

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ1

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO382 SAS No.: SDG No.: W0027
Matrix (soil/water): WATER Lab Sample ID: AA6798
Level (low/med): LOW Date Received: 04/16/94
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
7440-31-5	Silicon				NR
	Bismuth				NR
5955-70-0	Cyanide	20.0			AS

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE ONLY.

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ2 sp 5/26/94
~~BOBNJ1~~

Lab Name: ITAS_KNOXVILLE____________ Contract: HANFORD/WE
Lab Code: ITSTU_ Case No.: W0382 SAS No.: ________ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6806
Level (low/med): LOW__ Date Received: 04/16/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	40.0	U		P_
7440-70-2	Calcium__	36800			P_
7439-89-6	Iron_____	27.5	B		P_
7439-95-4	Magnesium	13000			P_
7439-96-5	Manganese	2.0	U		P_
7440-09-7	Potassium	3810	B		P_
7782-49-2	Selenium_	2.4	B		F_
7440-23-5	Sodium___	19600			P_
7440-31-5	Silicon__	16500			P_
	Bismuth__	10.0	U		F_
5955-70-0	Cyanide__				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___
Color After: COLORLESS Clarity After: CLEAR_ Artifacts: ______

Comments:
DISSOLVED.

FORM I - IN

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U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ1

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO382 SAS No.: _____ SDG No.: W0027_

Matrix (soil/water): WATER Lab Sample ID: AA6792

Level (low/med): LOW__ Date Received: 04/16/94

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	38900			P
7439-89-6	Iron	38.5	B		P
7439-95-4	Magnesium	13700			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	3910	B		P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	20900			P
7440-31-5	Silicon	17500			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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ALKALINITY ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	351
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/26/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6156	2	U
BOBNL7	AA6272	80	+

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

ALKALINITY ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	379
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/26/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6156	2	U
BOBNJ5	AA6698	110	+
BOBNK5	AA6754	100	+
BOBNJ7	AA6740	108	+
BOBNK3	AA6747	98	+
BOBNN7	AA6761	20	+

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

ALKALINITY ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	381
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/26/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6156	2	U
BOBNL3	AA6786	100	+
BOBNM1	AA6779	82	+

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

ALKALINITY ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	**SDG Number:**	W0027
Contract Name:	Westinghouse Hanford	**Job Number:**	382
Sample Matrix:	Water	**Extraction Date:**	N/A
Concentration Units:	mg/l	**Analysis Date:**	04/26/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6157	2	U
BOBNH9	AA6802	100	+
BOBNJ1	AA6795	110	+

+ - 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:**	W0027
Contract Name:	Westinghouse Hanford	**Job Number:**	351
Sample Matrix:	Water	**Extraction Date:**	N/A
Concentration Units:	mg/l	**Analysis Date:**	04/19/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6101	0.02	U
BOBNL7	AA6271	19	+

+ - 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:**	W0027
Contract Name:	Westinghouse Hanford	**Job Number:**	379
Sample Matrix:	Water	**Extraction Date:**	N/A
Concentration Units:	mg/l	**Analysis Date:**	05/06/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6152	0.04	+
BOBNJ5	AA6697	14	+
BOBNK5	AA6753	0.02	U
BOBNJ7	AA6739	16	+
BOBNK3	AA6746	5.0	+
BOBNN7	AA6760	3.6	+

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	381
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/06/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6152	0.04	+
BOBNM1	AA6778	17	+
BOBNL3	AA6785	8.5	+

+ - Positive result.

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	382
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/11/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6178	0.02	U
BOBNJ1	AA6794	15	+
BOBNH9	AA6801	12	+

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

SULFATE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	351
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/27/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6124	5	U
BOBNL7	AA6274	47	+

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

SULFATE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	379
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/27/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6124	5	U
Method Blank	P6125	5	U
BOBNJ5	AA6700	38	+
BOBNK5	AA6756	38	+
BOBNJ7	AA6742	41	+
BOBNK3	AA6749	64	+
BOBNN7	AA6763	31	+

Method blank P6124 applies to sample: BOBNJ5

Method blank P6125 applies to samples: BOBNK5, BOBNJ7, BOBNK3 and BOBNN7.

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

SULFATE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	381
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/27/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6124	5	U
BOBNM1	AA6781	152	+
BOBNL3	AA6788	102	+

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

SULFATE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	382
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/02/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6180	5	U
BOBNH9	AA6804	18	+
BOBNJ1	AA6797	44	+

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

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	351
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/15/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6095	1	U
BOBNL7	AA6273	312	+

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

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	379
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/19/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6103	1	U
BOBNJ5	AA6699	266	+
BOBNJ7	AA6741	286	+
BOBNK3	AA6748	298	+
BOBNK5	AA6755	200	+
BOBNN7	AA6762	222	+

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

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	381
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/19/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6103	1	U
BOBNM1	AA6780	542	+
BOBNL3	AA6787	370	+

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

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	382
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/19/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6103	1	U
BOBNJ1	AA6796	276	+
BOBNH9	AA6803	280	+

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	351
Client Sample ID:	BOBNL7	Analysis Date:	05/09/94 & 05/23/94
Lab Sample ID:	AA6270	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.95	+	0.4
chloride	7.3	+	1.2
nitrite	0.4	U	0.4
phosphate	1.0	U	1.0
sulfate	46	+	4.5

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	379
CIient Sample ID:	BOBNJ5	Analysis Date:	05/10/94 & 05/23/94
Lab Sample ID:	AA6696	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.60	+	0.4
chloride	5.9	+	0.4
nitrite	0.4	U	0.4
phosphate	1.0	U	1.0
sulfate	29	+	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:**	W0027
Contract Name:	Westinghouse Hanford	**Job Number:**	379
Client Sample ID:	BOBNJ7	**Analysis Date:**	05/10/94 & 05/23/94
Lab Sample ID:	AA6738	**Confirmation Date:**	N/A
Sample Matrix:	Water	**Concentration Units:**	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.42	+	0.4
chloride	7.8	+	0.8
nitrite	0.4	U	0.4
phosphate	1.0	U	1.0
sulfate	34	+	3.0

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	379
Client Sample ID:	BOBNK3	Analysis Date:	05/10/94 & 05/23/94
Lab Sample ID:	AA6745	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.80	+	0.4
chloride	11	+	0.8
nitrite	0.4	U	0.4
phosphate	1.0	U	1.0
sulfate	63	+	4.5

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	379
Client Sample ID:	BOBNK5	Analysis Date:	05/10/94 & 05/23/94
Lab Sample ID:	AA6752	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	4.0	+	0.4
nitrite	0.4	U	0.4
phosphate	1.0	U	1.0
sulfate	32	+	3.0

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	379
Client Sample ID:	BOBNN7	Analysis Date:	05/11/94 & 05/23/94
Lab Sample ID:	AA6763	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.82	+	0.4
chloride	9.0	+	0.8
nitrite	0.4	U	0.4
phosphate	1.0	U	1.0
sulfate	28	+	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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	381
Client Sample ID:	BOBNM1	Analysis Date:	05/09/94 & 05/23/94
Lab Sample ID:	AA6777	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.52	+	0.4
chloride	52	+	4.0
nitrite	0.4	U	0.4
phosphate	1.5	+	1.0
sulfate	186	+	12

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	381
Client Sample ID:	BOBNL3	Analysis Date:	05/09/94 & 05/23/94
Lab Sample ID:	AA6784	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.56	+	0.4
chloride	115	+	1.2
nitrite	0.4	U	0.4
phosphate	1.0	U	1.0
sulfate	23	+	7.5

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	382
Client Sample ID:	BOBNJ1	Analysis Date:	05/12/94
Lab Sample ID:	AA6793	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	7.9	+	0.8
nitrite	0.4	U	0.4
phosphate	1.0	U	1.0
sulfate	36	+	3.0

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	382
Client Sample ID:	BOBNH9	Analysis Date:	05/12/94
Lab Sample ID:	AA6800	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	10	+	1.2
nitrite	0.4	U	0.4
phosphate	1.0	U	1.0
sulfate	17	+	1.5

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

WO #351

INTERNATIONAL TECHNOLOGY CORPORATION

[illegible] Office
[illegible] George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

Per Shipping Container

Date/Time Received 4/12/94 1230 Client Name WHC

Project/Client # 94-130 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) EROS

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 ☑ all in 1 bag.
7. Number of sample containers in cooler: 15
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 2°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 N/A
12. Have any anomalies been identified above? Yes ☑ No ☐
13. Memos have been initiated for all anomalies identified above? Yes ☑

Printed Name/Signature T.A. Gilmore [signature] Date/Time 4/12/94 1230

FORM NO. LS-042, Rev.0, 2.94

WO 374

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
3100 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

Per Shipping Container

Date/Time Received 4/14/94 1130 Client Name WHC

Project/Client # 94-130 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 ☑ all in 1 bag
7. Number of sample containers in cooler: 15
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 20°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 N/A
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 Date/Time 4/14/94 1130

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

WO 379

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
[illegible] George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

Per Shipping Container

Date/Time Received 4/14/94 1130 Client Name WHC

Project/Client # 94-130 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) SML 118

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 ☑ all in one bag
7. Number of sample containers in cooler: 15
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 2°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 N/A
12. Have any anomalies been identified above? Yes ☒ No ☑
13. Memos have been initiated for all anomalies identified above? 4/14/94 Yes ☐

Printed Name/Signature Tom Gilmore Date/Time 4/14/94 1130

FORM NO. LS-042, Rev.0, 2.94

9613490.1300

0000035

WO 379

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
1330 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

* Per Shipping Container

Date/Time Received 4/14/94 1130 Client Name WHC

Project/Client # 94-130 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) ER05

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 ☑ all in 1 bag
7. Number of sample containers in cooler: 15
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 2°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 N/A
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 4/14/94 1130

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

WO 379

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
1820 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

Per Shipping Containers

Date/Time Received 4/14/94 1130 Client Name WHC

Project/Client # 94-130 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) ER-7

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 ☑ all in 1 bag
7. Number of sample containers in cooler: 16
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 2°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 N/A
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 Date/Time 4/14/94 1130

FORM NO. LS-042, Rev.0, 2.94

LWO 379

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
3100 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

Per Shipping Container

Date/Time Received 4/14/94 1130 Client Name WHC

Project/Client # 94-130 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) GWS144

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: 15
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 3°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 N/A
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 Date/Time 4/14/94 1130

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

WC 381

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
[illegible] George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

Per Shipping Container

Date/Time Received 4/12/94 1230 Client Name WHC

Project/Client # 94-130 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) GWS 144

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 ~~☑~~ 4/12/94 No ☑ all in one bag.
7. Number of sample containers in cooler: 15
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 2°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 N/A
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 4/12/94 1230

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

9613490.1304

0000039

WO 381

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
[illegible] George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

Per Shipping Container

Date/Time Received 4/12/94 1230 Client Name WHC

Project/Client # 94-130 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) GWS015

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 ☑ all in 1 bag
7. Number of sample containers in cooler: 15
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 2°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 N/A
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 Tom Gilmore Date/Time 4/12/94 1230

FORM NO. LS-042, Rev.0, 2.94

LOO 381

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

1 Per Shipping Container

Date/Time Received 4-14-94 1500 Client Name WHC

Project/Client # 94-065 Batch or Case # 006465

Cooler ID (if noted on the outside of cooler) GWS055

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: 7
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) 006465
    Request for analysis #(s) N/A
    Airbill # N/A Carrier N/A
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☒

Printed Name/Signature Laura Ostrenga Date/Time 4-14-94 15:00

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

WO 382

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
1330 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 4-15-94 14:40 Client Name WHC

Project/Client # SAF 94-130 Batch or Case # 30BN H9

Cooler ID (if noted on the outside of cooler) EKO 5

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: 15
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 3°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 N/A
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☒

Printed Name/Signature [illegible] Date/Time 4-15-94 14:40

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

WO 382

INTERNATIONAL TECHNOLOGY CORPORATION
Regional Office
3830 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

1 Per Shipping Container

Date/Time Received 4-15-94 14:30 Client Name WHC

Project/Client # SAF 94-130 Batch or Case # 308107 / 308NT2

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: 15
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 3°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 N/A
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☒

Printed Name/Signature Dawn Lokkinsburg Date/Time 4-15-94 14:40

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

WO 382

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
3300 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

~~4-14-94~~ 4-15-94 (1 Per Shipping Container)

Date/Time Received 4-14 14:30 Client Name BOBIT X8/ECPNX9

Project/Client # SAF - ~~94-129~~ ~~4-15-94~~ Batch or Case # WHC

Cooler ID (if noted on the outside of cooler) Sonic 118

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: 14
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 3°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 n/a
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☒

Printed Name/Signature Karen Hattenburg Date/Time 4-15-94 14:40

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

WO#351

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: ☐ Priority ☒ Normal

Collector: B T WHITTEN	Company Contact: P. M. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-05	Field Logbook No.:	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: WHC-C-336-341	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		

Sample No.	Matrix*	Date Sampled	Time Sampled	Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	none			
				Type of Container	P	G	P	P	P	P	P	P	Gs	P	P	G			
				No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1			
Special Handling and/or Storage: Cool to 4 C. Relog 2C AJSimpson 4/11/94				Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L	1L	40 ml			
SAMPLE ANALYSIS: 404200					*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	Total Activity			
					61A	B	C	D	E	F	G	V	V	V	02A	-			
BOBNL7 01	W	4/1/94	1145		X	X	X	X	X	X	X	X	X	X		X			
BOBNL8 02	W	4/11/94	1145												X				

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
[signature]	4/11/94 1154	[signature] AJSimpson AJSimpson	4/11/94 1355
[signature] AJSimpson AJSimpson	4/12/94 1007	[signature] LSweeney LSweeney	4-12-94 1007
LSweeney LSweeney	4/12/94 1230	[signature]	4/12/94 1230
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613490.1309

0000044

NO 379

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: ☐ Priority ☒ Normal

Collector: P. E. WHITE	Company Contact: P. M. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: GWS 015	Field Logbook No.: EFL-1123	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: 1114-C-C336-37	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refris 2B		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3				
Type of Container	P	G	P	P	P	P	P	P	Gs	P	P	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	2L	1L	40 mL			
SAMPLE ANALYSIS 404257	*1 IC ANIONS-F, Cl, SO4, NO2 PO4. 01A	B	NO2, NO3. C	ALKA-LINITY D	TDS E	SULFATE F	CYANIDE G	*2 4042 5801	TRITIUM	Tc-99	*3 02A				

Sample No.	Matrix*	Date Sampled	Time Sampled													
B0BNJ5	W	4/12/94	0902	X	X	X	X	X	X	X	X	X	X		X	
B0BNJ6	W	4/12/94	0902											X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By / Date/Time	Received By / Date/Time
Kirby P. Lee 4/12/94 1230	AJ Simpson 4/12/94 1230
AJ Simpson 4/13/94 1000	L Sievering 4/14/94 1000
L Sievering 4/14/94 1130	Tom Gilmore 4/14/94 1130
Relinquished By / Date/Time	Received By / Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9615490.1310

0000045

WO 3514

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: ☐ Priority ☒ Normal

Collector: R T WHITTEN	Company Contact: P. M. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: GAL-118	Field Logbook No.: FHC-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: WHC-C-336-35	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		

Special Handling and/or Storage: Cool to 4 C. Refrig 3A KJS 4/12/94

Sample No.	Matrix*	Date Sampled	Time Sampled	Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	n/a			
				Type of Container	P	G	P	P	P	P	P	P	Gs	P	P	G			
				No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1			
				Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L	1L	1L			
				SAMPLE ANALYSIS	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3				
				404257	03A	B	C	D	E	F	G	40425802			04A				
BOBN77	W	4/12/94	1000		X	X	X	X	X	X	X	X	X	X					
BOBN79	W	4/12/94	1000												X				

CHAIN OF POSSESSION

Relinquished By / Date/Time	Received By / Date/Time
K. D. Lee 4/12/94 1238	AJ Simpson 4/12/94 1238
AJ SIMPSON 4/14/94 1001	L Sweeney 4/14/94 1003
L Sweeney 4/14/94 1130	[illegible] 4/14/94 1130

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613490.1311

0000046

WO 379

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: ☐ Priority ☒ Normal

Collector: B. J. [illegible]	Company Contact: P. M. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: CRC5	Field Logbook No.: EFL-1234	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: WHC-C-3336-46	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refrig 313 AJS 4/14/94		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	n/a			
Type of Container	G P	G	P	P	P	P	P	P	Gs	P	G P	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	1	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	2L	1L	4oz			
SAMPLE ANALYSIS 404257	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM 404258 03	Tc-99	*3	TOTAL URANIUM			
	05A	B	C	D	E	F	G				06A				

Sample No.	Matrix*	Date Sampled	Time Sampled													
BOBN K3	W	4/12/94	1050	X	X	X	X	X	X	X	X	X	X		X	
BOBN K4	W	4/12/94	1050											X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	4/12/94 1239	AJ SIMPSON	4/12/94 1239
AJ SIMPSON	4/14/94 1002	[illegible]	4/14/94 1002
[illegible]	4/14/94 1132	[illegible]	4/14/94 1132

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613490.1312

0000047

WO 379

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: ☐ Priority ☒ Normal

Collector	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: (ER-117-12)	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: [illegible] 0336-41	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3				
Type of Container	G P	G	P	P	P	P	P	P	Gs	P	G P	P			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2 1	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L 2L	1L	2 coal			
SAMPLE ANALYSIS 404257	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	[illegible]			
	07A	B	C	D	E	F	G	40425804			08A				

Sample No.	Matrix*	Date Sampled	Time Sampled													
BOBNK[illegible]	W	04/13/94	0850	X	X	X	X	X	X	X	X	X	X		X	
BOBNK[illegible]	W	04/13/94	0950											X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
P.H. Butcher	04/13/94 1252	Karen E. Rogers	4-13-94 1252
Karen E. Rogers	4-13-94 1440	L Sweeney L Sweeney	4-13-94 1440
L Sweeney L Sweeney	4/14/94 1130	[illegible]	4/14/94 1130
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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-6000-628 (12/92)

9613490.1313

0000048

WC 3791

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: ☐ Priority ☒ Normal

Collector: K.D Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: Cooler #1	Field Logbook No.: EFL-1124	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: 11-94-C-0336-40	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		

Sample No.	Matrix*	Date Sampled	Time Sampled	Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	n/a			
				Type of Container	P	G	P	P	P	P	P	P	Gs	P	P	G			
				No. of Container(s)	1	1	1	1	1	1	1	2	2	2 1	1	1			
				Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L 2L	1L	2L			
SAMPLE ANALYSIS 404257					*1 09A	IC ANIONS-F, Cl, SO4, NO2 PO4. B	NO2, NO3. C	ALKA-LINITY D	TDS E	SULFATE F	CYANIDE G	*2	TRITIUM 404258 05	Tc-99	*3 10A	TOTAL ALPHA ACTIVITY			
BOBN17	W	04/13/94	1232		X	X	X	X	X	X	X	X	X	X		X			
BOBN18	W	04/13/94	1232												X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K.D Lee	04/13/94 1242	Loren E. Rogers	4-13-94 1252
Loren E. Rogers	4-13-94 1440	J. Lucas LC Stribling	4-13-94 1440
J. Lucas LC Stribling	4/14/94 1130	[signature]	4/14/94 1130
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613490.1314

0000049

WO 381

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: ☐ Priority ☒ Normal

Collector: B. WHITTEN	Company Contact: P. M. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: GW3015	Field Logbook No.:	Method of Shipment: HAND DELIVERED
Shipped To: LT	Offsite Property No.: W74-C-C336.31	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		

Special Handling and/or Storage: Cool to 4 C. Refrig 2C AJS 4/6/94

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	None			
Type of Container	P	G	P	P	P	P	P	P	Gs	P	P+	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2 4L ~~2 4L~~	2 1L ~~1~~	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L ~~2L~~	1L	4ml			
SAMPLE ANALYSIS	*1 IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.		ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	Total Activity			
404178	01A	B -	C -	D -	E -	F -	G -	-	-	-	02A	-			

Sample No.	Matrix*	Date Sampled	Time Sampled													
B0BN11 01	W	4/11/94	1242	X	X	X	X	X	X	X	X	X	X		X	
B0BN11 02	W	4/11/94	1242											X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	4/6/94	AJ Simpson	4/6/94 1354
AJ Simpson AJ SIMPSON	4/6/94 1007	L Sweeney L Sweeney	4/12/94 1007
L Sweeney L Sweeney	4-12-94 1230	[illegible] Tom Gilmore	4/12/94 1230

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613490.1315

0000050

WO 381

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: ☐ Priority ☒ Normal

Collector: A.T WHITEN	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: GW Sampl	Field Logbook No.:	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W914-C-C336-35	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		

Sample No.	Matrix*	Date Sampled	Time Sampled	Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	NONE			
				Type of Container	G	G	P	P	P	P	P	P	Gs	P	P	P			
				No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1			
				Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L	1L	40 mL			
				SAMPLE ANALYSIS	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3				
				4C4/98	03A	B	C	D	E	F	G				04A				
BOBN-03	W	4/11/94	10 40		X	X	X	X	X	X	X	X	X	X		X			
BOBN-04	W	4/11/94	10 40												X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[signature]	4/11/94 1351	A Simpson	
A Simpson	4/11/94	C J Simpson	4/11/94 1358
L Sweeney	4/12/94 1007	L Sweeney	4/12/94 1007
L Sweeney	4/12/94 1230	[signature]	4/12/94 1230

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

Tedlar Sample Water Leaked in/air bubbles so sample value are bubbles could not be measured

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)

9613490.1316

0000051

WO 382

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: K. D. Lee	Company Contact: P. M. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: GW5015	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W74-0-0336-42	Bill of Lading/Air Bill No.: NONE

Possible Sample Hazards/Remarks: None

Special Handling and/or Storage: Cool to 4 C. Stored in 3C AJS Simpson 4/14/94 1345

SAMPLE ANALYSIS: 40428601

Sample No.	Matrix*	Date Sampled	Time Sampled	Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
				Type of Container	P	G	P	P	P	P	P	P	Gs	P	G-P	G			
				No. of Container(s)	1	1	1	1	1	1	1	2	2	2 1L	1	1			
				Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L 2L	1L	20mL			
					*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2 40428701	TRITIUM 287 2H 4/15	Tc-99	*3 40428802	TOTAL ACTIVITY			
					A	B	C	D	E	F	G	02A		7A	02A				
B0BNJ1	W	04/14/94	1115		X	X	X	X	X	X	X	X	X	X		X			
B0BNJ2	W	04/14/94	1115												X				

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
K. D. Lee	04/14/94 1135	Lorene E. Rogers	4-14-94 1135
Lorene E. Rogers	4-14-94 1340	A.J. Simpson	4/14/94 1343
A.J. Simpson	4/15/94 1000	L. Sweeney	4/15/94 1000
L. Sweeney	4/15/94 1440		

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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-6000-826 (12/92)

9613490.1317

0000052

WO 382

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: ☐ Priority ☒ Normal

Collector: K.D Lee	Company Contact: P. M. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-05	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W74-0-0336-42	Bill of Lading/Air Bill No.: NOAX
Possible Sample Hazards/Remarks: None		

Special Handling and/or Storage: Cool to 4 C. Stored in Refrig 3B by AJS 4/14/94 1346

SAMPLE ANALYSIS: 40428602

Sample No.	Matrix*	Date Sampled	Time Sampled	Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
				Type of Container	G P	G	P	P	P	P	P	P	Gs	P	G P	G			
				No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1			
				Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L-PC	1L	40mL			
					*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKALINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	TOTAL ACTIVITY			
												40428702			4/14/94				
					A	B	C	D	E	F	G				04A				
BOBNH9	W	04/14/94	1000		X	X	X	X	X	X	X	X	X	X		X			
BOBNT0	W	04/14/94	1000												X				

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
Kathleen L. Lee	04/14/94 1135	Karen E Rogers	4-14-94 1135
Karen E Rogers	4-14-94 1346	AJ SIMPSON	4/14/94 1346
AJ Simpson AJ SIMPSON	4/15/94 1000	L Sweeney L Sweeney	4/15/94 1000
L Sweeney L Sweeney	4/15/94 1000	Karen Gottsleuy	4/15/94 14:40

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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-6000-826 (12/92)

9613490.1318

0000053

9613490.1319

000055

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		WM4-C-0536-37

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Env Engr Tech	EFS	ET Field Sampling

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

Routing Hand Deliver ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
Analytical Services 3rd Generation Richland, WA 99352	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1	Sample No: BCBNS5, BCBNS6 Cooler ID: GWSC15 Polycooler with groundwater samples packed in wet ice and vermiculite	NA
1	Sample No: BCBNS7, BCBNS8 Cooler ID: SMC118 Polycooler with groundwater samples packed in wet ice in vermiculite	NA

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

Necessity for the Off-Site Use of this Property

Sampling supports ET/ES work in the 200 AREA

BEST AVAILABLE COPY

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. 57366	Date 4/14/94
Location of Property (Area & Bldg.) 200-W-5	Contact PH Butcher	Phone (509) 376-4388
Date Ready for Shipment	Cost Code to be Charged 58416 PL55A	Approximate Date This Property will be Returned NA
Originated By PH Butcher	Date 4-14-94	Authorized By [signature] Date 4/14/94
Signature and Name of Property Control	Custodian Date	Property Management Approval [signature] Date 4/14/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Date				

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

[signature] 4/14/94 1130

54-3000-479 (09/89)

9613490.1320

0000056

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-C-0336-46

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Env. Eng. & Tech	EFS	EF Field Sampling

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

Routing Hand Deliver ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
IT Analytical Services 200 East Way Richland, WA 99352	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1	Sample No: B0BNR3, B0BNR4. Cooler ID: ER-C5 Polycooler with groundwater samples packed in wet ice and vermiculite	NA
	Sample No: B0BNN7, B0BNN8 Cooler ID: GWS144 Polycooler with groundwater samples packed in wet ice and vermiculite	NA

☐ 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

BEST AVAILABLE COPY

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
[signature]	157886	4/14/94

Location of Property (Area & Bldg.)	Contact	Phone
200-UR-1	PH Rutcher	509 376 4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
4-14-94	F1416 PL53A	NA

Originated By	Date	Authorized By	Date
PH Rutcher	4-14-94	[signature]	4/14/94
Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
		[signature]	4/14/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Date				

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

[signature] 4/14/94 WHC

54-3000-479 (09/89)

9613490.1321

0000057

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-C-1336-41

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Env. Eng. & Tech.	EFS	E1 Field Sampling

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

Routing [illegible] ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
IT Analytical Services 2200 240 WAY Richland, WA 99352	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1	Sample No: BOBNK5, BOBNK6 Cooler No: ER-7 Polycoolers with groundwater samples packed in wet ice and vermiculite	NA

☐ 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

BEST AVAILABLE COPY

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
[illegible]	157866	1/14/94

Location of Property (Area & Bldg.)	Contact	Phone
200-W-5	PH Butcher	(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
1-14-94	SB410 P152A	NA

Originated By	Date	Authorized By	Date
PH Butcher	1-14-94	R/Simpson	4/14/94
Signature and Name of Property Control	**Custodian Date**	**Property Management Approval**	**Date**
		[illegible] Hanker	4/14/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Date				

DISTRIBUTION

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

[illegible] 4/14/94 IRC

54-3000-479 (09/89)

WO 382

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-C-C336-42

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Env. Eng & Tech	EFS	ER Field Samplers

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

Routing ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
IT Analytical Services 2800 G.W. Way Richland, WA 99352	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1	Sample No: B0BNJ1 1B0BNJ2 Cooler ID: GWSU15 Polycooler with groundwater samples packed in wet ice and vermiculite	NA
1	Sample No: B0BNH9, B0BNJC Cooler ID: FR-05 Polycooler with groundwater samples packed in wet ice and vermiculite	NA

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

Necessity for the Off-Site Use of this Property

Samplers supports RI/FS work in the 200 AREA

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
[signature]	15773	4/15/94

Location of Property (Area & Bldg.)	Contact	Phone
200-BP-5	PH Butcher	509 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
4-15-94	BB410 PL53A	NA

Originated By	Date	Authorized By	Date
PH Butcher	4-15-94	PH Butcher	4-15-94

Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
		[signature]	4/15/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Q Bayl IT				
Date 4-15-94 1440				

DISTRIBUTION

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

WO 382

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-U-0336-43

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Env Eng & Tech	EFS	ER Field Sampling

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

Routing ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
IT Analytical Services 2606 G.W. WAY Richland, WA 99352	Full Title

Quantity	Description. (Include Serial and any Government Tag Numbers)	Original Cost
1	Sample No: B0BNX8, B0BNX9 Cooler ID: SMG-118 Polycooler with groundwater samples packed in wet ice and vermiculite	NA

☐ 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 100 AREA

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
[signature]	157123	4/15/94

Location of Property (Area & Bldg.)	Contact	Phone
100-BC-5	PH Butcher	(509) 376-4358

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
4-15-94	88410 PB5AA	NA

Originated By	Date	Authorized By	Date
PH Butcher	4-15-94	PH Butcher	4-15-94
Signature and Name of Property Control	**Custodian Date**	**Property Management Approval**	**Date**
		[signature]	4/15/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
R Boyd ST				
Date 4-15-94 1440				

DISTRIBUTION

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

54-2000-479 (10/90)

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001448*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO# 351 RL# 459

Reference Document No. 340368

Page 1 of 1

Project Name/No.[1] 94-130
Sample Team Members[2]
Profit Center No.[3] 4362
Project Manager[4] Van Petty
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 4/12/94
Lab Destination[8] Middlebrook
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13] 887557604 3

Bill to:[5] ITAS Richland
Report to:[10] ITAS Richland

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
W0420001A	BOBNL7 / Water	4/11/94 1145	Glass	1000ml	HNO3 4°C	metals pH=L2	2°C KAK 4/13/94	
B				500ml		Anions	FOR LAB USE ONLY	
C			Poly		H2SO4	NO2/NO3 pH=L2		
D				250ml		Alkalinity		
E						TDS		
F						Sulfate		
G				1000ml	NaOH	CN pH=11		
W0420002A	BOBNL8 / Water		Glass		HNO3	metals pH=L2		

Special Instructions:[23]

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal:[25] Return to Client ☒ Disposal by Lab ☐ Archive ____ (mos.)

Turnaround Time Required:[26] Normal ☒ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0027

1. Relinquished by[28] (Signature/Affiliation) ITAS	Date: 4/12/94 Time: 1600	1. Received by[28] (Signature/Affiliation) ITAS-KN	Date: 04-13-94 Time: 09:05
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

9613490.1324

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INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001477*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO#3374 RL#4YR

Reference Document No. 340373
Page 1 of 3

Project Name/No.[1] 94-136
Sample Team Members[2]
Profit Center No.[3] 4632
Project Manager[4] Von Tetley
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 4/14/94
Lab Destination[8] Middlebrook
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[1] 112 7285 433

Bill to:[5] ITAS Richland
Report to:[10] ITAS Richland

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
W404257 01A	BOBNJ5 / H_2O	4/12/94 0902	Glass	1000ml	HNO_3 4°C	Metals pH<2	6° C BFB 4/15/94	
B			|	500ml		Anions	FOR LAB USE ONLY	
C			Poly	|	H_2SO_4	NO_2/NO_3 pH<2		
D			|	250ml 4/14/94		Alkalinity		
E			|	250ml		TDS		
F			|	|		Sulfate		
G			|	1000ml	NaOH	cyan pH>12		
02A	BOBNJ6 / H_2O		Glass	|	HNO_3	Metals pH<2	↓	

Special Instructions:[23]

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal:[25] Return to Client ☑ Disposal by Lab ☐ Archive _____ (mos.)

Turnaround Time Required:[26] Normal ☒ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0027

1. Relinquished by[28] (Signature/Affiliation) ITAS	Date: 4/14/94 Time: 1600	1. Received by[28] (Signature/Affiliation) Bryan Blanquist ITASKN	Date: 4/15/94 Time: 7:00
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

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INTERNATIONAL TECHNOLOGY CORPORATION

CUR # 1477

Work Order No.: 375

Condition Upon Receipt Variance Report
ITAS - Knoxville Laboratory/Middlebrook Facility

Client: ITAS- Richland

Date: 4-15-94

Project No: Westinghouse Hanford

Initiated by: KAK

Analysis Requested: Anions + Metals

RFA/COC Numbers: 340373

Client Sample Numbers Affected: W0425709B + W0425707A

Condition/Variance (Check all that apply):

1. ☐ Not enough sample received for proper analysis. Received approximately: _____
2. ☑ Sample received broken/leaking.
3. ☐ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C. Record temperature: _____
   - ☐ pH _____
   - ☐ other: _____
4. ☐ Sample received in improper container.
5. ☐ Sample received without proper paperwork. Explain: _____
6. ☐ Paperwork received without sample.
7. ☐ No sample ID on sample container.
8. ☐ Custody tape disturbed/broken/missing.
9. ☐ Sample splits performed by lab.
10. ☐ Volatile sample received with approximately _____ mm headspace.
11. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
12. ☐ All coolers on airbill not received with shipment.
13. ☐ Other (explain below): _____

Notes: _____

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". Comments: _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: Kenya K Kenna Date: 5/19/94

Project Management Review: _____ Date: _____

INTERNATIONAL TECHNOLOGY CORPORATION

WO#377

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 340373

Page 2 of 3

Project Name

Project No. 94-130

Samples Shipment Date 4/14/94

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
W4042570 3A	BOBNJ7/H_2O	4/12/94 1050	Glass	1000ml	HNO_3 4°C	Metals pH<2	6°C 4/15/94	
B				500ml		Anions		
C			Poly		H_2SO_4	NO_2/NO_3 pH<2		
D				250ml		Alkalinity		
E						TDS		
F						Sulfate		
G				1000ml	NaOH	Cyan pH>12		
04A	BOBNJ8/H_2O		Glass		HNO_3	Metals pH<2		
W4042570 5A	BOBNK3/H_2O	4/12/94 1050			HNO_3	Metals pH<2		
B				500ml		Anions		
C			Poly		H_2SO_4	NO_2/NO_3 pH<2		
D				250ml		Alkalinity		
E						TDS		
F						Sulfate		
G				1000ml	NaOH	CN pH>12		
06A	BOBNK4/H_2O		Glass		HNO_3	Metals pH<2		
W4042570 7A	BOBNK5/H_2O	4/13/94 0915			HNO_3	Metals	Rec'd Broken (KAK 4-15-94)	
B				500ml		Anions	USE ONLY	
C			Poly		H_2SO_4	NO_2/NO_3 pH<2		
D				250ml		Alkalinity		

White: To accompany samples Yellow: Field copy *See back of form for special instructions.

MCA 3/15/91

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WO#377

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 340373
Page 3 of 3

Project Name

Project No. 94-130

Samples Shipment Date 4/14/94

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
W4042570 7E	BOB NK5 / H_2O	4/13/94 0950	Poly	250 ml	4°C	TDS	6°C OK 4/15/94	
F	|	|	|	|		Sulfate		
G	|	|	|	1000 ml	NaOH	CN pH=12		
8A	BOB NK6 / H_2O	|	Glass	|	HNO_3	Metals pH=<2		
W4042570 9A	BOB NN7 / H_2O	4/13/94 1202	|	|	HNO_3	Metals pH=<2		
B	|	|	|	500 ml		Anions → Recid kit broken 4-15-94		
C	|	|	Poly	|	H_2SO_4	NO_2/NO_3 pH=<2		
D	|	|	|	250 ml		Alkalinity @ 4/14/94		
E	|	|	|	|		TDS		
F	|	|	|	|		sulfate		
G	|	|	|	1000 ml	NaOH	CN pH=12		
10A	BOB NN8 / H_2O	|	Glass	|	HNO_3	Metals pH=<2		
							FOR LAB USE ONLY	
	@ 4/14/94							

White: To accompany samples Yellow: Field copy *See back of form for special instructions.

MCA 3/15/91

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INTERNATIONAL TECHNOLOGY CORPORATION

CLR 78 Temp 2°

COC NO. *0001479*

WO 391

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 340367

Page 1 of 2

Project Name/No.[1] 94-130

Sample Team Members[2]

Profit Center No.[3] 4632

Project Manager[4] Van Pettey

Purchase Order No.[6]

Required Report Date[11]

Samples Shipment Date[7] 4/12/94

Lab Destination[8] ~~Middlebrook~~ St. Louis

Lab Contact[9] 4/12/94

Project Contact/Phone[12]

Carrier/Waybill No.[13]

Bill to:[5] ITAS Richland

Report to:[10] ITAS Richland

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21] pH	Condition on Receipt[21] °C	Disposal Record No.[22]
W0419801A	BOBNM1/water	4/11/94 1242	Amber glass Poly	1000ml	HNO3	Metals	1	2°C BPB 4/15/94	FOR LAB USE ONLY
B			Amber Glass	500ml	4°C	Anions			
C			Poly	1	H_2SO_4	NO_2 NO_3	1		
D				250ml	4°C	Alkalinity			
E						TDS			
F						Sulfate			
G				100cml	NaOH	CN	9		
W0419802A	BOBNM2/water		Amber Glass	1	HNO3	Metals	1		

Special Instructions:[23]

Possible Hazard Identification:[24] CAT III
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☑ Disposal by Lab ☐ Archive _____ (mos.)

Turnaround Time Required:[26]
Normal ☑ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐

Project Specific (specify): SDG W0026

1. Relinquished by[28] (Signature/Affiliation) ITAS	Date: 4/12/94 Time: 1600	1. Received by[28] (Signature/Affiliation)	Date: 04-13-94 Time: 0900
2. Relinquished by (Signature/Affiliation)	Date: 04-14-94 Time: 1700	2. Received by (Signature/Affiliation) Bryan Blomquist ITASKN	Date: 4/15/94 Time: 9:00
3. Relinquished by (Signature/Affiliation) ITAS-KN	Date: 04-15-94 Time: 11:00	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 340367

Page 2 of 2

Project Name

Project No. 94-130

Samples Shipment Date 4/12/94

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
W4041980 3 A	BOBNL3 / Water	4/11/94 1640	Glass	1000ml	HNO3 4°C	Metals	1 pH 2 °C 4/13/94 good	FOR LAB
B			1	500ml		Anions		USE
C			Poly	500ml	H2SO4	NO2/NO3	1	ONLY
D				250ml		Alkalinity		
E				1		TDS		
F				1		Sulfate		
G				1000ml	NaOH	CN	13	
W4041980 4 A	BOBNL4 / Water		Glass Amber	1	HNO3	Metals	1	
	(35) 4/12/94							

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

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INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001480*

Rcpt. Lot 495

WO 382

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 340379

Page 1 of 2

Project Name/No.[1] 94-130

Sample Team Members[2]

Profit Center No.[3] 4632

Project Manager[4] Van Petty

Purchase Order No.[6]

Required Report Date[11]

Samples Shipment Date[7] 4-15-94

Lab Destination[8] Middlebrook

Lab Contact[9]

Project Contact/Phone[12]

Carrier/Waybill No.[13]

Bill to:[5] I.T. Richland.

Report to:[10] I.T. Richland

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
40428601A	B03N71	4-14-94 11:15	G	1L		METALS	3°C BTB 4/16/94	
B			G	500ml		ANIONS	FOR LAB USE ONLY	
C			P	500ml		NO2/NO3		
D			P	250ml		ALKALINITY		
E			P	250ml		TDS		
F			P	250ml		SULFATE		
G			P	1L		CYANIDE		
40428602A	B03N72		G	1L		METALS		

Special Instructions:[23] As per WHC Contract

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal:[25] Return to Client ☒ Disposal by Lab ☐ Archive _____ (mos.)

Turnaround Time Required:[26] Normal ☒ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0027

1. Relinquished by[28] (Signature/Affiliation) Heidelberg IT. Date: 4/15/94 Time: 1600	1. Received by[28] (Signature/Affiliation) Bryan Blanquist IT BKN Date: 4/16/94 Time: 9:30
2. Relinquished by (Signature/Affiliation) Date: Time:	2. Received by (Signature/Affiliation) Date: Time:
3. Relinquished by (Signature/Affiliation) Date: Time:	3. Received by (Signature/Affiliation) Date: Time:

Comments:[29]

White: to accompany samples Yellow: field copy

MCA 3/15/91

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 341037

Page 2 of 2

Project Name 94-130

Project No. SIX-100027

Samples Shipment Date 4-15-94

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
40428603A	BOBINH9	4-14-94 10:20	G	1L		METAL	3°C BP 4/16/94	
B			G	500ml		ANIONS		
C			P	500ml		NO2/NO3		
D			P	250ml		Alkalinity		
E			P			TDS		
F			P			sulfate		
G			P	1L		Cyanide		
40428604A	BOBNJO		G	1L		Metals		
	JH 4/15/94							

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

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WO#351

TENNELEC #1 SCREENING CALCULATION SPREADSHEET

BOBNM1 and BOBNL3 are Cat. III based on total activity per gram. Others are Cat. I.

Customer Code WHC	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts Cntd	BACKGROUND Alpha	Beta	Mnts
			41294		412	10	19	238	240

Customer ID WHC/WATER	pH <2 Rcvd/Reiq	Pinchi Wght (mGrms)	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	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Beta
B0BNM1		3.6	5	4.0	35	3	94	0.22	8.41	6.3E-01	1.8E+01	2.3E-04	6.4E-03	4.6E-07	1.6E-06	5.7E+01	1.6E+03	~~Yes~~	1.8E+02	6.2E+01
B0BNL3		1.6	5	4.0	36	6	88	0.52	7.81	1.8E+00	1.6E+01	6.5E-04	5.9E-03	7.1E-07	1.5E-06	1.8E+02	1.5E+03	~~Yes~~	6.1E+01	6.8E+01
B0BNL7		1.4	5	4.0	37	2	30	0.12	2.01	4.1E-01	4.2E+00	1.5E-04	1.5E-03	3.3E-07	7.1E-06	3.7E+01	3.8E+02	Yes	2.7E+02	2.6E+02
B0BKJ5		3.1	5	4.0	38	17	16	1.62	0.61	6.6E+00	2.1E-01	2.4E-03	7.7E-05	1.4E-06	1.6E-06	5.9E+02	1.9E+01	Yes	1.7E+01	5.2E+03
B0BKJ9		0.7	5	4.0	39	1	7	0.02	-0.29	9.0E-02	-6E-01	3.3E-05	-2E-04	1.3E-07	-2E-06	8.1E+00	-6E+01	Yes	1.2E+03	-2E+03
B0BKJ3		2.5	5	4.0	40	15	24	1.42	1.41	5.7E+00	2.1E+00	2.0E-03	7.4E-04	1.3E-06	2.4E-07	5.1E+02	1.9E+02	Yes	2.0E+01	5.4E+02
TOTAL	uCi							-0.06	-0.99	-3E-01	-2E+00	5.5E-03	1.4E-02	ERR	ERR	ERR	ERR	Yes	ERR	ERR

JRN 12 Apr 94

WO 379

All Category I
JRM 14 April 94

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
BAT			41394		413	10	12	210	240

Customer ID	pH	Pinchl	Vol.	Sample	SMPLE CNT DATA			Net Sample		DPM / Aliqout		uCi per Sample		2 Sigma Error		pCi/(Gm or L)		Catagory 1	Aliquot to Cat 1 Gm or Ltr	
					Hldr	Total	Counts	Counts/Minute						uCi per Sample						
BAT/WATER	<2 Rcvd/Relq	Wght (mGrms)	Anal. mG mL	Size Gm L	Num.	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Yes/No	Alpha	Beta
B0BR68		2.4	5	1.0	45	9	30	0.85	2.13	3.3E+00	4.0E+00	3.0E-04	3.6E-04	2.4E-07	1.9E-07	3.0E+02	3.6E+02	Yes	3.3E+01	2.8E+02
B0BR98		2.2	5	1.0	46	12	32	1.15	2.33	4.5E+00	4.2E+00	4.1E-04	3.8E-04	2.8E-07	2.0E-07	4.1E+02	3.8E+02	Yes	2.5E+01	2.6E+02
B0BQX2		3.0	5	1.0	47	10	22	0.95	1.33	3.8E+00	2.2E+00	3.4E-04	2.0E-04	2.6E-07	8.9E-08	3.4E+02	2.0E+02	Yes	2.9E+01	5.0E+02
B0BQX1		3.2	5	1.0	48	4	16	0.35	0.73	1.4E+00	1.3E+00	1.3E-04	1.2E-04	1.5E-07	1.0E-07	1.3E+02	1.2E+02	Yes	7.9E+01	8.4E+02
B0BRB8		3.8	5	1.0	49	1	12	0.05	0.33	1.9E-01	6.6E-01	1.8E-05	6.0E-05	5.4E-08	2.4E-07	1.8E+01	6.0E+01	Yes	5.7E+02	1.7E+03
B0BR68		2.3	5	1.0	50	2	5	0.15	-0.38	6.1E-01	-9E-01	5.5E-05	-8E-05	9.4E-08	-1E-07	5.5E+01	-8E+01	Yes	1.8E+02	-1E+03
B0BQJ6		2.9	5	4.0	51	0	12	-0.05	0.33	-2E-01	7.3E-01	-8E-05	2.6E-04	-2E-07	9.7E-07	-2E+01	6.6E+01	Yes	-5E+02	1.5E+03
B0BQJ5		2.3	5	4.0	52	1	9	0.05	0.03	2.0E-01	2.0E-02	7.2E-05	7.2E-06	2.1E-07	8.7E-09	1.8E+01	1.8E+00	Yes	5.6E+02	5.5E+04
B09FZ3		1.2	5	1.0	53	2	10	0.15	0.13	5.9E-01	1.7E-01	5.3E-05	1.5E-05	9.2E-08	1.3E-08	5.3E+01	1.5E+01	Yes	1.9E+02	6.6E+03
TOTAL	uCi							-0.05	-0.88	-2E-01	-2E+00	1.3E-03	1.3E-03	ERR	ERR	ERR	ERR	Yes	ERR	ERR

96134901334

6900069

WO 381 AL # 2158

BOBNM1 and BOBNL3 are Cat. III based on total activity per gram. Others are Cat. I.

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			41294		412	10	19	238	240

Customer ID	pH	Pinchi	Vol.	Sample	SMPLE CNT DATA			Net Sample		DPM / Aliqout		uCi per Sample		2 Sigma Error uCi per Sample		pCi/(Gm or L)		Catagory 1	Aliquot to Cat 1 Gm or Ltr	
WHC/WATER	<2 Rcvd/Reiq	Wght (mGrms)	Anal. mG mL	Size Gm L	Hldr Num.	Total Alpha	Counts Beta	Counts/Minute Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Yes/No	Alpha	Beta
B0BNM1		3.6	5	4.0	35	3	94	0.22	8.41	6.3E-01	1.6E+01	2.3E-04	6.4E-03	4.6E-07	1.6E-06	5.7E+01	1.6E+03	~~Yes~~	1.8E+02	6.2E+01
B0BNL3		1.6	5	4.0	36	6	88	0.52	7.81	1.8E+00	1.6E+01	6.5E-04	5.9E-03	7.1E-07	1.5E-06	1.6E+02	1.5E+03	~~Yes~~	6.1E+01	6.8E+01
B0BNL7		1.4	5	4.0	37	2	30	0.12	2.01	4.1E-01	4.2E+00	1.5E-04	1.5E-03	3.3E-07	7.1E-06	3.7E+01	3.8E+02	Yes	2.7E+02	2.6E+02
B0BKJ5		3.1	5	4.0	38	17	16	1.62	0.81	6.6E+00	2.1E-01	2.4E-03	7.7E-05	1.4E-06	1.6E-08	5.9E+02	1.9E+01	Yes	1.7E+01	5.2E+03
B0BKJ9		0.7	5	4.0	39	1	7	0.02	-0.29	9.0E-02	-6E-01	3.3E-05	-2E-04	1.3E-07	-2E-06	8.1E+00	-6E+01	Yes	1.2E+03	-2E+03
B0BKJ3		2.5	5	4.0	40	15	24	1.42	1.41	5.7E+00	2.1E+00	2.0E-03	7.4E-04	1.3E-06	2.4E-07	5.1E+02	1.9E+02	Yes	2.0E+01	5.4E+02
TOTAL	uCi							-0.08	-0.99	-3E-01	-2E+00	5.5E-03	1.4E-02	ERR	ERR	ERR	ERR	Yes	ERR	ERR

JRN 12 Apr 94

9613490.1335

0000070

WO 382

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Customer Code WHC	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
			41594		415	10	14	212	240

P.H. category I
JRN 15 Apr 94

Customer ID WHC/WATER	pH <2 Rcvd/Reiq	RESIDUE Wght (mGrms)	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	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Beta
B0BNH9		0.9	5		4.0		35	8	76	0.74	6.72	2.7E+00	1.4E+01	9.7E-04	5.0E-03	8.6E-07	1.4E-06	2.4E+02	1.2E+03	Yes	4.1E+01	8.0E+01
B0BNX8		0.3	5		1.0		36	13	39	1.24	3.02	4.7E+00	5.6E+00	4.2E-04	5.1E-04	2.6E-07	2.3E-07	4.2E+02	5.1E+02	Yes	2.4E+01	2.0E+02
B0BNJ1		2.0	5		4.0		37	4	73	0.34	6.42	1.2E+00	1.3E+01	4.2E-04	4.9E-03	5.7E-07	1.5E-05	1.0E+02	1.2E+03	Yes	9.6E+01	6.2E+01
TOTAL	uCi									-0.06	-0.86	-2E-01	-2E+00	1.8E-03	1.0E-02	ERR	ERR	ERR	ERR	Yes	ERR	ERR

9613490.1336

0000071

WO#351

SAMPLE STATUS REPORT FOR E 6220. E-BLANK 6994957A TIME: 4/12/94 8: 8
DISPATCHED: 4/ 1/94 13:57 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/11/94 15:23

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

BO BNL7
BOBNL8 AJS 4/12/94

WO 374

SAMPLE STATUS REPORT FOR E 6210. E-BLANK 299E3315 TIME: 4/13/94 8: 9
DISPATCHED: 4/ 1/94 13:49 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/12/94 13:33

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

BO BNJ5
BO BNJ6

AJS
4/13/94

WO 379

SAMPLE STATUS REPORT FOR E 6211. E-BLANK 299E3318 TIME: 4/13/94 8: 9
DISPATCHED: 4/ 1/94 13:50 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/12/94 13:34

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

BOBNJ7
BOBNJ8

AJS
4/13/94

WO 379

SAMPLE STATUS REPORT FOR E 6214. E-BLANK 299E3339 TIME: 4/13/94 8: 9
DISPATCHED: 4/ 1/94 13:52 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/12/94 13:34

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

BO BNK3
BO BNK4

AJS
4/13/94

WO 379

SAMPLE STATUS REPORT FOR E 6215. E-BLANK 299E3340 TIME: 4/14/94 9: 8
DISPATCHED: 4/ 1/94 13:53 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/14/94 8:40

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

BCBNK5
BC BNK6
LCS
4-14-94

WC 374

SAMPLE STATUS REPORT FOR E 6230. E-BLANK 69955-55 TIME: 4/14/94 9: 8
DISPATCHED: 4/ 1/94 14: 6 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/14/94 9: 6

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

BOBNN7
BOBNN8
LCS
4/14/94

WO 381

SAMPLE STATUS REPORT FOR E 6218. E-BLANK 6994955A TIME: 4/12/94 8: 8
DISPATCHED: 4/ 1/94 13:56 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/11/94 15:23

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

BO BN L3
BO BN L4

AJS
4/12/94

WO 381

SAMPLE STATUS REPORT FOR E 6222. E-BLANK 6995053A TIME: 4/12/94 8: 8
DISPATCHED: 4/ 1/94 13:59 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/11/94 15:23

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

BO BNM1
BO BNM2

AJS
4/12/94

04/15/94 07:38 ☎373 3178 222S 3B 006

SAMPLE STATUS REPORT FOR E 6207. E-BLANK 299E3312 TIME: 4/15/94 8:32
DISPATCHED: 4/ 1/94 13:47 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/14/94 14:34

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

BOBNH9
BOBNJ0
LCS
4/15/94

WO 382

04/15/94 07:38 ☎373 3176 222S 3B ☑007

SAMPLE STATUS REPORT FOR E 6208. E-BLANK 299E3313 TIME: 4/15/94 8:32
DISPATCHED: 4/ 1/94 13:48 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/14/94 14:34

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

~~BOBNX8~~
~~BOBNX9~~
LCS
4/15/94
- BOBNJ1
BOBNJ2

WO 382

04/14/94 08:14 ☎373 3178 222S 3B 010

SAMPLE STATUS REPORT FOR E 6261. E-BLANK 1-B3-46 TIME: 4/14/94 9:11
DISPATCHED: 4/ 1/94 15:10 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/13/94 15: 1

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

BOBNX8
BOBNX9
KCS
4-14-94

INTERNATIONAL TECHNOLOGY CORPORATION

June 3, 1994

J. A. Lerch
Buyer's Technical Representative
Westinghouse Hanford Company
P.O. Box 1970
2355 Stevens Drive
Richland, WA 99352

RECORD COPY

Reference: Contract MPV-SVV-239000.

Dear Mr. Lerch:

Accompanying this letter is the Data Package Deliverable for Radiochemical analyses on the following WHC samples:

SDG NUMBER	SAF NUMBER	WHC ID NUMBERS	ITAS-RICHLAND ID NUMBERS
W0027	94-130	See COA*	See COA*

*COA = Certificate of Analysis.

The Diskette Deliverable for Radiochemical analyses will be delivered at a later date.

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

Sincerely,

Van H. Pettey
Project Manager

Receipt of this letter and package are acknowledged by:

Name: Gerald Richards Date: 6/3/94 Time: 4:35pm

XC: Rebecca Cartwright
Jim Harvey
Sheree' Schneider
File

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

INTERNATIONAL TECHNOLOGY CORPORATION

Analytical Data Package Prepared For

Westinghouse Hanford

Radiochemical Analysis By

IT Analytical Services
Richland Laboratory

Sample Delivery Group Number: W0027

WHC IDENTIFICATION NUMBER	ITAS RICHLAND ID NUMBER
BOBNM1	40419901
BOBNL3	40419902
BOBNL7	40420101
BOBNJ5	40425801
BOBNJ7	40425802
BOBNK3	40425803
BOBNK5	40425804
BOBNN7	40425805
BOBNJ1	40428701
BOBNH9	40428702

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INTERNATIONAL TECHNOLOGY CORPORATION

RECORD COPY

CERTIFICATE OF ANALYSIS

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

June 3, 1994

Attention: J.A.Lerch

SAF Number	:	94-130
Date SDG Closed	:	April 15, 1994
Number of Samples	:	Ten (10)
Sample Type	:	Water
SDG Number	:	W0027
Data Deliverable	:	Stand Alone

I. Introduction

On April 12, 14, and 15, 1994, ten water 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
404199-01A	B0BNM1	Water	4/12/94
404199-02A	B0BNL3	Water	4/12/94
404201-01A	B0BNL7	Water	4/12/94
404258-01A	B0BNJ5	Water	4/14/94
404258-02A	B0BNJ7	Water	4/14/94
404258-03A	B0BNK3	Water	4/14/94
404258-04A	B0BNK5	Water	4/14/94
404258-05A	B0BNN7	Water	4/14/94
404287-01A	B0BNJ1	Water	4/15/93
404287-02A	B0BNH9	Water	4/15/93

II. Analytical Results/Methodology

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

The requested analyses were:

Alpha Spectroscopy
Plutonium-238, -239/40 by method ITAS-RD-3209
Gamma Spectroscopy
Gamma Scan 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
Technetium-99 by method ITAS-IT-RS-0001
Tritium by method ITAS-RD-3205
Total Uranium
Total Uranium by method ITAS-RD-4200

III. Quality Control

The analytical results for each analysis performed under SDG W0027 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate. Any exceptions have been noted in the "Comments" section.

Quality control sample results are reported in the same units as sample results.

IV. Comments

The initial radioactivity screening of the samples classified them as Category I, with the exceptions of samples B0BNM1 and B0BNL3 which were classified as Category III. A review of the screening data revealed that the samples initially identified as Category III were in fact Category I samples, therefore they were batched with the other Category I samples.

Alpha Spectroscopy

Plutonium-238, -239/40 by method ITAS-RD-3209
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNL7) results are within contractual requirements. Sample B0BNP1 from SDG W0038 was inadvertently batched with this SDG for this analysis. That sample will be reported with SDG W0038.

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNL3) results are within contractual requirements. Sample B0BNP1 from SDG W0038 was inadvertently batched with this SDG for this analysis. That sample will be reported with SDG W0038.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BNL7 and B0BNP1) results are within contractual requirements. Sample B0BNP1 from SDG W0038 was inadvertently batched with this SDG for this analysis. That sample will be reported with SDG W0038.

Gross Beta by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BNL7 and B0BNP1) results are within contractual requirements. Sample B0BNP1 from SDG W0038 was inadvertently batched with this SDG for this analysis. That sample will be reported with SDG W0038.

Strontium-90 by method ITAS-RD-3204
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNL3) results are within contractual requirements.

Liquid Scintillation Counting

Technetium-99 by method ITAS-IT-RS-0001
Three matrix spikes were analyzed with the batch. The sample results were not yield corrected by the average matrix spike chemical yield. The LCS, matrix spike, batch blank, sample and sample duplicate (duplicate of sample B0BNM1) results are within contractual requirements. The result for the duplicate of sample B0BNK3 was just outside of the 3 sigma control limit. The duplicate difference is attributed to sediment in the sample and the batch is accepted and reported based on two acceptable LCS results, two acceptable batch blank results, four acceptable instrument blank results, three acceptable matrix spike results and one acceptable duplicate result.

Tritium by method ITAS-RD-3205
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNM1) results are within contractual requirements.

Total Uranium

Total Uranium by method ITAS-RD-4200
Two matrix spikes were analyzed with the batch. Neither spike produced useable data due the high activity (matrix effect) present in the sample. The samples were spiked with .09 μg of natural uranium and the activity for each of the samples measured 4.3 μg/L and 5.5 μg\L. No matrix spike yield correction was performed. The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BNL7 and B0BNJ5) results are within contractual requirements. Sample B0BNP1 from SDG W0038 was inadvertently batched with this SDG for this analysis. That sample will be reported with SDG W0038.

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

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0027
LAB SAMPLE ID: 40419901
MATRIX: WATER
WHC ID: BOBNM1
DATE RECEIVED 4/12/94
REPORTING UNITS pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
PU-238	1.39E-01	2.20E-01	2.21E-01	0.541	RD3209
PU239/40	2.31E-01	2.67E-01	2.70E-01	0.541	RD3209
CO-60	2.72E+01	7.47E+00	7.95E+00	N/A	RD3219
CS-137DA	3.56E+00	4.18E+00	4.19E+00	N/A	RD3219
RU-106DA	-3.51E+01	3.94E+01	3.96E+01	N/A	RD3219
ALPHA	2.24E+00	2.10E+00	2.12E+00	1	RD3222
BETA	3.11E+02	1.25E+01	2.51E+01	1	RD3222
TOTAL-SR	-1.40E-01	2.63E-01	2.65E-01	0.876	RD3204
TC-99	1.69E+03	8.49E+00	1.87E+02	0.951	ITAS-IT-RS-0001
TRITIUM	2.27E+02	1.07E+02	2.02E+02	0.973	RD3205
URANIUM	5.18E+00	N/A	7.77E-01	1	RD4200

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
LAB SAMPLE ID: 40419902
WHC ID: BOBNL3
REPORTING UNITS pCi/L

SDG NO.: W0027
MATRIX: WATER
DATE RECEIVED 4/12/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
PU-238	-1.19E-02	2.37E-02	2.38E-02	0.703	RD3209
PU239/40	-4.74E-02	4.74E-02	4.80E-02	0.703	RD3209
K-40	1.09E+02	1.11E+02	1.12E+02	N/A	RD3219
CO-60	7.83E+00	5.43E+00	5.49E+00	N/A	RD3219
CS-137DA	5.49E+00	4.25E+00	4.29E+00	N/A	RD3219
RU-106DA	2.23E+01	3.87E+01	3.88E+01	N/A	RD3219
ALPHA	2.62E+00	1.76E+00	1.78E+00	1	RD3222
BETA	8.62E+01	6.66E+00	9.02E+00	1	RD3222
TOTAL-SR	-6.59E-02	2.45E-01	2.46E-01	1	RD3204
TC-99	3.81E+02	4.06E+00	4.45E+01	0.951	ITAS-IT-RS-0001
TRITIUM	9.14E+02	1.28E+02	2.41E+02	0.973	RD3205
URANIUM	3.44E+00	N/A	5.16E-01	1	RD4200

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0027
LAB SAMPLE ID: 40420101
MATRIX: WATER
WHC ID: BOBNL7
DATE RECEIVED 4/12/94
REPORTING UNITS pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
PU-238	0.00E+00	0.00E+00	2.40E-01	0.521	RD3209
PU239/40	-1.60E-02	3.20E-02	3.21E-02	0.521	RD3209
CO-60	1.70E+01	8.54E+00	8.70E+00	N/A	RD3219
CS-137DA	6.31E-02	4.78E+00	4.78E+00	N/A	RD3219
RU-106DA	5.44E+00	4.99E+01	4.99E+01	N/A	RD3219
ALPHA	2.30E+00	1.51E+00	1.53E+00	1	RD3222
BETA	4.01E+02	1.39E+01	3.15E+01	1	RD3222
TOTAL-SR	2.71E-01	2.88E-01	2.96E-01	0.99	RD3204
TC-99	1.53E+03	8.02E+00	1.69E+02	0.951	ITAS-IT-RS-0001
TRITIUM	5.17E+03	2.19E+02	5.27E+02	0.973	RD3205
URANIUM	2.89E+00	N/A	4.33E-01	1	RD4200

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0027
LAB SAMPLE ID: 40425801
MATRIX: WATER
WHC ID: BOBNJ5
DATE RECEIVED 4/14/94
REPORTING UNITS pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
PU-238	-2.38E-02	3.36E-02	3.38E-02	0.701	RD3209
PU239/40	-1.19E-02	2.38E-02	2.38E-02	0.701	RD3209
CO-60	-6.62E+00	4.42E+00	4.46E+00	N/A	RD3219
CS-137DA	5.74E-01	3.40E+00	3.40E+00	N/A	RD3219
RU-106DA	-9.36E+00	2.97E+01	2.97E+01	N/A	RD3219
ALPHA	8.46E-01	9.54E-01	9.60E-01	1	RD3222
BETA	8.35E+00	2.63E+00	2.69E+00	1	RD3222
TOTAL-SR	1.89E-01	2.85E-01	2.89E-01	1	RD3204
TC-99	1.04E+01	1.23E+00	5.09E+00	0.951	ITAS-IT-RS-0001
TRITIUM	3.65E+03	1.91E+02	4.20E+02	0.973	RD3205
URANIUM	2.05E+00	N/A	3.07E-01	1	RD4200

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0027
LAB SAMPLE ID: 40425802
MATRIX: WATER
WHC ID: BOBNJ7
DATE RECEIVED 4/14/94
REPORTING UNITS pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
PU-238	0.00E+00	0.00E+00	1.95E-01	0.643	RD3209
PU239/40	0.00E+00	0.00E+00	1.95E-01	0.643	RD3209
K-40	6.56E+01	9.71E+01	9.73E+01	N/A	RD3219
CO-60	-1.79E+00	4.76E+00	4.76E+00	N/A	RD3219
CS-137DA	-3.78E+00	4.85E+00	4.87E+00	N/A	RD3219
RU-106DA	5.07E+00	3.76E+01	3.76E+01	N/A	RD3219
ALPHA	3.86E+01	5.43E+00	7.24E+00	1	RD3222
BETA	7.33E+01	6.12E+00	8.01E+00	1	RD3222
TOTAL-SR	-1.60E-01	2.31E-01	2.35E-01	1	RD3204
TC-99	2.52E+02	3.38E+00	3.05E+01	0.951	ITAS-IT-RS-0001
TRITIUM	4.98E+03	2.16E+02	5.13E+02	0.973	RD3205
URANIUM	6.39E+01	N/A	9.59E+00	1	RD4200

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0027
LAB SAMPLE ID: 40425803
MATRIX: WATER
WHC ID: BOBNK3
DATE RECEIVED 4/14/94
REPORTING UNITS pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
PU-238	-2.31E-02	4.62E-02	4.65E-02	0.361	RD3209
PU239/40	3.47E-01	4.00E-01	4.06E-01	0.361	RD3209
CO-60	3.07E+00	4.26E+00	4.27E+00	N/A	RD3219
CS-137DA	-2.53E+00	4.71E+00	4.72E+00	N/A	RD3219
RU-106DA	4.02E+01	3.17E+01	3.20E+01	N/A	RD3219
ALPHA	1.42E+00	1.21E+00	1.23E+00	1	RD3222
BETA	1.50E+01	3.15E+00	3.32E+00	1	RD3222
TOTAL-SR	-2.06E-01	2.31E-01	2.37E-01	1	RD3204
TC-99	2.22E+01	1.41E+00	6.15E+00	0.951	ITAS-IT-RS-0001
TRITIUM	2.97E+03	1.78E+02	3.74E+02	0.973	RD3205
URANIUM	2.56E+00	N/A	3.84E-01	1	RD4200

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0027
LAB SAMPLE ID: 40425804
MATRIX: WATER
WHC ID: BOBNK5
DATE RECEIVED 4/14/94
REPORTING UNITS pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
PU-238	-1.45E-02	2.91E-02	2.92E-02	0.574	RD3209
PU239/40	-5.81E-02	5.81E-02	5.88E-02	0.574	RD3209
CO-60	3.31E+00	2.70E+00	2.72E+00	N/A	RD3219
CS-137DA	-1.15E-01	3.26E+00	3.26E+00	N/A	RD3219
RU-106DA	-8.36E+00	3.58E+01	3.58E+01	N/A	RD3219
ALPHA	2.78E+00	1.40E+00	1.45E+00	1	RD3222
BETA	9.69E+00	2.70E+00	2.78E+00	1	RD3222
TOTAL-SR	4.45E-02	2.61E-01	2.61E-01	1	RD3204
TC-99	-5.78E-01	1.04E+00	4.21E+00	0.951	ITAS-IT-RS-0001
TRITIUM	1.03E+02	1.03E+02	1.95E+02	0.973	RD3205
URANIUM	4.39E+00	N/A	6.59E-01	1	RD4200

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0027
LAB SAMPLE ID: 40425805
MATRIX: WATER
WHC ID: BOBNN7
DATE RECEIVED 4/14/94
REPORTING UNITS pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
PU-238	0.00E+00	0.00E+00	1.90E-01	0.66	RD3209
PU239/40	-1.26E-02	2.53E-02	2.53E-02	0.66	RD3209
CO-60	1.88E+00	4.62E+00	4.63E+00	N/A	RD3219
CS-137DA	3.03E+00	3.41E+00	3.42E+00	N/A	RD3219
RU-106DA	1.93E+01	3.70E+01	3.71E+01	N/A	RD3219
ALPHA	4.66E-01	7.30E-01	7.32E-01	1	RD3222
BETA	6.00E+01	5.54E+00	6.97E+00	1	RD3222
TOTAL-SR	6.18E-02	2.59E-01	2.59E-01	1	RD3204
TC-99	2.05E+02	3.09E+00	2.54E+01	0.951	ITAS-IT-RS-0001
TRITIUM	8.08E+03	2.64E+02	7.33E+02	0.973	RD3205
URANIUM	1.51E+00	N/A	2.27E-01	1	RD4200

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0027
LAB SAMPLE ID: 40428701
MATRIX: WATER
WHC ID: BOBNJ1
DATE RECEIVED 4/15/94
REPORTING UNITS pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
PU-238	-3.23E-02	4.57E-02	4.60E-02	0.516	RD3209
PU239/40	-1.61E-02	3.23E-02	3.24E-02	0.516	RD3209
CO-60	9.21E+00	7.37E+00	7.43E+00	N/A	RD3219
CS-137DA	4.36E+00	4.05E+00	4.07E+00	N/A	RD3219
RU-106DA	-8.66E+00	4.25E+01	4.25E+01	N/A	RD3219
ALPHA	1.04E+01	2.89E+00	3.16E+00	1	RD3222
BETA	2.84E+02	1.17E+01	2.32E+01	1	RD3222
TOTAL-SR	6.68E-02	2.65E-01	2.66E-01	1	RD3204
TC-99	1.38E+03	7.63E+00	1.53E+02	0.951	ITAS-IT-RS-0001
TRITIUM	5.70E+03	2.28E+02	5.64E+02	0.973	RD3205
URANIUM	2.10E+01	N/A	3.15E+00	1	RD4200

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0027
LAB SAMPLE ID: 40428702
MATRIX: WATER
WHC ID: BOBNH9
DATE RECEIVED 4/15/94
REPORTING UNITS pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
PU-238	7.78E-02	1.56E-01	1.56E-01	0.536	RD3209
PU239/40	0.00E+00	0.00E+00	2.33E-01	0.536	RD3209
CO-60	3.64E+01	9.88E+00	1.05E+01	N/A	RD3219
CS-137DA	1.61E+00	3.60E+00	3.60E+00	N/A	RD3219
RU-106DA	-1.72E+01	3.43E+01	3.43E+01	N/A	RD3219
ALPHA	2.33E+00	1.42E+00	1.45E+00	1	RD3222
BETA	3.38E+02	1.27E+01	2.71E+01	1	RD3222
TOTAL-SR	-5.73E-03	2.81E-01	2.81E-01	0.85	RD3204
TC-99	1.38E+03	7.63E+00	1.53E+02	0.951	ITAS-IT-RS-0001
TRITIUM	4.96E+02	1.16E+02	2.16E+02	0.973	RD3205
URANIUM	3.10E+00	N/A	4.64E-01	1	RD4200

9613490.1365

INTERNATIONAL TECHNOLOGY CORPORATION

~~0170~~ RWC

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LABORATORY NONCONFORMANCE MEMO (NCM) ITAS-Richland

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): SB 5/29/94

PARAMETER(S): Tc99

SAMPLE NUMBER(S) AFFECTED: 40419901 F0419901

MATRIX: H2O 1wc027

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis
2. ☐ Holding time exceeded by _____ days due to
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1 ☐ QA/QC:
       - ☐ surrogates ☐ internal standards
       - ☐ spike recovenes ☐ blank contamination
     - 2.3.2 ☐ CONFIRMATION:
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3 ☐ DILUTION:
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ OTHER: (see #10)
3. ☐ Sample lost during extraction/analysis: no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☒ Other (specify): Dupes barely out @ 35
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Daines 5/30/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

0032A

IT CORPORATION

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CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE GEA 5/29/94

Probable sediment in sample ~~GEA~~ 5/29/94

☒ CORRECTIVE ACTION: INITIALS/DATE GEA 5/29/94

Report based on 2 LCS, several blk, 3 MS, and another dups in batch.

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE_____

FIRST LEVEL SUPERVISOR: Wayne E. Pelkmund DATE: 5/29/94

RESPONSIBLE MANAGER: W Mackelle DATE: 5/31/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN DS 6/1/94

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: DS DATE: 6/1/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: DS DATE: 6/1/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE 00321

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INTERNATIONAL TECHNOLOGY CORPORATION

9613490.1367

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LABORATORY NONCONFORMANCE MEMO (NCM) (ITAS-Richland)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): PKnitzer 6-3-94

PARAMETER(S): Unat

SAMPLE NUMBER(S) AFFECTED: 404199, 404201, 404287, 404321 W0027 thru 0038

MATRIX: water ~~W0419901~~, W0419902 PK 6/3/94

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1. ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2. ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3. ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ QA/QC:
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ CONFIRMATION:
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ DILUTION:
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ OTHER: (see #10)
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify): two matrix spikes considered lost (matrix effect) We will assume 100% yield on the samples. Reagent spike good.
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Davies 6/3/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

0032E

IT CORPORATION LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☑ ROOT CAUSE: INITIALS/DATE PK 6/3/94

2 samples spike with .09 µgm of Unot The samples read. 5.1 + 3.4 a .09 µgm in 200ml can not be seen

PK 6/3/94

☐ CORRECTIVE ACTION: INITIALS/DATE _____

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE _____

FIRST LEVEL SUPERVISOR: Pamy Kiesling DATE: 6-3-94

RESPONSIBLE MANAGER: [signature] DATE: 6/3/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: Jodie Cox DATE: 6/3/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Cox DATE: 6/3/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

VALIDATION SUMMARY

9613490.1370 W0027-ITC-036

Los Alamos Technical Associates, Inc.

8633 Gage Blvd. / Kennewick, WA 99336 / Telephone (509) 783-4369 / FAX (509) 783-9661

August 15, 1994

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

Dear Karl,

Attached is the data validation report for analytical results for 200-BP-5 Groundwater Operable Unit (SDG WOO27-ITC-036). The package was received by Los Alamos Technical Associates on July 20, 1994. Validation of this package began on July 28, and was completed on August 15, 1994.

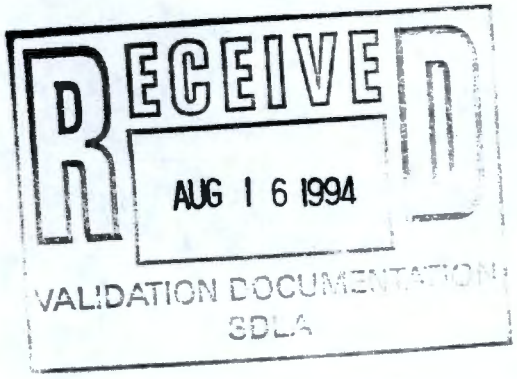
If you have any questions, please let me know.

Sincerely,

Donald J. Smith
Senior Environmental Engineer

cc: Chris Haecker, LATA
VW402.44 file

DATA VALIDATION REPORT
for
200-BP-5 Groundwater Operable Unit
SDG W0027-ITC-036
LATA VW402.44



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

August 15, 1994

Table of Contents

200-BP-5 Groundwater Operable Unit
Data Validation Narrative

INTRODUCTION

All samples in Sample Delivery Group (SDG) W0027-ITC-036 were validated at level "D" as defined in the Data Validation Procedures for Chemical Analysis (WHC-SD-EN-SPP-002) and Data Validation Procedures for Radiochemical Analyses (WHC-SD-EN-SPP-001).

The data package was received by Los Alamos Technical Associates (LATA) on July 15, 1994. Validation began on July 20, 1994 and was completed on August 15, 1994.

The chemical and radiochemical analyses were performed by International Technology Corporation, ITAS.

ANALYSES REQUESTED

Twenty (20) water samples numbered B0BNH9, B0BNJ0, B0BNJ1, B0BNJ2, B0BNJ5, B0BNJ6, B0BNJ7, B0BNJ8, B0BNK3, B0BNK4, B0BNK5, B0BNK6, B0BNL3, B0BNL4, B0BNL7, B0BNL8, B0BNM1, B0BNM2, B0BNN7, and B0BNN8 were collected on April 11, 12, 13, 14 1994 by WHC and transferred to International Technology Corporation (ITC) for analysis.

A subset of the SDG included ten (10) water samples B0BNH9, B0BNJ1, B0BNJ5, B0BNJ7, B0BNK3, B0BNK5, B0BNL3, B0BNL7, B0BNM1 and B0BNN7. The following determinations were conducted:

Metals:	ICP	Method CLP
	Selenium	Method CLP
Total Cyanide		Method CLP
Sulfate		Method 375.4
Total Dissolved Solids		Method 160.1
Alkalinity		Method 310.1
Nitrate+Nitrite		Method 353.2
Anions (F, Cl, SO_4, NO_2, PO_4)		Method 300.0
Tritium		Method ITAS-RD-3205
Gross Alpha/Beta		Method ITAS-RD-3222
Plutonium 238, 239/240		Methods ITAS-RD-3209
Strontium 89/90		Method ITAS-RD-3204
Total Uranium		Method ITAS-RD-4200
Gamma Spectrometry		Methods ITAS-RD-3219

ANALYSES REQUESTED (CONT.)

A second subset of the SDG included ten (10) water samples B0BNJ0, B0BNJ2, B0BNJ6, B0BNJ8, B0BNK4, B0BNK6, B0BNL4, B0BNL8, B0BNM2, and B0BNN8.

Metals:	ICP	Method CLP Filtered
	Selenium	Method CLP Filtered

DATA QUALITY OBJECTIVES

The data quality objectives for 200-BP-5 Groundwater Operable Unit are specified in the *Quality Assurance Program Plan for the 200-BP-5 Groundwater Operable Unit* (DOE/RL 88-32, Rev. 1). Precision, accuracy, and detection limit requirements for the project have been derived from *USEPA Contract Laboratory Program Statement of Work for Inorganic Analyses* (EPA 1989a).

The primary objective of the data validation effort was to ensure these data quality objectives were met, and that the data are usable and defensible. This was accomplished through a detailed examination of the data package to recreate the analytical process and verify that proper and acceptable analytical techniques had been applied. The data package was checked for correct submission of required deliverables, correct transcription of raw data to the summary forms, and for proper calculation of a number of parameters. Data qualifiers are assigned to any results that have been determined to be deficient. These are discussed below.

Precision. Goals for precision were met with the exception of those items discussed under "**Minor Deficiencies**".

Accuracy. Goals for accuracy were met with the exception of those items discussed under "**Minor Deficiencies**".

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

Detection Limits. Detection limit goals were met for all requested analyses.

Completeness. The data package was 95% complete for the requested analyses.

MAJOR DEFICIENCIES (REJECTED DATA)

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

1. The analyses for nitrite by IC and phosphate by IC exceeded the maximum hold time by greater than two times the limit. All undetected sample results were qualified as unusable (UR).

MINOR DEFICIENCIES

The following minor deficiencies were discovered. These minor shortcomings are not expected to significantly affect the overall quality of the data.

1. The iron results for samples BOBNM1, BOBNM2, BOBNL3, and BOBNL4 were qualified as estimated (J/BJ) because the duplicate precision was outside acceptance criteria.

2. The iron results for samples BOBNL8, BOBNH9, BOBNJ0, BOBNJ1, BOBNJ2, BOBNJ5, BOBNJ6, BOBNJ7, BOBNJ8, BOBNK3, BOBNK4, BOBNK6, BOBNN7, and BOBNN8 were qualified as undetected (U). Iron was detected in the preparation blank and sample results were not greater than five times the blank result.

3. The manganese results for samples BOBNL7, BOBNK3, BOBNK4, and BOBNJ8 were qualified as undetected (U) because sample results were not greater than five times the blank values.

4. The technetium results for BOBNM1, BOBNL3, BOBNL7, BOBNJ5, BOBNJ7, BOBNK3, BOBNN7, BOBNJ1, and BOBNH9 were qualified as estimated because the duplicate precision was outside of acceptance criteria.

5. The holding time was exceeded by less than two times the limit for alkalinity. The results were qualified as estimate (J) for samples BOBNL7, BOBNM1, and BOBNL3.

6. The holding time was exceeded by less than two times the limit for total dissolved solids. The results were qualified as estimated (J) for samples BOBNM1, BOBNL3, and BOBNH9.

7. The holding time was exceeded by greater than two times the limit for phosphate. The detected sample results were qualified as estimated (J).

8. The analytical spike recovery for selenium was < 85% in BOBNN8. The results are qualified as estimated (UJ).

COMMENTS

1. The uranium results were reported in pCi/L instead of the correct units of µg/L. The correct units were added to the Form Is.

2. The total uranium RPD had transcription errors. All total uranium results were checked for transcription errors.

3. The metals analysis was not performed on BOBNK5 because the container was received broken or leaking. See the attached laboratory Variance Report.

REFERENCES

EPA *USEPA Contract Laboratory Program Statement of Work for Inorganic Analyses*, EPA 1989a, U.S. Environmental Protection Agency, Washington, D.C.

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

WHC 1993, *Data Validation Procedures for Radiochemical Analyses*, WHC-SD-EN-SPP-001, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

WHC 1994, *Quality Assurance Program Plan for the 200-BP-5 Groundwater Operable Unit*, DOE/RL 88-32, Rev. 1, Department of Energy-Hanford, Richland, Washington.

DATA VALIDATION APPLIED QUALIFIERS

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows.

U- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a QC deficiency identified during data validation, the associated quantitation limit is an estimate.

J- Indicates the compound or analyte was analyzed for and detected. The associated concentration is an estimate, but the data are usable for decision making purposes.

BJ- Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R- Indicates the compound or analyte was analyzed for, detected, and due to an identified QC deficiency the data are unusable.

UR- Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data are unusable due to an identified QC deficiency.

JN- Indicates a tentatively identified compound (TIC) that has been determined to be valid in terms of identification and quantitation.

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.

NJ- Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific application (i.e., usable for decision making purposes).

N- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision making purposes).

LABORATORY APPLIED QUALIFIERS

Qualifiers which may be applied by the laboratory in compliance with applicable requirements are as follows.

Organic Data Qualifiers

U- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

J- Indicates an estimated value. This flag is used when estimating concentrations of tentatively identified compounds (TICs) or when the presence of a TCL compound is confirmed at a concentration of less than the CRQL but greater than the IDL.

N- Indicates presumptive evidence of a compound. This flag is used only by the laboratory for TIC results when the identification is based on a mass spectral library search.

P- This flag is used for pesticide/Aroclor target analytes when there is greater than 25% difference for detected values between the quantitation and confirmation GC columns. The lower of the two concentrations is reported on the report form and the result is flagged with a "P".

C- This flag applies to pesticide results where the identification has been confirmed by GC/MS. This flag should not be used by the laboratory if GC/MS confirmation was attempted but unsuccessful, in which case, the laboratory should use an "X" flag as defined below. The "X" flag is then defined in the SDG narrative.

B- This flag applies to results in which the analyte was detected in both the sample and the associated blank. The combination of the "B" flag with the "U" flag ("BU" or "UB") is expressly prohibited in the analytical SOW.

E- This flag identifies compounds whose concentrations exceed the calibrated range of the GC/MS instrument.

D- This flag identifies compounds identified in an analysis at a secondary dilution factor.

A- Indicates a TIC which is a suspected aldol-condensate product.

X- This is a non-specific flag used to properly define the results. If used, this flag must be properly defined within the body of the SDG.

LABORATORY APPLIED QUALIFIERS

Inorganic Qualifiers

U- Indicates the analyte was analyzed for but not detected in the sample.

B- Indicates the analyte concentration is less than the CRDL but greater than the IDL.

E- Indicates the value reported is estimated due to the presence of interference.

M- Indicates duplicate injection precision criteria were not met during graphite furnace (GFAA) analysis.

N- Indicates spiked sample recovery was not within the control limits.

S- Indicates the reported value was determined by the Method of Standard Additions (MSA).

W- Indicates post-digestion spike for GFAA analysis is outside control limits and the sample absorbance is less than 50% of the spike absorbance.

*- Indicates duplicate analysis was not within control limits.

+- Indicates the correlation coefficient (r) for the MSA was less than 0.995.

Data Qualification Summary

9613490.1381

INORGANICS QUALIFICATION SUMMARY

ANALYTE	QUALIFIER	SAMPLES AFFECTED	DQO	REASON
Iron	J/BJ	BOBNM1 BOBNM2 BOBNL4 BOBNL3	PRECISION	RPD > 20%, Sample detect
Iron	U	BOBNL8 BOBNH9 BOBNN8 BOBNJ0 BOBNJ1 BOBNN7 BOBNJ2 BOBNJ5 BOBNK6 BOBNJ6 BOBNJ7 BOBNK4 BOBNJ8	OTHER	Preparation blanks positive
Manganese	U	BOBNK3 BOBNK4 BOBNJ8 BOBNL7	OTHER	Calibration blanks positive
Selenium	UJ	BOBNN8	ACCURACY	Spike recovery < 85%, sample non-detect

GENERAL CHEMISTRY QUALIFICATION SUMMARY

ANALYTE	QUALIFIER	SAMPLES AFFECTED	DQO	REASON
Nitrite	UR	BOBNM1 BOBNL3 BOBNL7 BOBNJ5 BOBNJ7 BOBNK3 BOBNN7 BOBNJ1 BOBNH9 BOBNK5	HOLD TIME	Hold time exceeded 2x, sample results non-detect
Phosphate	UR	BOBNK5 BOBNL3 BOBNL7 BOBNJ5 BOBNJ7 BOBNK3 BOBNN7 BOBNJ1 BOBNH9	HOLD TIME	Hold time exceeded 2x, sample results non-detect
Phosphate	J	BOBNM1	HOLD TIME	Hold time exceeded 2x, sample results detected
TDS	J	BOBNM1 BOBNL3 BOBNH9	HOLD TIME	Hold time exceeded by < 2x
Alkalinity	J	BOBNL7 BOBNM1 BOBNL3	HOLD TIME	Hold time exceeded by < 2x

RADIOCHEMISTRY QUALIFICATION SUMMARY

ANALYTE	QUALIFIER	SAMPLES AFFECTED	DQO	REASON
Technetium	J	BOBNM1 BOBNL3 BOBNL7 BOBNJ5 BOBNJ7 BOBNK3 BOBNN7 BOBNJ1 BOBNH9	PRECISION	RPD > 20%, Sample detect
Technetium	UJ	BOBNK5	PRECISION	RPD > 20%, Sample non-detect

entered by: DES
date: 9-14-94

checked by: JM
date: 10/10/94

Data Summary Tables

9613490.1383

METALS/CYANIDE DATA SUMMARY TABLE

FILE#:VW402.44		HEIS #:	B0BNH9		B0BNJ0		B0BNJ2		B0BNJ1	
		Date:	14-Apr-94		14-Apr-94		14-Apr-94		14-Apr-94	
		Matrix:	WATER		WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Aluminum	7429-90-5	ug/L	40	U	40	U	40	U	40	U
Calcium	7440-70-2	ug/L	26700		27800		36800		38900	
Iron	7439-89-6	ug/L	82	U	23.1	U	27.5	U	38.5	U
Magnesium	7439-95-4	ug/L	8160		8500		13000		13700	
Manganese	7439-96-5	ug/L	2	U	2	U	2	U	2	U
Potassium	7440-09-7	ug/L	6040		6220		3810	B	3910	B
Selenium	7782-49-2	ug/L	2	U	2	U	2.4	B	2	U
Sodium	7440-23-5	ug/L	20200		20800		19600		20900	
Silicon	7740-31-5	ug/L	23600		25300		16500		17500	
Bismuth	7440-69-9	ug/L	10	U	10	U	10	U	10	U
Cyanide	5955-70-0	ug/L	30						20	

FILE#:VW402.44		HEIS #:	B0BNM1		B0BNM2		B0BNL3		B0BNL4	
		Date:	11-Apr-94		11-Apr-94		11-Apr-94		11-Apr-94	
		Matrix:	WATER		WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Aluminum	7429-90-5	ug/L	40	U	51.4	B	55	B	40	U
Calcium	7440-70-2	ug/L	66700		74900		45800		47800	
Iron	7439-89-6	ug/L	887	J	71.6	BJ	385	J	125	J
Magnesium	7439-95-4	ug/L	19800		22100		12300		12800	
Manganese	7439-96-5	ug/L	9.8	B	2.5	B	48.4		47.2	
Potassium	7440-09-7	ug/L	6230		7010		7690		8250	
Selenium	7782-49-2	ug/L	9.1		9		5.7		5.8	
Sodium	7440-23-5	ug/L	29900		32400		33200		34400	
Silicon	7740-31-5	ug/L	12300		14100		15100		15700	
Bismuth	7440-69-9	ug/L	10	U	10	U	10	U	10	U
Cyanide	5955-70-0	ug/L	98				24			

FILE#:VW402.44		HEIS #:	B0BNL7		B0BNL8		B0BNJ5		B0BNJ6	
		Date:	12-Apr-94		11-Apr-94		12-Apr-94		12-Apr-94	
		Matrix:	WATER		WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Aluminum	7429-90-5	ug/L	119	B	43.8	B	67.5	B	51.9	B
Calcium	7440-70-2	ug/L	34700		41800		37700		36200	
Iron	7439-89-6	ug/L	195		51.2	U	27.9	U	12.2	U
Magnesium	7439-95-4	ug/L	10600		12800		11600		11200	
Manganese	7439-96-5	ug/L	3.4	U	2	U	2	U	2	U
Potassium	7440-09-7	ug/L	5920		7030		5280		4690	B
Selenium	7782-49-2	ug/L	2	U	2	U	2	U	2	B
Sodium	7440-23-5	ug/L	31700		38500		20600		19500	
Silicon	7740-31-5	ug/L	15900		20200		17400		16700	
Bismuth	7440-69-9	ug/L	10	U	10	U	10	U	10	U
Cyanide	5955-70-0	ug/L	104				10	U		

shaded areas indicate changes by the validator

entered by: C.M.S 9.14.94 date: ITC036.XLS checked by: DM date: 9-14-94

9613490.1384

METALS/CYANIDE DATA SUMMARY TABLE

FILE#:VW402.44		HEIS #:	B0BNJ7		B0BNJ8		B0BNK3		B0BNK4	
		Date:	12-Apr-94		12-Apr-94		12-Apr-94		12-Apr-94	
		Matrix:	WATER		WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Aluminum	7429-90-5	ug/L	53.1	B	64.3	B	40	U	40	U
Calcium	7440-70-2	ug/L	35700		35000		35200		37500	
Iron	7439-89-6	ug/L	81.6	U	45.4	U	123		15.5	U
Magnesium	7439-95-4	ug/L	15900		15300		10000		10800	
Manganese	7439-96-5	ug/L	2	U	2.8	U	2.3	U	2.2	U
Potassium	7440-09-7	ug/L	5160		5460		5830		5430	
Selenium	7782-49-2	ug/L	2	U	2.1	B	2.5	B	2.8	B
Sodium	7440-23-5	ug/L	17500		21300		21000		23100	
Silicon	7740-31-5	ug/L	17000		16100		17300		18500	
Bismuth	7440-69-9	ug/L	10	U	10	U	10	U	10	U
Cyanide	5955-70-0	ug/L	10	U			10	U		

FILE#:VW402.44		HEIS #:	B0BNK5		B0BNK6		B0BNN7		B0BNN8	
		Date:	14-Apr-94		13-Apr-94		13-Apr-94		13-Apr-94	
		Matrix:	WATER		WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Aluminum	7429-90-5	ug/L			40	U	40	U	59.1	B
Calcium	7440-70-2	ug/L			27800		24600		23000	
Iron	7439-89-6	ug/L			77.6	U	55.6	U	26.4	U
Magnesium	7439-95-4	ug/L			7960		9340		8860	
Manganese	7439-96-5	ug/L			57.6		2	U	2	U
Potassium	7440-09-7	ug/L			6070		4790	B	3640	B
Selenium	7782-49-2	ug/L			2	U	2	U	2	UJ
Sodium	7440-23-5	ug/L			12300		22300		21400	
Silicon	7740-31-5	ug/L			22700		15800		14900	
Bismuth	7440-69-9	ug/L			10	U	10	U	10	U
Cyanide	5955-70-0	ug/L	10	U			10	U		

000013

shaded areas indicate changes by the validator

entered by: JM date: 9.14.94 ITC036.XLS checked by: BM date: 9.14.9

9613490.1385

GENERAL CHEMISTRY DATA SUMMARY TABLE

FILE #: VW 402.44		HEIS #:	B0BNJ5		B0BNK5		B0BNJ7		B0BNK3	
		Date:	12-Apr-94		13-Apr-94		12-Apr-94		12-Apr-94	
		Matrix:	WATER		WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Fluoride (IC)	16984-48-8	mg/L	0.6		0.4	U	0.42		0.8	
Chloride (IC)	16884-100-6	mg/L	5.9		4		7.8		11	
Nitrite (IC)	14797-65-0	mg/L	0.4	UR	0.4	UR	0.4	UR	0.4	UR
Phosphate (IC)	7723-14-0	mg/L	1	UR	1	UR	1	UR	1	UR
Sulfate (IC)	48080-79-79	mg/L	29		32		34		63	
Alkalinity	ALKALINITY	mg/L	110		100		108		98	
Nitrite Nitrate	NO2+NO3-N	mg/L	14		0.02	U	16		5	
Sulfate	14808-79-8	mg/L	38		38		41		64	
Total Dissolved Solids	TDS	mg/L	226		200		286		298	

FILE #: VW 402.44		HEIS #:	B0BNN7		B0BNL7		B0BNM1		B0BNL3	
		Date:	13-Apr-94		11-Apr-94		11-Apr-94		11-Apr-94	
		Matrix:	WATER		WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Fluoride (IC)	16984-48-8	mg/L	0.82		0.95		0.52		0.56	
Chloride (IC)	16884-100-6	mg/L	9		7.3		52		115	
Nitrite (IC)	14797-65-0	mg/L	0.4	UR	0.4	UR	0.4	UR	0.4	UR
Phosphate (IC)	7723-14-0	mg/L	1	UR	1	UR	1.5	J	1	UR
Sulfate (IC)	48080-79-79	mg/L	28		46		186		23	
Alkalinity	ALKALINITY	mg/L	20		80	J	82	J	100	J
Nitrite Nitrate	NO2+NO3-N	mg/L	3.6		19		17		8.5	
Sulfate	14808-79-8	mg/L	31		47		152		102	
Total Dissolved Solids	TDS	mg/L	222		312		542	J	370	J

FILE #: VW 402.44		HEIS #:	B0BNJ1		B0BNH9	
		Date:	14-Apr-94		11-Apr-94	
		Matrix:	WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q
Fluoride (IC)	16984-48-8	mg/L	0.4	U	0.4	U
Chloride (IC)	16884-100-6	mg/L	7.9		10	
Nitrite (IC)	14797-65-0	mg/L	0.4	UR	0.4	UR
Phosphate (IC)	7723-14-0	mg/L	1	UR	1	UR
Sulfate (IC)	48080-79-79	mg/L	36		17	
Alkalinity	ALKALINITY	mg/L	110		100	
Nitrite Nitrate	NO2+NO3-N	mg/L	15		12	
Sulfate	14808-79-8	mg/L	44		18	
Total Dissolved Solids	TDS	mg/L	276		280	J

000014

Shaded areas indicate changes by
the validator
ITC 036

entered by: JM
date: 9-14-94

checked by: DH
date: 9/14/94

9613490.1386

RADCHEM DATA SUMMARY TABLE

FILE #:VW402.44		HEIS #:	B0BNM1			B0BNL3		
		Date:	12-Apr-94			12-Apr-94		
		Matrix:	WATER			WATER		
Constituent	CAS #	Units	Results	Q	MDA	Results	Q	MDA
Gross Alpha	Alpha	pCi/L	2.24	U	2.74	2.62		1.78
Gross Beta	Beta	pCi/L	311		3.17	86.2		3.35
Tritium	10028-17-8	pCi/L	227	U	236.6	914		236.6
Technetium-99	14133-76-7	pCi/L	1690	J	2.43	381	J	2.43
Uranium	7440-61-1	ug/L	5.18		0.00354	3.44		0.00354
Plutonium-238	13981-16-3	pCi/L	0.139	U	0.208	-0.0119	U	0.284
Plutonium-239/240	PU-239/240	pCi/L	0.231		0.369	-0.0474	U	0.407
Cobalt-60	10198-40-0	pCi/L	27.2		<25	7.83	U	<25
Ruthenium-106DA	13967-48-1	pCi/L	-35.1	U	NA	22.3		NA
Cesium-137DA	10045-97-3	pCi/L	3.56	U	<15	5.49	U	<15
Total Strontium	7440-24-6	pCi/L	-0.14	U	0.819	-0.0659	U	0.746
Potassium-40	13966-00-2	pCi/L				109		NA

FILE #:VW402.44		HEIS #:	B0BNL7			B0BNJ5		
		Date:	12-Apr-94			12-Apr-94		
		Matrix:	WATER			WATER		
Constituent	CAS #	Units	Results	Q	MDA	Results	Q	MDA
Gross Alpha	Alpha	pCi/L	2.3		1.47	0.846	U	1.36
Gross Beta	Beta	pCi/L	401		3.12	8.35		3.15
Tritium	10028-17-8	pCi/L	5170		236.6	3650		236.6
Technetium-99	14133-76-7	pCi/L	1530	J	2.43	10.4	J	2.43
Uranium	7440-61-1	ug/L	2.89		0.00354	2.05		0.00354
Plutonium-238	13981-16-3	pCi/L	0	U	0.217	-0.0238	U	0.336
Plutonium-239/240	PU-239/240	pCi/L	-0.016	U	0.382	-0.0119	U	0.284
Cobalt-60	10198-40-0	pCi/L	17		<25	-6.62	U	<25
Ruthenium-106DA	13967-48-1	pCi/L	5.44		NA	-9.36	U	NA
Cesium-137DA	10045-97-3	pCi/L	0.0631	U	<15	0.574	U	<15
Total Strontium	7440-24-6	pCi/L	0.271	U	0.741	0.189	U	0.764
Potassium-40	13966-00-2	pCi/L						

FILE #:VW402.44		HEIS #:	B0BNJ7			B0BNK3		
		Date:	14-Apr-94			14-Apr-94		
		Matrix:	WATER			WATER		
Constituent	CAS #	Units	Results	Q	MDA	Results	Q	MDA
Gross Alpha	Alpha	pCi/L	38.6		1.31	1.42	U	1.49
Gross Beta	Beta	pCi/L	73.3		3.15	15		3.09
Tritium	10028-17-8	pCi/L	4980		236.6	2970		2366
Technetium-99	14133-76-7	pCi/L	252	J	2.43	22.2	J	2.43
Uranium	7440-61-1	ug/L	63.9		0.0035	2.56		0.00354
Plutonium-238	13981-16-3	pCi/L	0	U	0.176	-0.0231	U	0.334
Plutonium-239/240	PU-239/240	pCi/L	0	U	0.175	0.347		0.313
Cobalt-60	10198-40-0	pCi/L	-1.79	U	<25	3.07	U	<25
Ruthenium-106DA	13967-48-1	pCi/L	5.07		NA	40.2		NA
Cesium-137DA	10045-97-3	pCi/L	-3.78	U	<15	-2.53	U	<15
Total Strontium	7440-24-6	pCi/L	-0.16	U	0.749	-0.206	U	0.764
Potassium-40	13966-00-2	pCi/L	65.6		NA			

entered by: CMJ
date: 9/14/94

shaded areaS indicate changes by the validator
ITC036.XLS

checked by: BM
date: 9-14-9

RADIOCHEMISTRY DATA SUMMARY TABLE

FILE #:VW402.44		HEIS #:	B0BNK5			B0BNN7		
		Date:	14-Apr-94			14-Apr-94		
		Matrix:	WATER			WATER		
Constituent	CAS #	Units	Results	Q	MDA	Results	Q	MDA
Gross Alpha	Alpha	pCi/L	2.78		1.13	0.466	U	1.22
Gross Beta	Beta	pCi/L	9.69		3.05	60		3
Tritium	10028-17-8	pCi/L	103	U	236.6	8080		236.6
Technetium-99	14133-76-7	pCi/L	-0.578	UJ	2.43	205	J	243
Uranium	7440-61-1	ug/L	4.39		0.00354	1.51		0.00354
Plutonium-238	13981-16-3	pCi/L	-0.0145	U	0.348	0	U	0.171
Plutonium-239/240	PU-239/240	pCi/L	-0.0581	U	0.499	-0.0126	U	0.302
Cobalt-60	10198-40-0	pCi/L	3.31	U	<25	1.88	U	<25
Ruthenium-106DA	13967-48-1	pCi/L	-8.36	U	NA	19.3		NA
Cesium-137DA	10045-97-3	pCi/L	-0.115	U	<15	3.03	U	<15
Total Strontium	7440-24-6	pCi/L	0.0445	U	0.75	0.0618	U	0.74

FILE #:VW402.44		HEIS #:	B0BNJ1			B0BNH9		
		Date:	14-Apr-94			14-Apr-94		
		Matrix:	WATER			WATER		
Constituent	CAS #	Units	Results	Q	MDA	Results	Q	MDA
Gross Alpha	Alpha	pCi/L	10.4		1.48	2.33		1.33
Gross Beta	Beta	pCi/L	284		332	338		322
Tritium	10028-17-8	pCi/L	5700		236.6	496		236.6
Technetium-99	14133-76-7	pCi/L	1380	J	2.43	1380	J	2.43
Uranium	7440-61-1	ug/L	21		0.00354	3.1		0.00354
Plutonium-238	13981-16-3	pCi/L	-0.0323		0.456	0.0778		0.211
Plutonium-239/240	PU-239/240	pCi/L	-0.0161		0.386	0		0.21
Cobalt-60	10198-40-0	pCi/L	9.21		<25	36.4		<25
Ruthenium-106DA	13967-48-1	pCi/L	-8.66		NA	-17.2		NA
Cesium-137DA	10045-97-3	pCi/L	4.36		<15	1.61		<15
Total Strontium	7440-24-6	pCi/L	0.0668		0.756	-0.00573		0.829

Sample Results (Form I's)

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNH9

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO382 SAS No.: _____ SDG No.: W0027_

Matrix (soil/water): WATER Lab Sample ID: AA6799

Level (low/med): LOW Date Received: 04/16/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	26700			P
7439-89-6	Iron	82.0	~~B~~ U		P
7439-95-4	Magnesium	8160			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	6040			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	20200			P
7440-31-5	Silicon	23600			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

MW 9-1-94

MW 8-12-94

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNH9

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO382 SAS No.: _____ SDG No.: W0027_

Matrix (soil/water): WATER Lab Sample ID: AA6805

Level (low/med): LOW__ Date Received: 04/16/94

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_		_		NR
7440-70-2	Calcium__		_		NR
7439-89-6	Iron____		_		NR
7439-95-4	Magnesium		_		NR
7439-96-5	Manganese		_		NR
7440-09-7	Potassium		_		NR
7782-49-2	Selenium_		_		NR
7440-23-5	Sodium___		_		NR
7440-31-5	Silicon__		_		NR
	Bismuth__		_		NR
5955-70-0	Cyanide__	30.0	_		AS

mrs 8-12-94

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY._____

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJO
~~BOBNH9~~ JDK 5/24/97

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE
Lab Code: ITSTU_ Case No.: WO382 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6807
Level (low/med): LOW__ Date Received: 04/16/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	27800			P
7439-89-6	Iron	23.1	B		P
7439-95-4	Magnesium	8500			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	6220			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	20800			P
7440-31-5	Silicon	25300			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

BJ U 9-1-94

9-12-94

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___
Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:
DISSOLVED._____

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ1

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO382 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6798

Level (low/med): LOW Date Received: 04/16/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
7440-31-5	Silicon				NR
	Bismuth				NR
5955-70-0	Cyanide	20.0			AS

JMW 8-12-94

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

CYANIDE_ONLY.

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ2
~~BOBNJ1~~ JDK 5/27/94

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO382 SAS No.: SDG No.: W0027
Matrix (soil/water): WATER Lab Sample ID: AA6806
Level (low/med): LOW Date Received: 04/16/94
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	40.0	U		P	
7440-70-2	Calcium	36800			P	
7439-89-6	Iron	27.5	~~B~~ U		P	BJU MW 9-1-94
7439-95-4	Magnesium	13000			P	
7439-96-5	Manganese	2.0	U		P	
7440-09-7	Potassium	3810	B		P	
7782-49-2	Selenium	2.4	B		F	
7440-23-5	Sodium	19600			P	
7440-31-5	Silicon	16500			P	
	Bismuth	10.0	U		F	
5955-70-0	Cyanide				NR	

MW 8-12-94

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

Comments:
DISSOLVED.

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ1

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO382 SAS No.: _____ SDG No.: W0027_

Matrix (soil/water): WATER Lab Sample ID: AA6792

Level (low/med): LOW__ Date Received: 04/16/94

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	38900			P
7439-89-6	Iron	38.5	~~B~~		P
7439-95-4	Magnesium	13700			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	3910	B		P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	20900			P
7440-31-5	Silicon	17500			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

BF U dw 9-1-94

mw 8-12-94

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNM1

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO381 SAS No.: _____ SDG No.: W0027_

Matrix (soil/water): WATER Lab Sample ID: AA6776

Level (low/med): LOW__ Date Received: 04/16/94

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	66700			P
7439-89-6	Iron	887		*	P
7439-95-4	Magnesium	19800			P
7439-96-5	Manganese	9.8	B		P
7440-09-7	Potassium	6230			P
7782-49-2	Selenium	9.1			F
7440-23-5	Sodium	29900			P
7440-31-5	Silicon	12300			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

~~J~~ Fe Qualified J BM 9-14-94

BM 9-12-94

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN

ILM02.1

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNM1

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO381 SAS No.: _____ SDG No.: W0027_

Matrix (soil/water): WATER Lab Sample ID: AA6782

Level (low/med): LOW__ Date Received: 04/16/94

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
7440-31-5	Silicon				NR
	Bismuth				NR
5955-70-0	Cyanide	98.0			AS

MW 8-12-94

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY._____

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNM2

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO381 SAS No.: SDG No.: W0027
Matrix (soil/water): WATER Lab Sample ID: AA6790
Level (low/med): LOW Date Received: 04/16/94
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	51.4	B		P
7440-70-2	Calcium	74900			P
7439-89-6	Iron	71.6	B		P
7439-95-4	Magnesium	22100			P
7439-96-5	Manganese	2.5	B		P
7440-09-7	Potassium	7010			P
7782-49-2	Selenium	9.0			F
7440-23-5	Sodium	32400			P
7440-31-5	Silicon	14100			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

BJ MW 9-1-94
BJ BM 9-14-94

MW 8-12-94

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

Comments:
DISSOLVED.

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ILM02.1

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL3

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO381 SAS No.: SDG No.: W0027
Matrix (soil/water): WATER Lab Sample ID: AA6789
Level (low/med): LOW Date Received: 04/16/94
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
7440-31-5	Silicon				NR
	Bismuth				NR
5955-70-0	Cyanide	24.0			AS

8-12-94

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE_ONLY.

FORM I - IN

ILM02.1

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL3

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO381 SAS No.: _____ SDG No.: W0027_

Matrix (soil/water): WATER Lab Sample ID: AA6783

Level (low/med): LOW_ Date Received: 04/16/94

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	55.0	B		P
7440-70-2	Calcium	45800			P
7439-89-6	Iron	385		*	P
7439-95-4	Magnesium	12300			P
7439-96-5	Manganese	48.4			P
7440-09-7	Potassium	7690			P
7782-49-2	Selenium	5.7			F
7440-23-5	Sodium	33200			P
7440-31-5	Silicon	15100			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

JJBM 9-14-94

8-12-94

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___

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.

BOBNL4

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO381 SAS No.: _____ SDG No.: W0027_

Matrix (soil/water): WATER Lab Sample ID: AA6791

Level (low/med): LOW__ Date Received: 04/16/94

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	40.0	U		P_
7440-70-2	Calcium__	47800			P_
7439-89-6	Iron____	125			P_
7439-95-4	Magnesium	12800			P_
7439-96-5	Manganese	47.2			P_
7440-09-7	Potassium	8250			P_
7782-49-2	Selenium_	5.8			F_
7440-23-5	Sodium___	34400			P_
7440-31-5	Silicon__	15700			P_
	Bismuth__	10.0	U		F_
5955-70-0	Cyanide__				NR

Fe J BM 9-14-94

8-12-94

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

DISSOLVED._____

FORM I - IN

ILM02.1

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL7

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO351 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6269
Level (low/med): LOW__ Date Received: 04/13/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	119	B		P
7440-70-2	Calcium	34700			P
7439-89-6	Iron	195			P
7439-95-4	Magnesium	10600			P
7439-96-5	Manganese	3.4	B		P
7440-09-7	Potassium	5920			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	31700			P
7440-31-5	Silicon	15900			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

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MW 8-12-94

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____
Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:
TOTAL

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL7

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO351 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6275
Level (low/med): LOW__ Date Received: 04/13/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_				NR
7440-70-2	Calcium__				NR
7439-89-6	Iron_____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-23-5	Sodium___				NR
7440-31-5	Silicon__				NR
	Bismuth__				NR
5955-70-0	Cyanide__	104			AS

mw 8-12-94

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
CYANIDE_ONLY._____

FORM I - IN

ILM02.1

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL8

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO351 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6327

Level (low/med): LOW Date Received: 04/13/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.8	B		P
7440-70-2	Calcium	41800			P
7439-89-6	Iron	51.2	~~B~~		P
7439-95-4	Magnesium	12800			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	7030			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	38500			P
7440-31-5	Silicon	20200			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

~~BJ~~ U dmw 9-1-94

mw 8-12-94

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

DISSOLVED

FORM I - IN

ILM02.1

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ5

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO379 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6695

Level (low/med): LOW Date Received: 04/15/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	67.5	B		P
7440-70-2	Calcium	37700			P
7439-89-6	Iron	27.9	B		P
7439-95-4	Magnesium	11600			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	5280			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	20600			P
7440-31-5	Silicon	17400			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

BJ V 6-1-94

8-12-94

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

TOTAL

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ5

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO379 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6701
Level (low/med): LOW__ Date Received: 04/15/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
7440-31-5	Silicon				NR
	Bismuth				NR
5955-70-0	Cyanide	10.0	U		AS

8-12-94

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

Comments:
CYANIDE_ONLY._____

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ6

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO379 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6765

Level (low/med): LOW Date Received: 04/15/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	51.9	B		P
7440-70-2	Calcium	36200			P
7439-89-6	Iron	12.2	B		P
7439-95-4	Magnesium	11200			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	4690	B		P
7782-49-2	Selenium	2.0	B		F
7440-23-5	Sodium	19500			P
7440-31-5	Silicon	16700			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

BF U 4-12-94

4-12-94

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

DISSOLVED

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ7

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO379 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6737
Level (low/med): LOW__ Date Received: 04/15/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	53.1	B		P
7440-70-2	Calcium	35700			P
7439-89-6	Iron	81.6	B		P
7439-95-4	Magnesium	15900			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	5160			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	17500			P
7440-31-5	Silicon	17000			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

BJ U MW 9-1-94

MW 8-12-94

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____
Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:
TOTAL_____

FORM I - IN

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ7

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO379 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6743
Level (low/med): LOW__ Date Received: 04/15/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
7440-31-5	Silicon				NR
	Bismuth				NR
5955-70-0	Cyanide	10.0	U		AS

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

Comments:
CYANIDE_ONLY._____

FORM I - IN

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ8

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO379 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6766

Level (low/med): LOW Date Received: 04/15/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	64.3	B		P
7440-70-2	Calcium	35000			P
7439-89-6	Iron	45.4	B		P
7439-95-4	Magnesium	15300			P
7439-96-5	Manganese	2.8	B		P
7440-09-7	Potassium	5460			P
7782-49-2	Selenium	2.1	B		F
7440-23-5	Sodium	21300			P
7440-31-5	Silicon	16100			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

DISSOLVED

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK3

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO379 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6744

Level (low/med): LOW Date Received: 04/15/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	35200			P
7439-89-6	Iron	123			P
7439-95-4	Magnesium	10000			P
7439-96-5	Manganese	2.3	B		P
7440-09-7	Potassium	5830			P
7782-49-2	Selenium	2.5	B		F
7440-23-5	Sodium	21000			P
7440-31-5	Silicon	17300			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

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DW 8-12-94

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

TOTAL

FORM I - IN

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK3

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO379 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6750
Level (low/med): LOW__ Date Received: 04/15/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
7440-31-5	Silicon				NR
	Bismuth				NR
5955-70-0	Cyanide	10.0	U		AS

pw 8-12-94

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

Comments:
CYANIDE_ONLY._____

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK4

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO379 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6767
Level (low/med): LOW__ Date Received: 04/15/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	37500			P
7439-89-6	Iron	15.5	B		P
7439-95-4	Magnesium	10800			P
7439-96-5	Manganese	2.2	B		P
7440-09-7	Potassium	5430			P
7782-49-2	Selenium	2.8	B		F
7440-23-5	Sodium	23100			P
7440-31-5	Silicon	18500			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

~~BJ~~ U 9-1-94

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8-12-94

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____
Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:
DISSOLVED

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK6
~~BOBNK5~~ JDR 5/20/94

Lab Name: ITAS KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: WO379 SAS No.: SDG No.: W0027
Matrix (soil/water): WATER Lab Sample ID: AA6768D
Level (low/med): LOW Date Received: 04/15/94
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	27800			P
7439-89-6	Iron	77.6	~~B~~		P
7439-95-4	Magnesium	7960			P
7439-96-5	Manganese	57.6			P
7440-09-7	Potassium	6070			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	12300			P
7440-31-5	Silicon	22700			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

~~BJ~~ U MW 9-1-94

MW 8-2-94

Color Before: COLORLESS Clarity Before: CLEAR Texture:
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
DISSOLVED

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

~~BOBNK1~~
~~BOBNK5~~ JDR 5/24/71
BOBNK5 JDR 10/19/94

Lab Name: ITAS KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: WO379 SAS No.: SDG No.: W0027
Matrix (soil/water): WATER Lab Sample ID: AA6757
Level (low/med): LOW Date Received: 04/15/94
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
7440-31-5	Silicon				NR
	Bismuth				NR
5955-70-0	Cyanide	10.0	U		AS

mw 8-12-94

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE ONLY.

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN7

Lab Name: ITAS KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: WO379 SAS No.: SDG No.: W0027
Matrix (soil/water): WATER Lab Sample ID: AA6758
Level (low/med): LOW Date Received: 04/15/94
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	24600			P
7439-89-6	Iron	55.6	B		P
7439-95-4	Magnesium	9340			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	4790	B		P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	22300			P
7440-31-5	Silicon	15800			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

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mw 8-12-94

Color Before: COLORLESS Clarity Before: CLEAR Texture:
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
TOTAL

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN7

Lab Name: ITAS_KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO379 SAS No.: SDG No.: W0027

Matrix (soil/water): WATER Lab Sample ID: AA6764

Level (low/med): LOW Date Received: 04/15/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
7440-31-5	Silicon				NR
	Bismuth				NR
5955-70-0	Cyanide	10.0	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.

BOBNN8

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___
Lab Code: ITSTU_ Case No.: WO379 SAS No.: _____ SDG No.: W0027_
Matrix (soil/water): WATER Lab Sample ID: AA6769
Level (low/med): LOW__ Date Received: 04/15/94
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	59.1	B		P
7440-70-2	Calcium	23000			P
7439-89-6	Iron	26.4	B		P
7439-95-4	Magnesium	8860			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	3640	B		P
7782-49-2	Selenium	2.0	U	W	F
7440-23-5	Sodium	21400			P
7440-31-5	Silicon	14900			P
	Bismuth	10.0	U		F
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____
Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:
DISSOLVED

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SULFATE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	351
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/27/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6124	5	U
BOBNL7	AA6274	47	+

8-12-94

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

SULFATE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	382
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/02/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6180	5	U
BOBNH9	AA6804	18	+
BOBNJ1	AA6797	44	+

6-12-94

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

SULFATE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	381
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/27/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6124	5	U
BOBNM1	AA6781	152	+
BOBNL3	AA6788	102	+

4-12-94

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

SULFATE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	**SDG Number:**	W0027
Contract Name:	Westinghouse Hanford	**Job Number:**	379
Sample Matrix:	Water	**Extraction Date:**	N/A
Concentration Units:	mg/l	**Analysis Date:**	04/27/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6124	5	U
Method Blank	P6125	5	U
BOBNJ5	AA6700	38	+
BOBNK5	AA6756	38	+
BOBNJ7	AA6742	41	+
BOBNK3	AA6749	64	+
BOBNN7	AA6763	31	+

Method blank P6124 applies to sample: BOBNJ5

Method blank P6125 applies to samples: BOBNK5, BOBNJ7, BOBNK3 and BOBNN7.

MWS 8-12-94

\+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	351
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/19/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6101	0.02	U
BOBNL7	AA6271	19	+

8-12-94

+ - 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:**	W0027
Contract Name:	Westinghouse Hanford	**Job Number:**	381
Sample Matrix:	Water	**Extraction Date:**	N/A
Concentration Units:	mg/l	**Analysis Date:**	05/06/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6152	0.04	+
BOBNM1	AA6778	17	+
BOBNL3	AA6785	8.5	+

MW 4-12-94

+ - Positive result.

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	382
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/11/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6178	0.02	U
BOBNJ1	AA6794	15	+
BOBNH9	AA6801	12	+

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	379
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/06/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6152	0.04	+
BOBNJ5	AA6697	14	+
BOBNK5	AA6753	0.02	U
BOBNJ7	AA6739	16	+
BOBNK3	AA6746	5.0	+
BOBNN7	AA6760	3.6	+

8-12-94

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	351
Client Sample ID:	BOBNL7	Analysis Date:	05/09/94 & 05/23/94
Lab Sample ID:	AA6270	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.95	+	0.4
chloride	7.3	+	1.2
nitrite	0.4	~~U~~ UR	0.4
phosphate	1.0	~~U~~ UR	1.0
sulfate	46	+	4.5

9-12-94

+ - 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:**	W0027
Contract Name:	Westinghouse Hanford	**Job Number:**	379
Client Sample ID:	BOBNJ5	**Analysis Date:**	05/10/94 & 05/23/94
Lab Sample ID:	AA6696	**Confirmation Date:**	N/A
Sample Matrix:	Water	**Concentration Units:**	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.60	+	0.4
chloride	5.9	+	0.4
nitrite	0.4	~~U~~ U12	0.4
phosphate	1.0	~~U~~ U12	1.0
sulfate	29	+	1.5

8-12-94

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	379
Client Sample ID:	BOBNJ7	Analysis Date:	05/10/94 & 05/23/94
Lab Sample ID:	AA6738	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.42	+	0.4
chloride	7.8	+	0.8
nitrite	0.4	~~U~~ UR	0.4
phosphate	1.0	~~U~~ UR	1.0
sulfate	34	+	3.0

6-12-94

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	379
Client Sample ID:	BOBNK3	Analysis Date:	05/10/94 & 05/23/94
Lab Sample ID:	AA6745	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.80	+	0.4
chloride	11	+	0.8
nitrite	0.4	~~U~~ UR	0.4
phosphate	1.0	~~U~~ UR	1.0
sulfate	63	+	4.5

8-12-94

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	379
Client Sample ID:	BOBNK5	Analysis Date:	05/10/94 & 05/23/94
Lab Sample ID:	AA6752	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	4.0	+	0.4
nitrite	0.4	~~U~~ UR	0.4
phosphate	1.0	~~U~~ UR	1.0
sulfate	32	+	3.0

MW
5-12-94

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	379
Client Sample ID:	BOBNN7	Analysis Date:	05/11/94 & 05/23/94
Lab Sample ID:	AA6763	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.82	+	0.4
chloride	9.0	+	0.8
nitrite	0.4	~~U~~ UR	0.4
phosphate	1.0	~~U~~ UR	1.0
sulfate	28	+	1.5

pmw
6-12-94

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

ANION ANALYSIS

Laboratory Name:	IT'AS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	381
Client Sample ID:	BOBNM1	Analysis Date:	05/09/94 & 05/23/94
Lab Sample ID:	AA6777	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.52	+	0.4
chloride	52	+	4.0
nitrite	0.4	~~U~~ UR	0.4
phosphate	1.5	+ J	1.0
sulfate	186	+	12

8-12-94

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	381
Client Sample ID:	BOBNL3	Analysis Date:	05/09/94 & 05/23/94
Lab Sample ID:	AA6784	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.56	+	0.4
chloride	115	+	1.2
nitrite	0.4	U UR	0.4
phosphate	1.0	U UR	1.0
sulfate	23	+	7.5

6-12-94

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	382
Client Sample ID:	BOBNJ1	Analysis Date:	05/12/94
Lab Sample ID:	AA6793	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	7.9	+	0.8
nitrite	0.4	~~U~~ UR	0.4
phosphate	1.0	~~U~~ UR	1.0
sulfate	36	+	3.0

MW
6-12-94

+ - 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:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	382
Client Sample ID:	BOBNH9	Analysis Date:	05/12/94
Lab Sample ID:	AA6800	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	10	+	1.2
nitrite	0.4	U UR	0.4
phosphate	1.0	U UR	1.0
sulfate	17	+	1.5

8/12-94

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

ALKALINITY ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	351
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/26/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6156	2	U
BOBNL7	AA6272	80	J +

pw
6-12-94

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

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ALKALINITY ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	381
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/26/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6156	2	U
BOBNL3	AA6786	100	J +
BOBNM1	AA6779	82	J +

8-12-94

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

ALKALINITY ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	**SDG Number:**	W0027
Contract Name:	Westinghouse Hanford	**Job Number:**	382
Sample Matrix:	Water	**Extraction Date:**	N/A
Concentration Units:	mg/l	**Analysis Date:**	04/26/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6157	2	U
BOBNH9	AA6802	100	+
BOBNJ1	AA6795	110	+

9-12-94

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

ALKALINITY ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	379
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/26/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6156	2	U
BOBNJ5	AA6698	110	+
BOBNK5	AA6754	100	+
BOBNJ7	AA6740	108	+
BOBNK3	AA6747	98	+
BOBNN7	AA6761	20	+

MW
6-7-94

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

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	351
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/15/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6095	1	U
BOBNL7	AA6273	312	+

5-12-94

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

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	382
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/19/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6103	1	U
BOBNJ1	AA6796	276	+
BOBNH9	AA6803	280	J +

8-12-94

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

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	381
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/19/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6103	1	U
BOBNM1	AA6780	542	J +
BOBNL3	AA6787	370	J +

MW
8-12-94

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

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0027
Contract Name:	Westinghouse Hanford	Job Number:	379
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	04/19/94

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6103	1	U
BOBNJ5	AA6699	266	+
BOBNJ7	AA6741	286	+
BOBNK3	AA6748	298	+
BOBNK5	AA6755	200	+
BOBNN7	AA6762	222	+

MW 8-12-94

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

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0027

LAB SAMPLE ID: 40419901 MATRIX: WATER

WHC ID: BOBNM1 DATE RECEIVED 4/12/94

REPORTING UNITS pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER	
PU-238	1.39E-01	2.20E-01	2.21E-01	0.541	RD3209	
PU239/40	2.31E-01	2.67E-01	2.70E-01	0.541	RD3209	
CO-60	2.72E+01	7.47E+00	7.95E+00	N/A	RD3219	
CS-137DA	3.56E+00	4.18E+00	4.19E+00	N/A	RD3219	
RU-106DA	-3.51E+01	3.94E+01	3.96E+01	N/A	RD3219	
ALPHA	2.24E+00	2.10E+00	2.12E+00	1	RD3222	
BETA	3.11E+02	1.25E+01	2.51E+01	1	RD3222	
TOTAL-SR	-1.40E-01	2.63E-01	2.65E-01	0.876	RD3204	
TC-99	1.69E+03	8.49E+00	1.87E+02	0.951	ITAS-IT-RS-0001	J
TRITIUM	2.27E+02	1.07E+02	2.02E+02	0.973	RD3205	
URANIUM	5.18E+00	N/A	7.77E-01	1	RD4200	

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IT ANALYTICAL SERVICES
RICHLAND, WA
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SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0027

LAB SAMPLE ID: 40419902 MATRIX: WATER

WHC ID: BOBNL3 DATE RECEIVED 4/12/94

REPORTING UNITS pCi/L

Lab Q

	ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER	Val Q
U	PU-238	-1.19E-02	2.37E-02	2.38E-02	0.703	RD3209	
U	PU239/40	-4.74E-02	4.74E-02	4.80E-02	0.703	RD3209	
	K-40	1.09E+02	1.11E+02	1.12E+02	N/A	RD3219	
U	CO-60	7.83E+00	5.43E+00	5.49E+00	N/A	RD3219	
U	CS-137DA	5.49E+00	4.25E+00	4.29E+00	N/A	RD3219	
U	RU-106DA	2.23E+01	3.87E+01	3.88E+01	N/A	RD3219	
	ALPHA	2.62E+00	1.76E+00	1.78E+00	1	RD3222	
	BETA	8.62E+01	6.66E+00	9.02E+00	1	RD3222	
U	TOTAL-SR	-6.59E-02	2.45E-01	2.46E-01	1	RD3204	
	TC-99	3.81E+02	4.06E+00	4.45E+01	0.951	ITAS-IT-RS-0001	J
	TRITIUM	9.14E+02	1.28E+02	2.41E+02	0.973	RD3205	
	URANIUM mg/L	3.44E+00	N/A	5.16E-01	1	RD4200	

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mw 8-1-94

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IT ANALYTICAL SERVICES
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SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	**SDG NO.:**	W0027
LAB SAMPLE ID:	40420101	**MATRIX:**	WATER
WHC ID:	BOBNL7	**DATE RECEIVED**	4/12/94
REPORTING UNITS	pCi/L		

Lab 9 Vial 9

	ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER	
U	PU-238	0.00E+00	0.00E+00	2.40E-01	0.521	RD3209	
U	PU239/40	-1.60E-02	3.20E-02	3.21E-02	0.521	RD3209	
U	CO-60	1.70E+01	8.54E+00	8.70E+00	N/A	RD3219	
U	CS-137DA	6.31E-02	4.78E+00	4.78E+00	N/A	RD3219	
U	RU-106DA	5.44E+00	4.99E+01	4.99E+01	N/A	RD3219	
	ALPHA	2.30E+00	1.51E+00	1.53E+00	1	RD3222	
	BETA	4.01E+02	1.39E+01	3.15E+01	1	RD3222	
	TOTAL-SR	2.71E-01	2.88E-01	2.96E-01	0.99	RD3204	
	TC-99	1.53E+03	8.02E+00	1.69E+02	0.951	ITAS-IT-RS-0001	J
	TRITIUM	5.17E+03	2.19E+02	5.27E+02	0.973	RD3205	
	URANIUM	2.89E+00	N/A	4.33E-01	1	RD4200	

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IT ANALYTICAL SERVICES
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SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0027
LAB SAMPLE ID: 40425801
MATRIX: WATER
WHC ID: BOBNJ5
DATE RECEIVED 4/14/94
REPORTING UNITS pCi/L

Lab Q

Val Q

	ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER	
U	PU-238	-2.38E-02	3.36E-02	3.38E-02	0.701	RD3209	
U	PU239/40	-1.19E-02	2.38E-02	2.38E-02	0.701	RD3209	
U	CO-60	-6.62E+00	4.42E+00	4.46E+00	N/A	RD3219	
U	CS-137DA	5.74E-01	3.40E+00	3.40E+00	N/A	RD3219	
U	RU-106DA	-9.36E+00	2.97E+01	2.97E+01	N/A	RD3219	
U	ALPHA	8.46E-01	9.54E-01	9.60E-01	1	RD3222	
	BETA	8.35E+00	2.63E+00	2.69E+00	1	RD3222	
	TOTAL-SR	1.89E-01	2.85E-01	2.89E-01	1	RD3204	
	TC-99	1.04E+01	1.23E+00	5.09E+00	0.951	ITAS-IT-RS-0001	J
	TRITIUM	3.65E+03	1.91E+02	4.20E+02	0.973	RD3205	
	URANIUM	2.05E+00	N/A	3.07E-01	1	RD4200	

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IT ANALYTICAL SERVICES
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SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0027
LAB SAMPLE ID: 40425802
MATRIX: WATER
WHC ID: BOBNJ7
DATE RECEIVED 4/14/94
REPORTING UNITS pCi/L

Lab Q	ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER	Val Q
U	PU-238	0.00E+00	0.00E+00	1.95E-01	0.643	RD3209	
U	PU239/40	0.00E+00	0.00E+00	1.95E-01	0.643	RD3209	
	K-40	6.56E+01	9.71E+01	9.73E+01	N/A	RD3219	
U	CO-60	-1.79E+00	4.76E+00	4.76E+00	N/A	RD3219	
U	CS-137DA	-3.78E+00	4.85E+00	4.87E+00	N/A	RD3219	
U	RU-106DA	5.07E+00	3.76E+01	3.76E+01	N/A	RD3219	
	ALPHA	3.86E+01	5.43E+00	7.24E+00	1	RD3222	
	BETA	7.33E+01	6.12E+00	8.01E+00	1	RD3222	
U	TOTAL-SR	-1.60E-01	2.31E-01	2.35E-01	1	RD3204	
	TC-99	2.52E+02	3.38E+00	3.05E+01	0.951	ITAS-IT-RS-0001	J
	TRITIUM	4.98E+03	2.16E+02	5.13E+02	0.973	RD3205	
	URANIUM ug/L	6.39E+01	N/A	9.59E+00	1	RD4200	

JMW 8-13-94

JMW 9-1-94

0014

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IT ANALYTICAL SERVICES
RICHLAND, WA
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SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0027
LAB SAMPLE ID: 40425803
MATRIX: WATER
WHC ID: BOBNK3
DATE RECEIVED 4/14/94
REPORTING UNITS pCi/L

Lab Q

Val Q

	ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER	
U	PU-238	-2.31E-02	4.62E-02	4.65E-02	0.361	RD3209	
	PU239/40	3.47E-01	4.00E-01	4.06E-01	0.361	RD3209	
U	CO-60	3.07E+00	4.26E+00	4.27E+00	N/A	RD3219	
U	CS-137DA	-2.53E+00	4.71E+00	4.72E+00	N/A	RD3219	
	RU-106DA	4.02E+01	3.17E+01	3.20E+01	N/A	RD3219	
U	ALPHA	1.42E+00	1.21E+00	1.23E+00	1	RD3222	
	BETA	1.50E+01	3.15E+00	3.32E+00	1	RD3222	
U	TOTAL-SR	-2.06E-01	2.31E-01	2.37E-01	1	RD3204	
	TC-99	2.22E+01	1.41E+00	6.15E+00	0.951	ITAS-IT-RS-0001	J
	TRITIUM	2.97E+03	1.78E+02	3.74E+02	0.973	RD3205	
	URANIUM	2.56E+00	N/A	3.84E-01	1	RD4200	

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IT ANALYTICAL SERVICES
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SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0027

LAB SAMPLE ID: 40425804 MATRIX: WATER

WHC ID: BOBNK5 DATE RECEIVED 4/14/94

REPORTING UNITS pCi/L

Lab Q

Val Q

	ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER	
U	PU-238	-1.45E-02	2.91E-02	2.92E-02	0.574	RD3209	
U	PU239/40	-5.81E-02	5.81E-02	5.88E-02	0.574	RD3209	
	CO-60	3.31E+00	2.70E+00	2.72E+00	N/A	RD3219	
U	CS-137DA	-1.15E-01	3.26E+00	3.26E+00	N/A	RD3219	
U	RU-106DA	-8.36E+00	3.58E+01	3.58E+01	N/A	RD3219	
	ALPHA	2.78E+00	1.40E+00	1.45E+00	1	RD3222	
	BETA	9.69E+00	2.70E+00	2.78E+00	1	RD3222	
U	TOTAL-SR	4.45E-02	2.61E-01	2.61E-01	1	RD3204	
	TC-99	-5.78E-01	1.04E+00	4.21E+00	0.951	ITAS-IT-RS-0001	~~UJ~~ no qual.
U	TRITIUM	1.03E+02	1.03E+02	1.95E+02	0.973	RD3205	
	URANIUM	4.39E+00	N/A	6.59E-01	1	RD4200	

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IT ANALYTICAL SERVICES
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SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	**SDG NO.:**	W0027
LAB SAMPLE ID:	40425805	**MATRIX:**	WATER
WHC ID:	BOBNN7	**DATE RECEIVED**	4/14/94
REPORTING UNITS	pCi/L		

Lab G

Val G

	ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER	
U	PU-238	0.00E+00	0.00E+00	1.90E-01	0.66	RD3209	
U	PU239/40	-1.26E-02	2.53E-02	2.53E-02	0.66	RD3209	
U	CO-60	1.88E+00	4.62E+00	4.63E+00	N/A	RD3219	
U	CS-137DA	3.03E+00	3.41E+00	3.42E+00	N/A	RD3219	
U	RU-106DA	1.93E+01	3.70E+01	3.71E+01	N/A	RD3219	
U	ALPHA	4.66E-01	7.30E-01	7.32E-01	1	RD3222	
	BETA	6.00E+01	5.54E+00	6.97E+00	1	RD3222	
U	TOTAL-SR	6.18E-02	2.59E-01	2.59E-01	1	RD3204	
	TC-99	2.05E+02	3.09E+00	2.54E+01	0.951	ITAS-IT-RS-0001	J
	TRITIUM	8.08E+03	2.64E+02	7.33E+02	0.973	RD3205	
	URANIUM	1.51E+00	N/A	2.27E-01	1	RD4200	

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mw 9-1-94

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IT ANALYTICAL SERVICES
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SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	**SDG NO.:**	W0027
LAB SAMPLE ID:	40428701	**MATRIX:**	WATER
WHC ID:	BOBNJ1	**DATE RECEIVED**	4/15/94
REPORTING UNITS	pCi/L		

Lab G

Val F

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER	
U PU-238	-3.23E-02	4.57E-02	4.60E-02	0.516	RD3209	
U PU239/40	-1.61E-02	3.23E-02	3.24E-02	0.516	RD3209	
CO-60	9.21E+00	7.37E+00	7.43E+00	N/A	RD3219	
CS-137DA	4.36E+00	4.05E+00	4.07E+00	N/A	RD3219	
U RU-106DA	-8.66E+00	4.25E+01	4.25E+01	N/A	RD3219	
ALPHA	1.04E+01	2.89E+00	3.16E+00	1	RD3222	
BETA	2.84E+02	1.17E+01	2.32E+01	1	RD3222	
J TOTAL-SR	6.68E-02	2.65E-01	2.66E-01	1	RD3204	
TC-99	1.38E+03	7.63E+00	1.53E+02	0.951	ITAS-IT-RS-0001	J
TRITIUM	5.70E+03	2.28E+02	5.64E+02	0.973	RD3205	
URANIUM	2.10E+01	N/A	3.15E+00	1	RD4200	

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MW 4-1-94

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IT ANALYTICAL SERVICES
RICHLAND, WA
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SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0027
LAB SAMPLE ID: 40428702
MATRIX: WATER
WHC ID: BOBNH9
DATE RECEIVED 4/15/94
REPORTING UNITS pCi/L

Lab Q | Val Q

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER	
PU-238	7.78E-02	1.56E-01	1.56E-01	0.536	RD3209	U
PU239/40	0.00E+00	0.00E+00	2.33E-01	0.536	RD3209	U
CO-60	3.64E+01	9.88E+00	1.05E+01	N/A	RD3219	
CS-137DA	1.61E+00	3.60E+00	3.60E+00	N/A	RD3219	U
RU-106DA	-1.72E+01	3.43E+01	3.43E+01	N/A	RD3219	U
ALPHA	2.33E+00	1.42E+00	1.45E+00	1	RD3222	
BETA	3.38E+02	1.27E+01	2.71E+01	1	RD3222	
TOTAL-SR	-5.73E-03	2.81E-01	2.81E-01	0.85	RD3204	U
TC-99	1.38E+03	7.63E+00	1.53E+02	0.951	ITAS-IT-RS-0001	J
TRITIUM	4.96E+02	1.16E+02	2.16E+02	0.973	RD3205	
URANIUM	3.10E+00	N/A	4.64E-01	1	RD4200	

mw 8-1-94

mw 8-9-94
0019 mw 9-1-94

000080

Checklists

LATA INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E
PROJECT: 200-BP-5			SDG: W0027-ITC-036		
VALIDATOR: MC Webb		LATA NO.: VW401. VW402 44		DATE: 8-11-94	
SAF NO.: 94-130		LAB: ITC		CASE:	
QAPP REFERENCE:			SAP REFERENCE:		

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

ANALYSES PERFORMED

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

SAMPLES/MATRIX (waters - all)

B0BNL7, NL8

B0BNJ5, NJ6, NJ7, NJ8, NK3, NK4, NK6, NN7, NN8, NK5

B0BNH9, NJ0, NJ1, NJ2

B0BNL3, NL4, NM1, NM2

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 *(see HOLDING TIME SUMMARY form)*

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

Comments: _____

LATA INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS *(see CALIBRATION DATA SUMMARY form)*

Were initial calibrations performed on all instruments? . . . . . (Yes) No N/A

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

★ Recalculate the correlation coefficient (r) of the standard curves for atomic absorption and cyanide analyses.

$$\text{Correlation Coefficient (r)}$$

$$r = \frac{N \sum x_i y_i - \sum x_i \sum y_i}{[N \sum x_i^2 - (\sum x_i)^2]^{1/2} \; [N \sum y_i^2 - (\sum y_i)^2]^{1/2}}$$

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

★ Recalculate at least one ICV and CCV recovery for each method.

★

$$\text{ICV/CCV Recovery}$$

$$\%R = \frac{\text{observed value}}{\text{true value}} \times 100$$

Comments: _____

4. BLANKS *(see BLANK AND SAMPLE DATA SUMMARY form)*

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

Comments: Fe detected in Method blank BOBNL8 qualified as ~~BJU~~ (<193.9) Changed by BMT 9-14-94

Mn detected in a calibration blank BOBNL7 qualified as U

Fe detected in a method blank BOBNH9, NJ0, NJ1, NJ2 qual as ~~BJU~~ (<206.6, <193.9)

Fe detected in a method blank BOBNJ5, 6, 7, 8, ~~NK3~~, 4, 5, 6, , NN7, 8 (~~BJU~~)

Mn detected in a cal. blank BOBNK3, NJ8, NK4, ~~NN7~~ qual as (U) MW 9-12-94

NN7 is already U

LATA INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. ACCURACY *(see ACCURACY DATA SUMMARY form)*

Were spike samples analyzed? ..... (Yes) No N/A

Are all spike sample recoveries acceptable? ..... (Yes) No N/A

Were laboratory control samples (LCS) analyzed? ..... (Yes) No N/A

Are all LCS recoveries acceptable? ..... (Yes) No N/A

★

$$\%R = \frac{SSR - SR}{SA} \times 100$$

Spike Recovery

where:
SSR = spiked sample result
SR = sample result
SA = spike added

Comments: _____

6. PRECISION *(see PRECISION DATA SUMMARY form)*

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

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

★

$$RPD = \frac{|OS - D|}{\left(\frac{OS + D}{2}\right)} \times 100$$

Relative Percent Difference

where:
OS = sample concentration (original sample/MS)
D = duplicate concentration (duplicate sample/MSD)

Comments: Fe RPD > 20% Samples qualified estimated.
B0BNM2 (BJ) B0BNL3, NL4, NM1 (J)

6. PRECISION (continued) *(see PRECISION DATA SUMMARY form)*

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

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

★

Percent Difference

$$\%D = \frac{|I - S|}{I} \times 100$$

where:

I = analyte concentration before dilution

S = analyte concentration after serial dilution

Comments:_____

7. FIELD QC SAMPLES

Were field QC samples (field/trip blanks, duplicates, splits, performance audit) identified? Yes (No) N/A

Are field/trip blank results 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)

Are performance audit sample results acceptable? ..... Yes No (N/A)

Comments:_____

LATA INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

8. FURNACE AA QUALITY CONTROL

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

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

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

Are all analytical spike recoveries acceptable? ..... 9-1-94 (Yes) (No) N/A

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

Are all MSA results acceptable? ..... Yes No (N/A)

Comments:

BOBNNE qual. is rej. (UJ)

9. 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

★

Inorganics Analysis Results Calculation, water sample

Concentration (µg/L) = CONCW × DFW

where:

CONCW = concentration off calibration curve (µg/L)

DFW = dilution factor (if any)

★

Inorganics Analysis Results Calculation, soil sample

$$\text{Concentration (mg/Kg)} = \frac{\text{CONCS} \times \text{DFS} \times \text{VOL}}{\text{WS} \times \text{SS}}$$

where:

CONCS = concentration off calibration curve (mg/L)

DFS = dilution factor (if any)

VOL = volume of final extract (ml)

WS = weight of sample (g)

SS = dry weight conversion factor [(100 – %moisture) × 100]

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

Comments:

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

BOBNM1D

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO381 SAS No.: _____ SDG No.: W0027_

Matrix (soil/water): WATER Level (low/med): _LOW__

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		40.0000	U	47.4600	B	200.0		P
Calcium		66687.9700		78279.0800		16.0		P
Iron		887.1600		1245.3700		33.6	*	P
Magnesium	5000.0	19839.2900		23299.9800		16.0		P
Manganese		9.8400	B	14.7800	B	40.1		P
Potassium	5000.0	6231.6900		7238.6900		15.0		P
Selenium	5.0	9.1400		10.0600		9.6		F
Sodium		29940.0000		36030.0000		18.5		P
Silicon		12258.0600		14450.0300		16.4		P
Bismuth		10.0000	U	10.0000	U			F
Cyanide								NR

RPD > 20%
Result > 5*CRDL
CRDL Fe = 100

BJ BOBNM2 J BOBNL3, WLY, NM1

MW 8-12-94

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___

Lab Code: ITSTU_ Case No.: WO351 SAS No.: _____ SDG No.: W0027_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

APBW0503A (AA8093)
PBW0503A (AA8096)

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	40.0	U	40.0	U	40.0	U	40.0	U	40.000	U	P
Calcium	20.0	U	20.0	U	20.0	U	20.0	U	81.050	B	P
Iron	10.0	U	10.0	U	10.0	U	10.0	U	19.390	B	P
Magnesium	30.0	U	30.0	U	30.0	U	30.0	U	30.000	U	P
Manganese	2.0	U	5.2	B	2.0	U	2.5	B	2.000	U	P
Potassium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	1000.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Sodium	100.0	U	100.0	U	100.0	U	100.0	U	251.530	B	P
Silicon	30.0	U	30.0	U	30.0	U	30.0	U	59.260	B	P
Bismuth	10.0	U	10.0	U	10.0	U			10.000	U	F
Cyanide	10.0	U	10.0	U					10.000	U	AS

MW 8-12-94
19.39 * 5 = 96.95 < = U } Fe (HB)
~~BOBNL0 change B → U BJ~~ } MW 9-1-94

Mn 2.9 * 5 = 14.5 3.0 * 5 = 15
BOBWL7 change B → U Mn

MW 8-12-94

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___

Lab Code: ITSTU_ Case No.: WO351 SAS No.: _____ SDG No.: W0027_

Preparation Blank Matrix (soil/water): _____

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum			40.0	U	40.0	U					P
Calcium			20.0	U	20.0	U					P
Iron			10.0	U	10.0	U					P
Magnesium			30.0	U	30.0	U					P
Manganese			2.9	B	3.0	B					P
Potassium			1000.0	U	1000.0	U					P
Selenium			2.0	U	2.0	U	2.0	U			F
Sodium			100.0	U	100.0	U					P
Silicon			30.0	U	30.0	U					P
Bismuth											NR
Cyanide											NR

MW 8-12-94

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO382 SAS No.: _____ SDG No.: W0027_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

APBW0503A
PBW0503A

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	40.0	U	40.0	U	40.0	U	40.0	U	40.000	U	P
Calcium	20.0	U	20.0	U	20.0	U	20.0	U	59.290	B	P
Iron	10.0	U	10.0	U	10.0	U	10.0	U	20.660	B	P
Magnesium	-79.0	B	-35.5	B	-50.0	B	-40.3	B	-64.490	B	P
Manganese	2.0	U	2.6	B	2.0	U	2.0	U	2.000	U	P
Potassium	-1067.4	B	-1103.4	B	1000.0	U	-1170.0	B	1000.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Sodium	100.0	U	100.0	U	100.0	U	100.0	U	264.120	B	P
Silicon	30.0	U	30.0	U	30.0	U	30.0	U	48.200	B	P
Bismuth	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	F
Cyanide	10.0	U	10.0	U	10.0	U			10.000	U	AS

MW 8-12-94

FC { 20.660 * 5 = 103.3 *2 = 206.6 all detects < 103.3 B changed to U BJ BM 8-14-94 MW 8-12-94
BOBNH9, NJ0, NJ1, NJ2

10 Kendra

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___

Lab Code: ITSTU_ Case No.: WO379 SAS No.: _____ SDG No.: W0027_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_ PB
APBW05D3A (AA8093)
PBW0503A (AA8096)

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep. Blank	C	M
Aluminum	40.0	U	40.0	U	40.0	U	40.0	U	40.000	U	P
Calcium	20.0	U	20.0	U	20.0	U	20.0	U	81.050	B	P
Iron	10.0	U	10.0	U	10.0	U	10.0	U	19.390	B	P
Magnesium	30.0	U	30.0	U	30.0	U	30.0	U	30.000	U	P
Manganese	2.0	U	5.2	B	2.0	U	2.5	B	2.000	U	P
Potassium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	1000.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Sodium	100.0	U	100.0	U	100.0	U	100.0	U	251.530	B	P
Silicon	30.0	U	30.0	U	30.0	U	30.0	U	59.260	B	P
Bismuth	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	F
Cyanide	10.0	U	10.0	U	10.0	U			10.000	U	AS

MW 8-12-94
qual. B→U Fe BOB NJ5, NJ6, NJ7, NJ8, NK4, NK6, NN7, NN8 <96.95
qual B→U Mn BOB NK3, NJ8, NK4, NN7, <5.0

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___

Lab Code: ITSTU_ Case No.: WO379 SAS No.: _____ SDG No.: W0027_

Preparation Blank Matrix (soil/water): _____

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum			40.0	U	40.0	U					P
Calcium			20.0	U	20.0	U					P
Iron			10.0	U	10.0	U					P
Magnesium			30.0	U	30.0	U					P
Manganese			2.9	B	3.0	B					P
Potassium			1000.0	U	1000.0	U					P
Selenium			2.0	U	2.0	U	2.0	U			F
Sodium			100.0	U	100.0	U					P
Silicon			30.0	U	30.0	U					P
Bismuth			10.0	U	10.0	U					F
Cyanide											NR

FORM III - IN ILM02.1

Mww
8-12-94

Validator	Date	SDG
MC Webb	8-12-94	W0027-ITC-036

DATA VALIDATION SUMMARY

MAJOR DEFICIENCIES:

1. The holding time was exceeded by greater than two times for nitrite and phosphate by IC. The results for all the samples were qualified as unusable (UR).

MINOR DEFICIENCIES:

1. The iron results for samples BOBNM1, BOBNM2, BOBNL3, and BOBNL4 were qualified as estimated (J/BJ) because the duplicate precision was outside acceptance criteria. MW 9-1-94
2. The iron results for samples BOBNL8, BOBNH9, BOBNJ0, BOBNJ1, ~~NH2~~ BOBNJ2, BOBNJ5, BOBNJ6, BOBNJ7, BOBNJ8, ~~BOBNK3~~, BOBNK4, BOBNK6, BOBNN7, and BOBNN8 were qualified as ~~estimated~~ undetected (U) ~~(J/BJ)~~ because the preparation blank ~~was between IDL and CRDL.~~ ^Fe was detected in
3. The manganese results for samples BOBNL7, BOBNK3, BOBNK4, and BOBNJ8 were qualified as undetected (U) because calibration blank values were between IDL and CRDL.
4. The technetium results for BOBNM1, BOBNL3, BOBNL7, BOBNJ5, BOBNJ7, BOBNK3, BOBNK5, BOBNN7, BOBNJ1, and BOBNH9 were qualified as estimated because the duplicate precision was outside of acceptance criteria.
5. The holding time was exceeded by less than two times for alkalinity. The results were qualified as estimate (J) for samples BOBNL7, BOBNM1, and BOBNL3.
6. The holding time was exceeded by less than two times for total dissolved solids. The results were qualified as estimated (J) for samples BOBNM1, BOBNL3, and BOBNH9.

COMMENTS:

1. The MDA for tritium was not submitted by the laboratory. The package was on hold until 8-11-94.
2. The MDAs were not reported on the Form Is making it more difficult to validate the samples and QC.
3. The uranium results were reported in pCi/L instead of the correct units of ug/L. The correct units were added to the Form Is.
4. The U total RPD had transcription errors. All U total results were checked for transcription errors.

Because of the above items, this package took longer to validate.

7. Se analytical spike <85% Results qualified as estimated UR

MW 9-1-94

9613490.1468

DATA QUALIFICATION SUMMARY

SDG: W0027 - ITC 036	VALIDATOR: MWebb	DATE: 8/12-94	PAGE 1 OF 1

COMMENTS: GENERAL GC

COMPOUND	CAS No.	QUALIFIER	SAMPLES AFFECTED	MEDIA	REASON
Fe	7439-89-6	BJ	BOBNM2	W	RPD > 20%
		J	BOBNM1	W	
		J	BOBNL3	W	
		J	BOBNL4	W	
Fe		~~BJ~~ U	BOBNL8	W	+ Method Blk
Fe		~~BJ~~ U	BOBNH9	W	+ method blk
	Changes by BM 9-14-94	~~BJ~~ U	NJ0	W	
		~~BJ~~ U	NJ1	W	
		~~BJ~~ U	NJ2	W	
Fe		~~BJ~~ U	BOBNJ5	W	+ method blank
		~~BJ~~ U	BOBNJ6		
		~~BJ~~ U	BOBNJ7		
		~~BJ~~ U	BOBNJ8		
		~~J~~	~~BOBNK3~~		
		~~UJ~~ U	BOBNK4	BM 9-14-94	~~+ Method Blank~~
		~~U~~	~~BOBNM2~~ BOBNK5		8-12-94 NO FE
		~~BJ~~ U	BOBNK6		+ method blk
		~~BJ~~ U	BOBNN7		
		~~BJ~~ U	BOBNN8		
Mn	7439-96-5	U	BOBNL7	W	+ cal. blank
Mn		U	BOBNK3		+ cal blank
			BOBNK4		
			BOBNJ8		
			~~BOBNJ7~~		
			BOBNN7 is already qualified		
Se		UJ	BOBNN8	W	Analytical spike

BLANK AND SAMPLE DATA SUMMARY

SDG: W0027 - ITC - 036	VALIDATOR: BWJobb	DATE: 8-12-94	PAGE 1 OF __

COMMENTS: INORGANIC ANALYSES

FIELD SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
Method blk	Fe	19.39			ug/L		193.9	BOBNL8	~~BJ~~ U
Method blk	Fe	20.66			ug/L		206.6	BOBNH9	~~BJ~~ U
								BOBNJ0	~~BJ~~ U
								BOBNJ1	~~BJ~~ U
								BOBNJ2	~~BJ~~ U
Cal blank	Mn	2.9			ug/L	14.5	-	BOBNL7	U
Cal blank	Mn	3.0			ug/L	15.0	-	BOBNK3, NK4	U
								BOBNJ8, ~~NH7~~ NH8-12 94	U
Method blank	Fe	19.39			ug/L	—	193.9	BOBNJ5, NJ6	~~BJ~~ U
								BOBNJ7, NJ8	~~BJ~~ U
								BOBNK3, ~~NK4~~	~~J~~ NO QUAL
								BOBNK5, NK6 NK4	~~BJ~~ U
								BOBNN7	~~BJ~~ U
								BOBND8	~~BJ~~ U

BM 9-14-94

9961.064196

960000

PRECISION DATA SUMMARY

SDG: W0027-ITC-036	VALIDATOR: MWebb		DATE: 8-12-94		PAGE 1 OF 1
COMMENTS: INORGANIC ANALYSES					
COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
Fe	B0BNM1 / ~~WHITE~~	B0BNM10	33.6	B0BNM2	BJ
				B0BNM1	J
				B0BNL3	J
				B0BNL4	J

LINEAR REGRESSION ANALYSIS

Analysis: Inorganic (metals/CN)
Constituent: Se
SDG: WOO27-ITC-036

Calibration Date: 6-May-94

Date: 12-Aug-94
Validator: MC Webb

Concentration	Absorbance
0.00	0.003
5.00	0.018
10.00	0.039
20.00	0.078
40.00	0.158
80.00	0.301

r	r^2
0.9997	0.9993
slope	x intercept
265.5699	-0.6205
1/slope	y intercept
0.0038	0.0024

LINEAR REGRESSION ANALYSIS

Analysis: Inorganic (metals/CN)
Constituent: Bi
SDG: WOO27-ITC-036

Calibration Date: 14-May-94

Date: 12-Aug-94
Validator: MC Webb

Concentration	Absorbance
0.00	0.006
10.00	0.022
20.00	0.050
40.00	0.094
60.00	0.135
80.00	0.172

r	r^2
0.9986	0.9972
slope	x intercept
468.9902	-2.4934
1/slope	y intercept
0.0021	0.0055

LINEAR REGRESSION ANALYSIS

Analysis: Inorganic (metals/CN)
Constituent: CN
SDG: WOO27-ITC-036

Calibration Date: 21-Apr-94

Date: 23-Jun-94
Validator: MC Webb

Concentration	Absorbance
0.50	0.205
0.40	0.165
0.20	0.085
0.10	0.043
0.05	0.022
0.02	0.008
0.00	0.000

r	r^2
0.9999	0.9998
slope	x intercept
2.4362	-0.0024
1/slope	y intercept
0.4105	0.0010

LINEAR REGRESSION ANALYSIS

Analysis: Inorganic (metals/CN)
Constituent:
SDG: WOO27-ITC-036

Calibration Date:

Date: 12-Aug-94
Validator: MC Webb

Concentration	Absorbance

r	r^2
#DIV/0!	#DIV/0!
slope	x intercept
#DIV/0!	#DIV/0!
1/slope	y intercept
#DIV/0!	#DIV/0!

PERCENT RECOVERY (ICV/CCV)

Analysis: Inorganic (metals/CN)
SDG: WOO27-ITC-036

Date: 12-Aug-94
Validator: MC Webb

Constituent	Observed Value	True Value	%R
	O	A	
ICP (Al)	415502.40	40000.00	1038.8%
Se	40.18	40.00	100.5%
Bi	41.49	40.00	103.7%
CN	199.00	200.00	99.5%

PERCENT RECOVERY (ICV/CCV)

Analysis: Inorganic (metals/CN) Date: 12-Aug-94
SDG: WOO27-ITC-036 Validator: MC Webb

Constituent	Observed Value O	True Value A	%R
ICP (Al)	41552.40	40000.00	103.9%
Se	40.18	40.00	100.5%
Bi	41.49	40.00	103.7%
CN	199.00	200.00	99.5%

100A

MW 9-1-94

MATRIX SPIKE RECOVERY (MS)

Analysis: Inorganic (metals/CN)
SDG: WOO27-ITC-036
Sample ID:

Date: 12-Aug-94
Validator: MC Webb

Constituent	Spike Sample Result SSR	Sample Result SR	Spike Added SA	%R
ICP (Al) BOBNJ5	2030.54	67.47	2000.00	98.2%
Se BOBNJ5	9.92	0.00	10.00	99.2%
Bi BOBNJ5	17.63	0.00	20.00	88.2%
CN (BLK SPK)	206.00	10.00	200.00	98.0%

PERCENT RECOVERY (LCS)

Analysis: Inorganic (metals/CN)
SDG: WOO27-ITC-036

Date: 12-Aug-94
Validator: MC Webb

Constituent	Observed value	True value	%R
	OLCS	ALCS	
ICP (Al)	1978.04	2000.00	98.9%
Se	9.38	10.00	93.8%
Bi	18.21	20.00	91.1%
CN	229.00	200.00	114.5%

RELATIVE PERCENT DIFFERENCE

Analysis: Inorganic (metals/CN)
SDG: WOO27-ITC-036
Sample ID:

Date: 12-Aug-94
Validator: MC Webb

Constituent	Original (Sample) concentration	Duplicate concentration	RPD
	OS	D	
ICP (Al) BOBNJ5	67.47	0.00	NC
Se BOBNJ5	0.00	0.00	NC
Bi BOBNJ5	0.00	0.00	NC
CN BOBNJ5	0.00	0.00	NC

961349D.1477

000103

PERCENT DIFFERENCE (ICP SERIAL DILUTION)

Analysis: ICP
SDG: WOO27-ITC-036
Sample ID:

Date: 12-Aug-94
Validator: MC Webb

Constituent	Analyte Concentration before Dilution	Analyte Concentration after Serial Dilution	%D
	I	S	
ICP (Ca) BOBNJ5	37654.77	37445.8	0.6%

INORGANICS RESULTS CALCULATION, WATER

Analysis: Inorganic (metals/CN)
SDG: WOO27-ITC-036
Sample ID: BOBNJ5

Date: 12-Aug-94
Validator: MC Webb

Constituent	Concentration from curve	Dilution Factor	Concentration (µg/L)
	CONCW	DFW	
ICP (Al)	67.4800	1	67.5
Se	1.5500	1	1.5500
Bi	-0.6400	1	-0.6400
CN	0.00	1	-0.0010

961349O* 1479

000105

9613490.1480

LATA GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E

PROJECT: 200-BP-5		SDG: W0027-ITC-036	
VALIDATOR: MWebb	LATA NO: VW401.402.44		DATE: 8-12-94
SAF NO.: 94-130	LAB: ITC		CASE:

QAPP REFERENCE:	SAP REFERENCE:

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

ANALYSES PERFORMED

☒ Alkalinity 310.1	☐ Chloride 325.3	☐ pH 9040/150.1	☐ TOC 9060/415.1	☒ TDS 160.1 ☐ TSS 160.2	☐
☒ Anions 300.0	☐ Chromium+6 7196	☐ Phenols 9065/420.1	☐ TOX 9020/9022	☐ Sulfate 375.4	☐
☐ Ammonia 350.3	☐ COD 410.1	☐ Phosphorus 365.2	☐ TKN 351.3	☐ Sulfide 9030/376.1	☐
☐ BOD 405.1	☒ Nitrate+Nitrite 353.2	☐ Oil & Grease 413.1	☐ TPH 9070/418.1	☒ Sulfate 375.4	☐

SAMPLES/MATRIX (all waters)

BOBNJ5, BOBNK5, BOBNJ7, BOBNK3, BOBNN7, ~~BOBNN4~~ 2nd entry MW
BOBNL7, BOBNM1, BOBNL3, BOBNJ1, BOBNH9

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 *(see HOLDING TIME SUMMARY form)*

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

Comments: Holding time was exceeded for alkalinity. BOBNL7, MN1, NL3 were qualified as estimated (J)

Holding time was exceeded for TDS. BOBNM1, NL3, and NH9 were qualified as estimated (J)

MW 9-1-94

PO_4 and NO_2 (IC) grossly exceeded the holding time by more than 2x the required Hold. Tm. The samples are qual UR for non-detects & J for detects (all samples)

LATA GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION *(see CALIBRATION DATA SUMMARY form)*

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

★ For methods requiring a calibration curve (three standards and a blank) use the following equation for correlation coefficient (r).

Correlation Coefficient (r)

$$r = \frac{N \sum x_i y_i - \sum x_i \sum y_i}{[N \sum x_i^2 - (\sum x_i)^2]^{1/2} \; [N \sum y_i^2 - (\sum y_i)^2]^{1/2}}$$

★ For methods requiring ICV/CCV or a calibration check standard, calculate recovery as follows:

Recovery

$$\%R = \frac{\text{observed value}}{\text{true value}} \times 100$$

Comments: _____

LATA GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

4. BLANKS *(see BLANK AND SAMPLE DATA SUMMARY form)*

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

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

Comments: NO2+NO3 had slightly elevated blanks, but all samples were greater than 5X blank. No qualifiers were assigned to samples

5. ACCURACY *(see ACCURACY DATA SUMMARY form)*

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

Are all spike recoveries acceptable? ..... (Yes) No N/A

★

$$\%R = \frac{\text{Spike Recovery: SSR - SR}}{SA} \times 100$$

where:
SSR = spiked sample result
SR = sample result
SA = spike added

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

Are all LCS recoveries acceptable? ..... (Yes) No N/A

★

$$\%R = \frac{\text{Recovery: observed value}}{\text{true value}} \times 100$$

Comments:

6. PRECISION *(see PRECISION DATA SUMMARY form)*

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

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

★

$$\text{RPD} = \frac{|OS - D|}{\left(\frac{OS + D}{2}\right)} \times 100$$

Relative Percent Difference

where:
OS = sample concentration (original sample/MS)
D = duplicate concentration (duplicate sample/MSD)

Comments:_____

7. FIELD QC SAMPLES

Were field QC samples (field/trip blanks, duplicates, splits, performance audit) identified? Yes (No) N/A

Are field/trip blank results 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)

Are performance audit sample results acceptable? . . . . . Yes No (N/A)

Comments:_____

Validator	Date	SDG
MC Webb	8-12-94	W0027-ITC-036

DATA VALIDATION SUMMARY

MAJOR DEFICIENCIES:

1. The holding time was exceeded by greater than two times for nitrite and phosphate by IC. The results for all the samples were qualified as unusable (UR).

MINOR DEFICIENCIES:

1. The iron results for samples BOBNM1, BOBNM2, BOBNL3, and BOBNL4 were qualified as estimated (J/BJ) because the duplicate precision was outside acceptance criteria.
2. The iron results for samples BOBNL8, BOBNH9, BOBNJ0, BOBNJ1, BOBNJ2,BOBNJ5, BOBNJ6, BOBNJ7, BOBNJ8, BOBNK4, BOBNK6, BOBNN7, and BOBNN8 were qualified as non-detect (U) because the preparation blank was > IDL but < ~~CRDL~~ 5x Blank BM 9-14-94
3. The manganese results for samples BOBNL7, BOBNK3, BOBNK4, and BOBNJ8 were qualified as undetected (U) because calibration blank values were ~~between~~ IDL and ~~CRDL~~. < 5x Blank BM 9-14-
4. The technetium results for BOBNM1, BOBNL3, BOBNL7, BOBNJ5, BOBNJ7, BOBNK3, BOBNN7, BOBNJ1, and BOBNH9 were qualified as estimated (J) because the duplicate precision was outside of acceptance criteria.
5. The holding time was exceeded by less than two times for alkalinity. The results were qualified as estimate (J) for samples BOBNL7, BOBNM1, and BOBNL3.
6. The holding time was exceeded by less than two times for total dissolved solids. The results were qualified as estimated (J) for samples BOBNM1, BOBNL3, and BOBNH9.
7. The result for Phosphate by IC (BOBNM1) was qualified as estimated (J) because of exceeded holding time.
8. Se for sample BOBNN8 was qualified estimated (UJ) because the analytical spike recovery was < 85%.

COMMENTS:

1. The MDA for tritium was not submitted by the laboratory. The package was on hold until 8-11-94.
2. The MDAs were not reported on the Form Is making it more difficult to validate the samples and QC.
3. The uranium results were reported in pCi/L instead of the correct units of ug/L. The correct units were added to the Form Is.
4. The U total RPD had transcription errors. All U total results were checked for transcription errors.

Because of the above items, this package took longer to validate.

000110

DATA QUALIFICATION SUMMARY

SDG: W0027-ITC 036	VALIDATOR: MWebb	DATE: 8-12-94	PAGE 1 OF 1

COMMENTS: GENERAL GC

COMPOUND	CAS No.	QUALIFIER	SAMPLES AFFECTED	MEDIA	REASON
Alkalinity	ALKALINITY	J	BOBNL7	W	Hold time
			BOBNM1	W	
			BOBNL3	W	
TDS		J	BOBNM1	W	Hold Time
		J	BOBNL3	W	
		J	BOBNH5	W	
NO_2 (IC)	14797-65-0	UR	BOBNJ5	W	Hold time
			BOBNK5	W	
			BOBNJ7	W	
			BOBNK3	W	
			BOBNN7	W	
			BOBNL7	W	
			~~BOBNL1~~ BOBNM1	W	
			BOBNL3	W	
			BOBNJ1	W	
	14797-65-0		~~BOBNH9~~ BOBNH9	W	
PO4 (IC)	7723-14-0	UR	BOBNJ5	W	Hold Time
			BOBNK5	W	
			BOBNJ7	W	
			BOBNK3	W	
			BOBNN7	W	
			BOBNL7	W	
			BOBNM1	W	
			BOBNL3	W	
			BOBNJ1	W	
			BOBNH9	W	

HOLDING TIME SUMMARY

SDG: W0027-ITC-036	VALIDATOR: MWebb	DATE: 8-12-94	PAGE 1 OF 1

COMMENTS: GENERAL CHEMISTRY ANALYSES

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER	HT
BOBNL7	Alkalinity	4-11-94		4-26-94		15d	J	14d
BOBNM1	"	"		"		"	J	"
BOBNL3	"	"		"		"	J	"
"	Sulfate (375.4)	4-11-94		5-2-94		22	OR	28d
BOBNM1	TDS	4-11-94		4-19-94		8	J	7d
NL3	"	"		"		"	J	
NH9	"	"		"		"	J	
All Samples ~~Soples~~	NO2 (IC)	4-11 to 4-14 ~~4-13~~		5-9 to 5-~~10~~ 12		>> 48 hrs.	UR	48hr
All Samples	PO4 (IC)	4-11 to 4-14		5-9 to 5-12		>> 48 hrs	UR	48 hr.

LINEAR REGRESSION ANALYSIS

Analysis: General Chemistry
Constituent: Anions F
SDG: WOO27-ITC-036

Calibration Date: 9-May-94

Date: 12-Aug-94
Validator: MC Webb

Concentration	Absorbance
0.00	0.000
0.40	397328.000
2.00	2136485.000
4.00	4584761.000

r 0.9994	r^2 0.9988
slope 0.0000	x intercept 0.0508
1/slope 1148729.1663	y intercept -56038.2419

LINEAR REGRESSION ANALYSIS

Analysis: General Chemistry
Constituent: NO2+ NO3
SDG: WOO27-ITC-036

Calibration Date: 19-Apr-94

Date: 12-Aug-94
Validator: MC Webb

Concentration	Absorbance
2.00	2.008
1.00	0.985
0.40	0.398
0.10	0.100
0.04	0.043
0.02	0.023
0.00	0.003

r 1.0000	r^2 0.9999
slope 0.9998	x intercept 0.0001
1/slope 1.0002	y intercept -0.0001

LINEAR REGRESSION ANALYSIS

Analysis: General Chemistry
Constituent: Sulfate
SDG: WOO27-ITC-036

Calibration Date: 27-Apr-94

Date: 12-Aug-94
Validator: MC Webb

Concentration	Absorbance
1.00	0.140
5.00	1.300
10.00	22.000
20.00	68.000
40.00	130.000
80.00	270.000
100.00	355.000

r	r^2
0.9990	0.9980

slope	x intercept
0.2777	2.9914

1/slope	y intercept
10.8028	-10.5047

LINEAR REGRESSION ANALYSIS

Analysis: General Chemistry
Constituent:
SDG: WOO27-ITC-036

Calibration Date:

Date: 12-Aug-94
Validator: MC Webb

Concentration	Absorbance

r	r^2
#DIV/0!	#DIV/0!

slope	x intercept
#DIV/0!	#DIV/0!

1/slope	y intercept
#DIV/0!	#DIV/0!

MATRIX SPIKE RECOVERY (MS)

Analysis: General Chemistry
SDG: WOO27-ITC-036
Sample ID:

Date: 12-Aug-94
Validator: MC Webb

Constituent	Spike Sample Result SSR	Sample Result SR	Spike Added SA	%R
N/N BOBNJ5	33.00	14.00	20.00	95.0%
Sulfate BOBNJ5	78.50	37.50	40.00	102.5%
Anion F BOBNJ5	2.20	0.60	2.00	80.0%
Alkalinity BLK SPK	142.00	0.00	142.00	100.0%
				#DIV/0!

000115

PERCENT RECOVERY (ICV/CCV)

Analysis: General Chemistry
SDG: WOO27-ITC-036

Date: 12-Aug-94
Validator: MC Webb

Constituent	Observed Value	True Value	%R
	O	A	
Alkalinity	142.00	142.00	100.0%
NO2NO3	0.96	1.00	96.0%
Sulfate	44.50	40.00	111.3%
Anion F	2.03	2.00	101.4%

PERCENT RECOVERY (LCS)

Analysis: General Chemistry
SDG: WOO27-ITC-036

Date: 12-Aug-94
Validator: MC Webb

Constituent	Observed value	True value	%R
	OLCS	ALCS	
Alkalinity	142.00	142.00	100.0%
NO2NO3	0.94	1.00	93.5%
Sulfate	44.50	40.00	111.3%
Anion F	1.90	2.00	95.0%

RELATIVE PERCENT DIFFERENCE

Analysis: General Chemistry
SDG: WOO27-ITC-036
Sample ID:

Date: 12-Aug-94
Validator: MC Webb

Constituent	Original (Sample) concentration	Duplicate concentration	RPD
	OS	D	
Alkalinity BOBNJ5	110.00	106.00	NC
N/N BOBNM1	75.00	80.00	NC
Sulfate BOBNJ5	102.00	85.00	18.2%
Anion F BOBNJ5	80.00	95.00	17.1%
TDS BOBNM1	542.00	534.00	1.5%
MW 8-13-94			#DIV/0!
			#DIV/0!
			#DIV/0!

GENERAL CHEMISTRY RESULTS CALCULATION, WATER

Analysis: General Chemistry
SDG: WOO27-ITC-036
Sample ID:

Constituent	Concentration off Calibration Curve	Run Dilution Factor	Concentration (mg/Kg)
	CONCS	DfS	
Alkalinity BOBNL7	80.000	1	80.00
Alkalinity BOBNM1	82.000	1	82.00
N/N BOBNL7	19.000	1	19.00
N/N BOBNM1	17.000	1	17.00
TDS BOBNL7	31.200	10	312.00
TDS BOBNM1	54.200	10	542.00
Anion F BOBNL7	0.950	1	0.95
Anion F BOBNM1	0.520	1	0.52
Sulfate BOBNL7	47.000	1	47.00
Sulfate BOBNM1	152.000	1	152.00

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LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E

PROJECT: 200-BP-5		DATA PACKAGE: W0027-1TC-036	
VALIDATOR: MWebb	LAB: ITC		DATE: 8-13-94
CASE:		SDG: W0027-1TC-036	
QAPP REFERENCE:		SAP REFERENCE:	

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

ANALYSES PERFORMED

[X] Gross Alpha [X] Gross Beta	[ ] Strontium-89 [ ] Strontium-90	[X] Technetium-99	[X] Isotopic Anal. Pu 238/39 Alpha Spec.	[X] Gamma Spectroscopy	[ ] Iodine-129
[X] Total Uranium (KPA)	[ ] Radium-226 [ ] Radium-228	[X] (LSC) Liquid Scintillation	[X] TOTAL Sr	[ ]	[ ]

SAMPLES/MATRIX B0BNM1, B0BNL3, B0BNL7, B0BNJ5, B0BNJ7
B0BNK3, B0BNK5, B0BNN7, B0BNJ1, B0BNH9 (water)

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification forms present? . . . . . (Yes) No N/A
Compliance screening form present? . . . . . (Yes) No N/A
Is a case narrative present? . . . . . (Yes) No N/A
Were all analyses requested reported? . . . . . (Yes) No N/A
Are all results supported in the raw data? . . . . . (Yes) No N/A
Comments: _____

2. CHAIN-OF-CUSTODY/HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A
Are samples preserved correctly? . . . . . (Yes) No N/A
Was the pH of the sample checked prior to analysis? . . . . . Yes No (N/A)
Comments: Can't locate documentation showing that pH was checked.

3. INITIAL CALIBRATION

Instruments/detectors calibrated within one year of sample analysis?	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:

4. CONTINUING CALIBRATION

Background checked at proper frequency?	(Yes)	No	N/A
Background check acceptable?	(Yes)	No	N/A
Efficiency checked at proper frequency?	(Yes)	No	N/A
Efficiency check acceptable?	(Yes)	No	N/A
Calibration check standards NIST traceable?	(Yes)	No	N/A
Calibration check standards expired?	Yes	(No)	N/A

Comments:

5. BLANKS *(see BLANK AND SAMPLE DATA SUMMARY form)*

Method blank analyzed?	(Yes)	No	N/A
Method blank results acceptable?	(Yes)	No	N/A
Analytes detected in method blank?	Yes	(No)	N/A
Transcription/Calculation Errors?	Yes	(No)	N/A

Comments:

6. **MATRIX SPIKES** *(see ACCURACY DATA SUMMARY form)*

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

★

Spike Recovery

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where:
SSR = spiked sample result
SR = sample result
SA = spike added

Comments: Sample Activity > 4 * spike level (U-total)
No qualifier when necessary MW 9-13-94

7. **LABORATORY CONTROL SAMPLES** *(see ACCURACY DATA SUMMARY form)*

LCS analyzed?	(Yes)	No	N/A
LCS recoveries acceptable?	(Yes)	No	N/A
LCS traceable?	(Yes)	No	N/A
Transcription/Calculation Errors?	Yes	(No)	N/A

★

Recovery

$$\%R = \frac{observed\ value}{true\ value} \times 100$$

Comments:

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

8. CHEMICAL RECOVERY *(see ACCURACY DATA SUMMARY form)*

Chemical carrier added?	(Yes)	No	N/A
Chemical recovery acceptable?	(Yes)	No	N/A
Tracer added?	(Yes)	No	N/A
Tracer recovery acceptable?	(Yes)	No	N/A
Standards traceable?	(Yes)	No	N/A
Standards expired?	Yes	(No)	N/A
Transcription/Calculation errors?	Yes	(No)	N/A

★

Alpha Spec Tracer Recovery

$$\frac{A - B}{(2.22)(E)(T)}$$

where:

A = *gross counts per minute*
B = *background counts per minute of tracer*
2.22 = *conversion factor, dpm/pCi*
E = *detector efficiency*
T = *activity (pCi) of tracer added to sample (can be determined by taking dpm of tracer added divided by 2.22)*

Comments: _____

9. DUPLICATES *(see PRECISION DATA SUMMARY form)*

Duplicates Analyzed?	(Yes)	No	N/A
RPD Values Acceptable? (9-1-94 vw)	Yes	(No)	N/A
Transcription/Calculation Errors?	(Yes)	No	N/A

★

Relative Percent Difference

$$RPD = \frac{|S - D|}{\left(\frac{S + D}{2}\right)} \times 100$$

where:

S = *sample concentration (original sample/MS)*
D = *duplicate concentration (duplicate sample/MSD)*

Comments: Transcription error in the calculation of RPD for U-Total duplicate. Documentation attached.
Tc-99 RPD > 20% Tc-99 results qualified as estimated (J,UJ)

10. FIELD QC SAMPLES

Field blank(s) identified?	Yes	(No)	N/A
Field blank results acceptable?	Yes	No	(N/A)
Analytes detected in field blank(s)?	Yes	No	(N/A)
Field duplicate sample(s) identified?	Yes	No	(N/A)
Field duplicate RPD values acceptable?	Yes	No	(N/A)
Field split sample(s) identified?	Yes	No	(N/A)
Field split RPD values acceptable?	Yes	No	(N/A)
Performance audit sample(s) identified?	Yes	No	(N/A)
Performance audit sample results acceptable?	Yes	No	(N/A)

Comments:

11. DETECTION LIMITS (LEVELS D & E)

MDA's meet required detection limits?	(Yes)	No	N/A
Transcription/calculation errors?	Yes	(No)	N/A

★

Minimum Detectable Activity (MDA)

$$\frac{4.66 \times \sqrt{(B)(T)}}{2.22(E)(I)(R)(D)(V)(Y)(T)}$$

where:

- B = *background counts per minute (cpm) or the reported standard deviation of the background (S) cpm*
- T = *counting time for associated sample*
- 2.22 = *conversion dpm/pCi*
- E = *detector efficiency*
- I = *ingrowth correction factor (if applicable or 1)*
- R = *carrier recovery factor (if applicable or 1)*
- D = *decay factor (if applicable or 1)*
- Y = *chemical yield factor (if applicable or 1)*
- V = *sample volume in liters or grams*

Comments:

Results Calculation Equations

Gross α/β and Tritium

$$\frac{(A - B) \times C}{(2.22)(E)(V)}$$

where:

A = *gross counts per minute*
B = *background counts per minute*
C = *activity of α fraction in β channel**
2.22 = *conversion factor, dpm/pCi*
E = *detector efficiency*
V = *sample volume, liters or grams*

**if for calculation of gross β, otherwise substitute 1*

Strontium (total)

$$\frac{A - B}{(2.22)(E)(I)(D)(R)(V)}$$

where:

A = *gross counts per minute*
B = *background counts per minute*
2.22 = *conversion factor, dpm/pCi*
E = *detector efficiency*
I = *ingrowth correction factor*
R = *carrier recovery factor*
D = *strontium decay factor*
V = *sample volume, liters or grams*

Strontium-90 (corrected for Sr-89)

$$\frac{A - B}{(2.22)(Y)(E)(I)(D)(R)(V)}$$

where:

A = *gross counts per minute*
B = *background counts per minute*
Y = *yttrium-90 yield factor*
2.22 = *conversion factor, dpm/pCi*
E = *detector efficiency*
I = *ingrowth correction factor*
R = *strontium-89 yield factor*
D = *strontium decay factor*
V = *sample volume, liters or grams*

Results Calculation Equations, continued

Technetium-99

$$\frac{A - B}{(2.22)(E)(R)(V)}$$

where:

A = *gross counts per minute*
B = *background counts per minute*
2.22 = *conversion factor, dpm/pCi*
E = *detector efficiency*
R = *carrier recovery factor*
V = *sample volume, liters or grams*

Alpha Spec Isotopes

$$\frac{A - B}{(2.22)(E)(R)(V)}$$

where:

A = *gross counts per minute for isotope*
B = *background counts per minute for detector*
2.22 = *conversion factor, dpm/pCi*
E = *detector efficiency*
R = *tracer recovery factor*
V = *sample amount, liters or grams*

Gamma Spec Isotopes

$$\frac{A}{(2.22)(B)(D)(E)(V)(T)}$$

where:

A = *peak area for isotope*
D = *decay factor for isotope*
2.22 = *conversion factor, dpm/pCi*
B = *abundance factor for isotope*
E = *efficiency factor for isotope*
V = *sample amount, liters or grams*
T = *live time (minutes)*

Results Calculation Equations, continued

Total Uranium by Laser Fluorometry

$$\frac{(WF - I)(R)(D)}{WU - WF}$$

where:

WF = *sample reading with Fluran*
I = *initial sample reading*
R = *concentration of uranium standard after dilution with sample* ($\mu g/L$)
D = *dilution factor*
WU = *sample reading with uranium standard*

Radium-226 by Radon Emanation

$$D = \frac{C}{(2.22)(E)(V)} \times \frac{1}{1 - e^{-\lambda t_1}} \times \frac{1}{e^{-\lambda t_2}} \times \frac{t_3}{1 - e^{-\lambda t_3}}$$

where:

C = *net count rate, cpm*
E = *calibration constant of the de-emanation system and the scintillation cell in counts per minutes/disintigrations per minute of radon-222*
V = *sample aliquot in liters*
t_1 = *the elapsed time in days between the first and second de-emanations, and* λ *is the decay constant for radon-222* ($0.181\ d^{-1}$)
t_2 = *the time interval in hours between the second de-emanation and counting, and* λ *is the decay constant of radon-222* ($0.00755 hr^{-1}$)
t_3 = *the counting time in minutes, and* λ *is the decay constant of radon-222* ($1.26 \times 10^{-4}\ \text{min}^{-1}$)
2.22 = *conversion factor, dpm/pCi*

PRECISION DATA SUMMARY

SDG: W0027 - ITC-036	VALIDATOR: MWebb	DATE: 8-13-94	PAGE 1 OF 1

COMMENTS: RADIOCHEMICAL ANALYSES

CONSTITUENT	FIELD SAMPLE ID:	DUPLICATE ID:	RPD/ CRDL	SAMPLES AFFECTED	QUALIFIER
Tc99	B0BNM1	B0BNM1	24.58	all	J/UJ

9613490.1510

W0027-1TC-036

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION SUMMARY

MAJOR DEFICIENCIES:

None

MINOR DEFICIENCIES:

1. Tc99 results were qualified as estimated (J/UJ) because the duplicate precision was outside acceptance criteria.

COMMENTS:

1. MDA for Tritium had to be calculated
2. MDAs were not reported on the Form 1s
3. Uranium results reported in pC/L instead of ug/L
4. The RPD for U-Total had a data entry error.

Because of the above items, this package took longer to validate.

9613490.1511

RADIOCHEMICAL SAMPLE WORKSHEET

Validator: MWebb	Date: 8-13-94	SDG: W0027 - ITC - 036
Laboratory: ITC	Sample ID: BOBNM1	CASE:

40419901

Nuclide	CDATE	DET	BKG	EFF	BLK	LCS	DUP	Y/R2	RESULT	MDA	CRDL W/S	Q
Gross α	5-14-94	3	✓	✓	✓	✓	✓	NA	U	2.74	3/10	
Gross β	5-13-94	43	✓	✓	✓	✓	✓	NA	310	3.17	4/15	
Ra-226											2/-	
Ra-228											3/-	
Ra-Total											1/5	
Ra-Deem											1/-	
Sr-89											5/1	
~~Sr-90~~ Total	5-21-94	43	✓	✓	✓	✓	✓	OK	U	.819	2/1	
LSC (H_3)									U	236.6	400/s	
GEA	5/7/94	1	✓	✓	✓	✓	✓	✓	OK	OK	varies	
Am-241											1/1	
Cm-244											1/1	
Pu-238	5/15	19	OK	OK	✓	✓	✓	✓	2.31E-1	.369	1/1	
Pu-239/40	5/15	19	OK	OK	✓	✓	✓	✓	U	.208	1/1	
Pu-241											15/5	
U-233/34											1/1	
U-235/36											1/1	
U-238											1/1	
U-Total	5-19-94	KPA	NA	NA	✓	✓	✓	✓	5.18	.00354	.1/1	
U-Fluoro											0.1	
Np-237											1/1	
Tc-99	5-27-94	3	✓	✓	✓	✓	X	✓	1690	2H3	15/5	J
I-129											5/2	

O=OK S=same X=Minor Def. M=Major Def. Q=Sample Qualifier

9613490.1512

RADIOCHEMICAL SAMPLE WORKSHEET

Validator: MWebb	Date: 8-13-94	SDG: WOD27-ITC-036
Laboratory: ITC	Sample ID: BDBNL3	CASE:

40415502

Nuclide	CDATE	DET	BKG	EFF	BLK	LCS	DUP	Y/R2	RESULT	MDA	CRDL W/S	Q
Gross α	5-14-94	4	✓	✓	✓	✓	✓	NA	2.616	1.78	3/10	
Gross ß	5-13-94	44	✓	✓	✓	✓	✓	NA	86.21	3.35	4/15	
Ra-226											2/-	
Ra-228											3/-	
Ra-Total											1/5	
Ra-Deem											1/-	
Sr-89											5/1	
~~Sr-90~~ total Sr	5-13-94	44	✓	✓	✓	✓	✓	OK	U	.746	2/1	
LSC (H_3)	5-18-94	5	✓	✓	✓	✓	✓	OK	914.4	2366	400/s	
GEA	5/7/94	4	✓	✓	✓	✓	✓	✓	OK	OK	varies	
Am-241											1/1	
Cm-244											1/1	
Pu-238	5/15/94	20	✓	✓	✓	✓	✓	✓	U	.284 ~~.407~~	1/1	
Pu-239/40	5/15/94	20	✓	✓	✓	✓	✓	✓	U	~~.407~~ .336	1/1	
Pu-241											15/5	
U-233/34											1/1	
U-235/36											1/1	
U-238											1/1	
U-Total	5-19-94	KPA	NA	NA	✓	✓	✓	✓	3.442	.00354	.1/1	
U-Fluoro											0.1	
Np-237											1/1	
Tc-99	5-27-94	3	✓	✓	✓	✓	X	✓	380.8	2.43	15/5	J
I-129											5/2	-

O=OK S=same X=Minor Def. M=Major Def. Q=Sample Qualifier

9613490.1513

RADIOCHEMICAL SAMPLE WORKSHEET

Validator: MW.ebb	Date: 8-13-94	SDG: W0027 - ITC - 036
Laboratory: ITC	Sample ID: BOBNJ5	CASE:

404258 C1

Nuclide	CDATE	DET	BKG	EFF	BLK	LCS	DUP	Y/R2	RESULT	MDA	CRDL W/S	Q
Gross α	5-14-94	1	✓	✓	✓	✓	✓	NA	U	1.36	3/10	
Gross β	5-13-94	45	✓	✓	✓	✓	✓	NA	8.353	3.15	4/15	
Ra-226											2/-	
Ra-228											3/-	
Ra-Total											1/5	
Ra-Deem											1/-	
Sr-89											5/1	
~~Sr-90~~ Total Sr	5-24-94	46	✓	✓	✓	✓	✓	NA	U	.764	2/1	
LSC (H_3)	5-18-94	5	✓	✓	✓	✓	✓	✓	3649	236.6	400/s	
GEA	5/7/94	6	✓	✓	✓	✓	✓	NA	✓	✓	varies	
Am-241											1/1	
Cm-244											1/1	
Pu-238	5/16/94	17	✓	✓	✓	✓	✓	✓	U	.336 .284	1/1	
Pu-239/40	5/16/94	17	✓	✓	✓	✓	✓	✓	U	.284 ~~.176~~	1/1	
Pu-241											15/5	
U-233/34											1/1	
U-235/36											1/1	
U-238											1/1	
U-Total	5-19-94	KAH	NA	NA	✓	✓	✓	✓	2.048	.00354	.1/1	
U-Fluoro											0.1	
Np-237											1/1	
Tc-99	5-27-94	3	✓	✓	✓	✓	X	✓	10.38	2.43	15/5	J
I-129											5/2	

O=OK S=same X=Minor Def. M=Major Def. Q=Sample Qualifier

9613490.1614

RADIOCHEMICAL SAMPLE WORKSHEET

Validator: MW.ebb	Date: 8-13-94	SDG: W0027-ITC-036
Laboratory: ITC	Sample ID: B0BNJ7	CASE:

40425802

Nuclide	CDATE	DET	BKG	EFF	BLK	LCS	DUP	Y/R2	RESULT	MDA	CRDL W/S	Q
Gross α	5-14-94	2	✓	✓	✓	✓	✓	NA	38.60	1.31	3/10	
Gross β	5-13-94	46	✓	✓	✓	✓	✓	NA	73.25	3.15	4/15	
Ra-226											2/-	
Ra-228											3/-	
Ra-Total											1/5	
Ra-Deem											1/-	
Sr-89											5/1	
~~Sr-90~~ Total Sr	5-21-94	41	✓	✓	✓	✓	✓	OK	U	.749	2/1	
LSC (H_3)	5-18-94	5	✓	✓	✓	✓	✓	✓	4978	236.6	400/s	
GEA	5/7/94	1	✓	✓	✓	✓	✓	NA	OK	OK	varies	
Am-241											1/1	
Cm-244											1/1	
Pu-238	5/16/94	18	✓	✓	✓	✓	✓	✓	U	.176	1/1	
Pu-239/40	5/16/94	18	✓	✓	✓	✓	✓	✓	U	.175	1/1	
Pu-241											15/5	
U-233/34											1/1	
U-235/36											1/1	
U-238											1/1	
U-Total	5-19-94	KPA	NA	NA	✓	✓	✓	✓	63.91	0.354	.1/1	
U-Fluoro											0.1	
Np-237											1/1	
Tc-99	5-27-94	3	✓	✓	✓	✓	X	✓	252	2.43	15/5	J
I-129											5/2	

O=OK S=same X=Minor Def. M=Major Def. Q=Sample Qualifier

9613490.1515

RADIOCHEMICAL SAMPLE WORKSHEET

Validator: MW.ebb	Date: 8-13-94	SDG: W0027-ITC-036
Laboratory: ITC	Sample ID: BOBNK3	CASE:

40425803

Nuclide	CDATE	DET	BKG	EFF	BLK	LCS	DUP	Y/R2	RESULT	MDA	CRDL W/S	Q
Gross α	5-14-94	3	✓	✓	✓	✓	✓	NA	~~1.42~~ U	1.49	3/10	
Gross β	5-13-94	41	✓	✓	✓	✓	✓	NA	14.98	3.09	4/15	
Ra-226											2/-	
Ra-228											3/-	
Ra-Total											1/5	
Ra-Deem											1/-	
Sr-89											5/1	
~~Sr-90~~ total Sr	5-21-94	42	✓	✓	✓	✓	✓	✓	U	.764	2/1	
LSC (H_3)	5-18-94	5	✓	✓	✓	✓	✓	✓	2974	236.6	400/s	
GEA	5/7/94	4	✓	✓	✓	✓	✓	NA	OK	OK	varies	
~~Am-241~~ pwb 6/3/94	~~5/7/94~~	~~4~~	~~✓~~	~~✓~~	~~✓~~	~~✓~~	~~✓~~	~~NA~~	~~OK~~	~~OK~~	~~1/1~~	
Cm-244											1/1	
Pu-238	5/16/94	19	✓	✓	✓	✓	✓	✓	U	.554	1/1	
Pu-239/40	5/16/94	19	✓	✓	✓	✓	✓	✓	.3466	.313	1/1	
Pu-241											15/5	
U-233/34											1/1	
U-235/36											1/1	
U-238											1/1	
U-Total	5-19-94	KPA	NA	NA	✓	✓	✓	✓	2.560	.00354	.1/1	
U-Fluoro											0.1	
Np-237											1/1	
Tc-99	5 27-94	3	✓	✓	✓	✓	X	✓	22,17	2.43	15/5	J
I-129											5/2	

O=OK S=same X=Minor Def. M=Major Def. Q=Sample Qualifier

9613490.1516

RADIOCHEMICAL SAMPLE WORKSHEET

Validator: MW.ebb	Date: 8-13-94	SDG: W0027 - ITC - 036
Laboratory: ITC	Sample ID: BOBN1C5	CASE:

404258 04

Nuclide	CDATE	DET	BKG	EFF	BLK	LCS	DUP	Y/R2	RESULT	MDA	CRDL W/S	Q
Gross α	5-14-94	4	✓	–	✓	–	–	NA	2.78	1.13	3/10	
Gross B	5-13-94	42	✓	✓	✓	–	✓	NA	9.689	3.05	4/15	
Ra-226											2/-	
Ra-228											3/-	
Ra-Total											1/5	
Ra-Deem											1/-	
Sr-89											5/1	
~~Sr-90~~ Total Sr	5-21-94	43	✓	✓	✓	–	✓	✓	U	.750	2/1	
LSC (H_3)	5-18-94	5	✓	–	✓	–	–	–	U	236.6	400/s	
GEA	5/7/94	6	✓	✓	✓	✓	✓	NA	OK	OL	varies	
Am-241											1/1	
Cm-244											1/1	
Pu-238	5/16/94	20	✓	✓	✓	✓	✓	✓	U	.348	1/1	
Pu-239/40	5/16/94	20	✓	✓	✓	✓	✓	✓	U	.499	1/1	
Pu-241											15/5	
U-233/34											1/1	
U-235/36											1/1	
U-238											1/1	
U-Total	5-19-94	KPA	NA	NA	✓	–	–	–	4.35	.00354	.1/1	
U-Fluoro											0.1	
Np-237											1/1	
Tc-99	5-27-94	3	✓	–	✓	✓	X	✓	U	~~2.37~~ 2.43	15/5	UJ
I-129											5/2	

O=OK S=same X=Minor Def. M=Major Def. Q=Sample Qualifier

9613490.1517

RADIOCHEMICAL SAMPLE WORKSHEET

Validator: MW.ebb	Date: 8-13-94	SDG: W0027 - ITC - 036
Laboratory: ITC	Sample ID: BOBNN7	CASE:

40425805

Nuclide	CDATE	DET	BKG	EFF	BLK	LCS	DUP	Y/R2	RESULT	MDA	CRDL W/S	Q
Gross α	5-14-94	5	✓	✓	✓	✓	✓	NA	U	1.22	3/10	
Gross β	5-13-94	43	✓	✓	✓	✓	✓	NA	55.99	300	4/15	
Ra-226											2/-	
Ra-228											3/-	
Ra-Total											1/5	
Ra-Deem											1/-	
Sr-89											5/1	
~~Sr-90~~ Total Sr	5-21-94	45	✓	✓	✓	✓	✓	✓	U	.740	2/1	
LSC (H_3)	5-18-94	5	✓	✓	✓	✓	✓	✓	808.2	236.6	400/s	
GEA	5/7/94	1	✓	✓	✓	✓	✓	NA	OK	OK	varies	
Am-241											1/1	
Cm-244											1/1	
Pu-238	5/16/94	21	✓	✓	✓	✓	✓	✓	U	.171	1/1	
Pu-239/40	5/16/94	21	✓	✓	✓	✓	✓	✓	U	.302	1/1	
Pu-241											15/5	
U-233/34											1/1	
U-235/36											1/1	
U-238											1/1	
U-Total	5-19-94	KJH	UA	NA	✓	✓	✓	✓	1.514	100354	.1/1	
U-Fluoro											0.1	
Np-237											1/1	
Tc-99	5-27-94	3	✓	✓	✓	✓	X	✓	204.7	2.43	15/5	J
I-129											5/2	

O=OK S=same X=Minor Def. M=Major Def. Q=Sample Qualifier

9613490.1518

RADIOCHEMICAL SAMPLE WORKSHEET

Validator: MW.ebc	Date: 8-13-94	SDG: W0027 - ITC - 036
Laboratory: ITC	Sample ID: 130BNJ1	CASE:

40428701

Nuclide	CDATE	DET	BKG	EFF	BLK	LCS	DUP	Y/R2	RESULT	MDA	CRDL W/S	Q
Gross α	5-14-94	6	✓	—	—	—	—	NA	10.38	1.48	3/10	
Gross β	5-13-94	44	✓	—	—	—	—	NA	284	3.32	4/15	
Ra-226											2/-	
Ra-228											3/-	
Ra-Total											1/5	
Ra-Deem											1/-	
Sr-89											5/1	
~~Sr-90~~ Tot+2D Sr	5-21-94	46	✓	✓	✓	—	✓	—	U	.756	2/1	
LSC (H_3)	5-18-94	5	✓	—	—	—	—	—	570.1	236.6	400/s	
GEA	5/7/94	4	✓	—	✓	✓	✓	N/A	OL	OL	varies	
Am-241											1/1	
Cm-244											1/1	
Pu-238	5/16/94	17	✓	✓	✓	✓	✓	✓	U	.456	1/1	
Pu-239/40	5/16/94	17	✓	✓	✓	✓	✓	✓	U	.386	1/1	
Pu-241											15/5	
U-233/34											1/1	
U-235/36											1/1	
U-238											1/1	
U-Total	5-19-94	KD17	NA	N/A	✓	✓	✓	✓	21.000	.00354	.1/1	
U-Fluoro											0.1	
Np-237											1/1	
Tc-99	5-27-94	3	✓	✓	✓	✓	X	✓	1376	2.43	15/5	J
I-129											5/2	

O=OK S=same X=Minor Def. M=Major Def. Q=Sample Qualifier

9613490.1519

RADIOCHEMICAL SAMPLE WORKSHEET

Validator: MW.ebb	Date: 8-13-94	SDG: W0027-ITC-036
Laboratory: ITC	Sample ID: B0BN49	CASE:

4042702

Nuclide	CDATE	DET	BKG	EFF	BLK	LCS	DUP	Y/R2	RESULT	MDA	CRDL W/S	Q
Gross α	5-14-94	1	—	—	—	—	—	NA	2.334	1.33	3/10	
Gross B	5-14-94	41	—	—	—	—	—	NA	338.1	3.22	4/15	
Ra-226											2/-	
Ra-228											3/-	
Ra-Total											1/5	
Ra-Deem											1/-	
Sr-89											5/1	
~~Sr-90~~ Total Sr	5-21-94	41	—	—	—	—	—	—	U	.829	2/1	
LSC (H_3)	5-18-94	5	—	-	—	—	—	—	496.1	236.6	400/s	
GEA	5/7/94	6	—	—	—	—	—	NA	Ok	Ok	varies	
Am-241											1/1	
Cm-244											1/1	
Pu-238	5/16/94	18	—	—	—	—	—	—	U	.211	1/1	
Pu-239/40	5/16/94	18	—	—	—	—	—	—	U	.210	1/1	
Pu-241											15/5	
U-233/34											1/1	
U-235/36											1/1	
U-238											1/1	
U-Total	5-15-94	KPA	NA	NA	—	—	—	—	3095	.00854	.1/1	
U-Fluoro											0.1	
Np-237											1/1	
Tc-99	5-27-94	3	—	—	—	—	X	—	1378	2.43	15/5	J
I-129											5/2	

O=OK S=same X=Minor Def. M=Major Def. Q=Sample Qualifier

9613490.1520

RADIOCHEMICAL SAMPLE WORKSHEET

Validator: MW.ebb	Date: 8-13-94	SDG: W0027 - ITC - 036
Laboratory: ITC	Sample ID: BOBNL7	CASE:

40420101

Nuclide	CDATE	DET	BKG	EFF	BLK	LCS	DUP	Y/R2	RESULT	MDA	CRDL W/S	Q
Gross α	5-14-94	6	✓	✓	✓	✓	✓	NA	2.299	1.47	3/10	
Gross B	5-13-94	41	✓	✓	✓	✓	✓	NA	400.7	3.12	4/15	
Ra-226											2/-	
Ra-228											3/-	
Ra-Total											1/5	
Ra-Deem											1/-	
Sr-89											5/1	
~~Sr-90~~ Total Sr	5-21-94	46	✓	✓	✓	✓	✓	✓	U	.741	2/1	
LSC (H_3)	5-18-94	5	✓	✓	✓	✓	+	✓	5174 5172	236.6	400/s	
GEA	5/7/94	4	✓	✓	✓	✓	✓	NA	OK	OK	varies	
Am-241											1/1	
Cm-244											1/1	
Pu-238	5-15-94	21	✓	✓	✓	✓	✓	✓	U	.217	1/1	
Pu-239/40	5-15-94	21	✓	✓	✓	✓	✓	✓	U	.382	1/1	
Pu-241											15/5	
U-233/34											1/1	
U-235/36											1/1	
U-238											1/1	
U-Total	KPA	NA	NA	✓	✓	✓	✓	✓	2.888	.00354	.1/1	
U-Fluoro											0.1	
Np-237											1/1	
Tc-99	5-27-94	3	✓	✓	✓	✓	X	✓	1526	2.43	15/5	J
I-129											5/2	

O=OK S=same X=Minor Def. M=Major Def. Q=Sample Qualifier

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

DUPLICATE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0027

LAB SAMPLE ID: F0419901

WHC ID: BOBNM1

REPORTING UNITS pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	1.32E+03	7.42E+00	1.47E+02	0.951	ITAS-IT-RS-0001
TRITIUM	1.91E+02	1.07E+02	2.00E+02	0.973	RD3205

RPD CALCULATIONS

ISOTOPE	SAMPLE RESULT	DUPLICATE RESULT	RPD
TC-99	1.69E+03	1.32E+03	24.58
TRITIUM	2.27E+02	1.91E+02	17.22

RPD > 20% all samples qualified estimated (J/UJ)

mw 8-13-94

9613490.1522

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

DUPLICATE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0027

LAB SAMPLE ID: F0420101

WHC ID: BOBNL7

REPORTING UNITS pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
PU-238	-4.32E-02	6.12E-02	6.17E-02	0.386	RD3209
PU239/40	0.00E+00	0.00E+00	3.24E-01	0.386	RD3209
ALPHA	2.29E+00	1.62E+00	1.63E+00	1	RD3222
BETA	3.69E+02	1.32E+01	2.92E+01	1	RD3222
URANIUM	2.05E+00	N/A	3.08E-01	1	RD4200

This is the dup result for BOBNJ5

RPD CALCULATIONS

ISOTOPE	SAMPLE RESULT	DUPLICATE RESULT	RPD
PU-238	0.00E+00	-4.32E-02	200.00
PU239/40	-1.60E-02	0.00E+00	200.00
ALPHA	2.30E+00	2.29E+00	0.44
BETA	4.01E+02	3.69E+02	8.31
URANIUM	2.89E+00	2.05E+00	34.01

Utotal

	Orig Result	Dup Result	RPD
BOBNL7	2.888	2.874	0.49%

Incorrect data entry of U-total data

mw 8-13-94

0022

9613490.1523

WHC-W0026

CLIENT WHC Procedure Code Lipa Prep Date 5-5-94 Prep Tech ~~Jan~~ Counting Tech M. Voelkel

Sample ID#	Analysis and Counting date	RESULTS µG/L ✓ µg/SA ____ Other ____	±	Counting Error	Total Error	Sample Volume Units: mL	Aliquot Volume Units: mL
L0419918	5-19-94	0.000	=			200 mL	100 mL
L0419915		0.~~48~~ 5/19/94 MV .481	=		±7.22E-02		100.3
EQIP024 PR. 4/20/94 EX. 4/20/95	.09064 µgm/SA ± 4.075E-04	= .45342 ± 2.1374E-03	= 10.6%				~~15 5-19-94~~
W0419901		5.503	= Lost				101.5
EQIP025 PR. 4/20/94 EX. 4/20/95	.09089 µgm/SA ± 4.0845E-04	= .45446 µgm/L	±				
W0419902		4.260	= Lost				100.0
EQIP026 PR. 4/20/94 EX. 4/20/95	.090680 µgm/SA 4.0705E-04	=	=				
			=				
40419901		5.180	=		±7.77E-01		100.0
↓ 02		3.443	=		±.516		100.0
40420101		2.888	=		±.433		100.0
F0420101		2.874	=		±.431		100.1
40425801		2.048	=		±.307		100.2
F0425801		2.050	=		±.308		100.3
40425802		63.910	=		±9.59		100.1
03		2.560	=		±.384		100.3
04		4.390	=		±.6585		101.0
↓ 05		1.514	=		±.227		100.0
40428701		21.000	=		±3.15		100.0
↓ 02		3.095	=		±.464		100.1
40432101	↓	4.689	=		±.703	↓	↓ 100.1
			=				
			=				
	MDA = 3.54E-03 µgm/l		=				
			=				
			=				
			=				

Form No. BA-002. 1/91. Rev. 3

PK 5/19/94

MW 4-13-94

0709

000149

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FOR PAGINATION PURPOSES

DATA QUALIFICATION SUMMARY

SDG: W0027-RC-036	VALIDATOR: MWebb	DATE: 8-13-94	PAGE 1 OF 1

COMMENTS: RADIOCHEMICAL ANALYSES

CONSTITUENT	CAS No.	QUALIFIER	SAMPLES AFFECTED	REASON
Tc99	14133-76-7	J	BOBNM1	RPD > 20%
		J	BOBNL3	
		J	BOBNL7	
		J	BOBNJ5	
		J	BOBNJ7	
		J	BOBNK3	
		UJ	BOBNK5	
		J	BOBNN7	
		J	BOBNJ1	
		J	BOBNH9	

RESULTS CALCULATION TOTAL URANIUM BY LASER FLUOROMETRY

Analysis: Radiochemistry Date: 8/13/94
SDG: W0027-ITC-036 Validator: MC Webb

Constituent	Sample reading	Result
	W.9	
BOBNM1	5.18	5.18
BOBNN7	1.51	1.51
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00

RESULTS CALCULATION ALPHA SPEC ISOTOPES

Analysis: Radiochemistry
SDG: W0027-ITC-036

Date: 13-Aug-94
Validator: MC Webb

Constituent		Gross Counts per minute	Background Counts per minute	Detector Efficiency	Tracer recovery factor	Sample volume (L or g)	Result
		A.7	B.7	E.7	R.7	V.7	
Pu238	BOBNM1	0.0100	0.0010	3.703	0.541	0.200	0.1387
Pu239/40	BOBNM1	0.0150	0.0000	3.700	0.541	0.200	0.2311
Pu238	BOBNN7	0.0000	0.0000	3.700	0.660	0.200	0.0000
Pu239/40	BOBNN7	0.0000	0.0010	3.700	0.660	0.200	-0.0126
							#DIV/0!
							#DIV/0!
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RESULTS CALCULATION TECHNETIUM-99

Analysis: Radiochemistry
SDG: W0027-ITC-036

Date: 13-Aug-94
Validator: MC Webb

Constituent		DPM of the sample	DPM of the blank	Decay Factor	Yield	Sample volume (L or g)	Result
		A.6	B.6	E.6	R.6	V.6	
Tc99	BOBNM1	1812.600	28.159	1.000	0.95	0.500	1690.4359
Tc99	BOBNN7	244.260	28.159	1.000	0.95	0.500	204.7167
							#DIV/0!
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RESULTS CALCULATION GROSS ALPHA/BETA AND TRITIUM

Analysis: Radiochemistry
SDG: W0027-ITC-036

Date: 13-Aug-94
Validator: MC Webb

Constituent		Gross Counts per minute	Background Counts per minute	Yield (for tritium only)	Detector Efficiency	Sample volume (L or g)	Result
		A.3	B.3	C.3	E.3	V.3	
Alpha	BOBNM1	0.160	0.038	1.00	4.891	0.120	2.2399
	BOBNN7	0.080	0.028	1.00	3.982	0.200	0.4664
Beta	BOBNM1	51.280	0.892	1.00	2.737	0.200	310.6125
	BOBNN7	11.980	0.892	1.00	2.589	0.200	64.6550
							#DIV/0!
							#DIV/0!
							#DIV/0!
							#DIV/0!
TRITIUM		DPM sample	DPM blank	Yield	Decay	Volume	
	BOBNM1	16.950	14.510	0.97	1.006	0.005	227.2752
	BOBNN7	101.330	14.510	0.97	1.005	0.005	8078.8589
							#DIV/0!
							#DIV/0!
							#DIV/0!
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							#DIV/0!
							#DIV/0!

MINIMUM DETECTABLE ACTIVITY (MDA)

Analysis: Radiochemistry
SDG: W0027-ITC-036
Sample: BOBNM1 (1) BOBNN7 (2)

Date: 13-Aug-94
Validator: MC Webb

Constituent	Background counts per minute (cpm) or Standard Deviation of background (cpm)	Counting time for associated sample	Detector Efficiency	Ingrowth correction factor	Carrier recovery factor	Decay factor	Chemical yield factor	Sample volume (L or g)	MDA
	B.2	T.2	E.2	I.2	R.2	D.2	Y.2	V.2	
Pu238 (1)	0.001	200.000	3.703	1.000	1.000	1.000	0.541	0.200	0.369
PU239/40 (1)	0.000	200.000	3.700	1.000	1.000	1.000	0.541	0.200	0.209
Sr total (1)	1.008	50.000	2.229	1.000	1.000	1.000	0.876	1.000	0.819
Sr total (2)	0.968	50.000	2.340	1.000	1.000	1.000	1.000	1.000	0.739
Pu238 (2)	0.000	200.000	3.703	1.000	1.000	1.000	0.660	0.200	0.171
Pu239/40 (2)	0.001	200.000	3.700	1.000	1.000	1.000	0.660	0.200	0.302
Alpha (1)	0.038	50.000	4.891	1.000	1.000	1.000	1.000	0.120	2.742
Alpha (2)	0.028	50.000	3.982	1.000	1.000	1.000	1.000	0.200	1.218
Beta (1)	0.892	50.000	2.737	1.000	1.000	1.000	1.000	0.200	3.175
Beta (2)	0.892	50.000	2.589	1.000	1.000	1.000	1.000	0.200	3.003
U total IDL									0.004
Tritium Blank	5.820	125.000	2.493	1.000	1.000	1.000	0.973	0.005	236.608
Tc99 Blank	26.680	100.000	1.055	1.000	1.000	1.000	0.951	0.500	2.428

RELATIVE PERCENT DIFFERENCE

Analysis: Radiochemistry
SDG: W0027-ITC-036

Date: 13-Aug-94
Validator: MC Webb

Constituent		Original (Sample) concentration OS	Duplicate concentration D	RPD
Pu238	BOBNL7	0.00	-0.04	NC
Pu239/40	BOBNL7	-0.02	0.00	NC
GEA	BOBNL3 Co60	7.83	8.64	9.8%
GEA	BOBNL3 Cs137	5.49	0.16	NC
GEA	BOBNL3 Ru106	22.30	-11.50	NC
Alpha	BOBNL7	2.30	2.29	0.4%
Beta	BOBNL7	401.00	369.00	8.3%
Sr total	BOBNH9	-0.07	0.00	NC
Tc99	BOBNM1	1690.00	1324.00	24.3%
Tc99	BOBNK3	22.17	22.72	2.5%
Tritium	BOBNM1	227.20	190.90	17.4%
U total	BOBNL7	2.89	2.87	0.5%
				#DIV/0!
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ALPHA SPEC TRACER RECOVERY

Analysis: Radiochemistry
SDG: W0027-ITC-036

Date: 13-Aug-94
Validator: MC Webb

Constituent		Gross counts per minute	Background counts per minute of tracer	Detector efficiency	Activity (pCi) of tracer added to sample	%R
		A.1	B.1	E.1	T.1	
Pu242	BOBNM1	1.03	0.002	3.7	7.0327	0.540845
Pu242	BOBNN7	1.26	0.002	3.7	7.0507	0.660161
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PERCENT RECOVERY (LCS)

Analysis: Radiochemistry
SDG: W0027-ITC-036

Date: 13-Aug-94
Validator: MC Webb

Constituent	Observed value	True value	%R
	OLCS	ALCS	
Pu238	4.70	4.59	102.5%
GEA Co60	24.10	24.80	97.2%
GEA Cs137DA	51.10	49.60	103.0%
GEA Eu152	39.40	49.70	79.3%
Alpha	16.90	22.57	74.9%
Beta	22.71	22.55	100.7%
Sr total	11.16	13.59	82.1%
Tc99	90.13	90.08	100.1%
Tc99	271.60	270.72	100.3%
Tritium	2714.00	2720.00	99.8%
U total	0.48	0.45	106.1%
			#DIV/0!
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MATRIX SPIKE RECOVERY (MS)

Analysis: Radiochemistry
SDG: W0027-ITC-036

Date: 13-Aug-94
Validator: MC Webb

Constituent	Spike Sample Result SSR	Sample Result SR	Spike Added SA	%R
Tc99 BOBNL3	629.50	380.80	270.60	91.9%
Tc99 BOBNM1	1943.00	1690.00	270.60	93.5%
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RESULTS CALCULATION TOTAL STRONTIUM

Analysis: Radiochemistry
SDG: W0027-ITC-036

Date: 13-Aug-94
Validator: MC Webb

Constituent	Gross Counts per minute	Background Counts per minute	Ingrowth correction Factor	Detector Efficiency	Carrier recovery factor	Sample volume (L or g)	Result
	A.4	B.4	I.4	E.4	R.4	V.4	
BOBNM1	0.860	1.008	1.227	2.229	0.876	1.00	-0.1383
BOBNN7	1.040	0.968	1.243	2.340	1.000	1.00	0.0611
							#DIV/0!
							#DIV/0!
							#DIV/0!
							#DIV/0!

INGROWTH FACTOR	Sr D/C	Y D/C	delta T (hr)	= e**(-Lt)	L =1.083E-2		
BOBNM1	2.23	1.85	19.33	0.8111	X	X	1.227
BOBNN7	2.34	1.90	20.25	0.8031	X	X	1.243
					X	X	#DIV/0!
					X	X	#DIV/0!
					X	X	#DIV/0!
					X	X	#DIV/0!

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

BOBNM1 and BOBNL3 are Cat. III based on total activity per gram. Others are Cat. I.

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			41294		412	10	19	238	240

Customer ID	pH	Pincht	Vol.	Sample	SMPLE CNT DATA			Net Sample		DPM / Aliqout		uCi per Sample		2 Sigma Error		pCi/(Gm or L)		Catagory	Aliquot to Cat 1	
					Hldr	Total	Counts	Counts/Minute		Alpha	Beta	Alpha	Beta	uCi per Sample				1	Gm or Ltr	
WHC/WATER	<2 Rcvd/Relq	Wght (mGrms)	Anal. mG mL	Size Gm L	Num.	Alpha	Beta	Alpha	Beta					Alpha	Beta	Alpha	Beta	Yes/No	Alpha	Beta
B0BNM1		3.6	5	4.0	35	3	94	0.22	8.41	6.3E-01	1.8E+01	2.3E-04	6.4E-03	4.6E-07	1.6E-06	5.7E+01	1.6E+03	~~Yes~~	1.8E+02	6.2E+01
B0BNL3		1.6	5	4.0	36	6	88	0.52	7.81	1.8E+00	1.6E+01	6.5E-04	5.9E-03	7.1E-07	1.5E-06	1.6E+02	1.5E+03	~~Yes~~	6.1E+01	6.8E+01
B0BNL7		1.4	5	4.0	37	2	30	0.12	2.01	4.1E-01	4.2E+00	1.5E-04	1.5E-03	3.3E-07	7.1E-06	3.7E+01	3.8E+02	Yes	2.7E+02	2.6E+02
B0BKJ5		3.1	5	4.0	38	17	16	1.62	0.61	6.6E+00	2.1E-01	2.4E-03	7.7E-05	1.4E-06	1.6E-06	5.9E+02	1.9E+01	Yes	1.7E+01	5.2E+03
B0BKJ9		0.7	5	4.0	39	1	7	0.02	-0.29	9.0E-02	-6E-01	3.3E-05	-2E-04	1.3E-07	-2E-06	8.1E+00	-6E+01	Yes	1.2E+03	-2E+03
B0BKJ3		2.5	5	4.0	40	15	24	1.42	1.41	5.7E+00	2.1E+00	2.0E-03	7.4E-04	1.3E-06	2.4E-07	5.1E+02	1.9E+02	Yes	2.0E+01	5.4E+02
TOTAL	uCi							-0.08	-0.99	-3E-01	-2E+00	5.5E-03	1.4E-02	ERR	ERR	ERR	ERR	Yes	ERR	ERR

JRN 12 Apr 94

9613490.1536

9613490.0162

C033K

4-04-287

000163

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

All category I.
JRN 14 Apr 94

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			41494		414	10	7	59	60

	Customer ID	pH	RESIDUE Wght	Vol. Anal.	Sample Size	SMPLE CNT DATA Hldr	Total Counts	Net Sample Counts/Minute		DPM / Aliqout		uCi per Sample		2 Sigma Error uCi per Sample		pCi/(Gm or L)		Catagory 1	Aliquot to Cat 1 Gm or Ltr	
	WHC/WATER	<2 Rcvd/Relq	(mGrms)	mG mL	Gm L	Num.	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Yes/No	Alpha	Beta
✓	B0BNK5		1.3	5	4.0	35	38	127	3.68	11.72	1.4E+01	2.3E+01	5.1E-03	8.1E-03	2.2E-06	1.9E-06	1.3E+03	2.0E+03	Yes	7.8E+00	4.9E+01
✓	B0BNN7		1.1	5	4.0	36	4	16	0.28	0.62	1.1E+00	1.1E+00	3.9E-04	4.1E-04	5.1E-07	4.0E-07	9.8E+01	1.0E+02	Yes	1.0E+02	9.8E+02
	B0BNX2		0.5	5	1.0	37	10	20	0.88	1.02	3.4E+00	1.6E+00	3.1E-04	1.4E-04	2.4E-07	6.3E-08	3.1E+02	1.4E+02	Yes	3.3E+01	7.0E+02
	B0BNY0		1.1	5	1.0	38	3	22	0.18	1.22	6.8E-01	2.5E+00	6.1E-05	2.2E-04	1.0E-07	5.0E-07	6.1E+01	2.2E+02	Yes	1.6E+02	4.5E+02
	B0BNX8		1.3	5	1.0	39	4	24	0.28	1.42	1.1E+00	2.8E+00	9.7E-05	2.6E-04	1.3E-07	3.9E-07	9.7E+01	2.6E+02	Yes	1.0E+02	3.9E+02
✓	B0BNJ7		1.2	5	4.0	40	2	27	0.08	1.72	2.7E-01	3.6E+00	9.9E-05	1.3E-03	2.7E-07	8.4E-06	2.5E+01	3.2E+02	Yes	4.1E+02	3.1E+02
✓	B0BNK3		1.3	5	4.0	41	2	17	0.08	0.72	3.1E-01	1.5E+00	1.1E-04	5.3E-04	2.7E-07	2.0E-06	2.8E+01	1.3E+02	Yes	3.6E+02	7.5E+02
✓	B0BNJ5		1.3	5	4.0	42	0	10	-0.12	0.02	-5E-01	1.1E-01	-2E-04	4.1E-05	-3E-07	2.1E-08	-4E+01	1.0E+01	Yes	-2E+02	9.9E+03
	TOTAL	uCi							-0.12	-0.98	-4E-01	-2E+00	6.0E-03	1.1E-02	ERR	ERR	ERR	ERR	Yes	ERR	ERR

9613490.1537

CC.3322

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

BOBNM1 and BOBNL3 are Cat. III based on total activity per gram. Others are Cat. I.

9164

Customer Code WHC	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
			41294		412	10	19	238	240

Customer ID WHC/WATER	pH <2 Rcvd/Relq	Pincht Wght (mGrms)	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	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Beta
B0BNM1		3.6	5		4.0		35	3	94	0.22	8.41	6.3E-01	1.8E+01	2.3E-04	6.4E-03	4.6E-07	1.6E-06	5.7E+01	1.6E+03	~~Yes~~	1.8E+02	6.2E+01
B0BNL3		1.6	5		4.0		36	6	88	0.52	7.81	1.8E+00	1.6E+01	6.5E-04	5.9E-03	7.1E-07	1.5E-06	1.6E+02	1.5E+03	~~Yes~~	6.1E+01	6.8E+01
B0BNL7		1.4	5		4.0		37	2	30	0.12	2.01	4.1E-01	4.2E+00	1.5E-04	1.5E-03	3.3E-07	7.1E-06	3.7E+01	3.8E+02	Yes	2.7E+02	2.6E+02
B0BKJ5		3.1	5		4.0		38	17	16	1.62	0.61	6.6E+00	2.1E-01	2.4E-03	7.7E-05	1.4E-06	1.6E-08	5.9E+02	1.9E+01	Yes	1.7E+01	5.2E+03
B0BKJ9		0.7	5		4.0		39	1	7	0.02	-0.29	9.0E-02	-6E-01	3.3E-05	-2E-04	1.3E-07	-2E-06	8.1E+00	-6E+01	Yes	1.2E+03	-2E+03
B0BKJ3		2.5	5		4.0		40	15	24	1.42	1.41	5.7E+00	2.1E+00	2.0E-03	7.4E-04	1.3E-06	2.4E-07	5.1E+02	1.9E+02	Yes	2.0E+01	5.4E+02
TOTAL	uCi									-0.08	-0.99	-3E-01	-2E+00	5.5E-03	1.4E-02	ERR	ERR	ERR	ERR	Yes	ERR	ERR

JRN 12 Apr 94

9613490.1539

00334

Laboratory Case Narratives

INTERNATIONAL TECHNOLOGY CORPORATION

RECORD COPY

CERTIFICATE OF ANALYSIS

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

June 3, 1994

Attention: J.A.Lerch

SAF Number	:	94-130
Date SDG Closed	:	April 15, 1994
Number of Samples	:	Ten (10)
Sample Type	:	Water
SDG Number	:	W0027
Data Deliverable	:	Stand Alone

I. Introduction

On April 12, 14, and 15, 1994, ten water 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
404199-01A	B0BNM1	Water	4/12/94
404199-02A	B0BNL3	Water	4/12/94
404201-01A	B0BNL7	Water	4/12/94
404258-01A	B0BNJ5	Water	4/14/94
404258-02A	B0BNJ7	Water	4/14/94
404258-03A	B0BNK3	Water	4/14/94
404258-04A	B0BNK5	Water	4/14/94
404258-05A	B0BNN7	Water	4/14/94
404287-01A	B0BNJ1	Water	4/15/93
404287-02A	B0BNH9	Water	4/15/93

II. Analytical Results/Methodology

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

The requested analyses were:

Alpha Spectroscopy
Plutonium-238, -239/40 by method ITAS-RD-3209
Gamma Spectroscopy
Gamma Scan 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
Technetium-99 by method ITAS-IT-RS-0001
Tritium by method ITAS-RD-3205
Total Uranium
Total Uranium by method ITAS-RD-4200

III. Quality Control

The analytical results for each analysis performed under SDG W0027 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate. Any exceptions have been noted in the "Comments" section.

Quality control sample results are reported in the same units as sample results.

IV. Comments

The initial radioactivity screening of the samples classified them as Category I, with the exceptions of samples B0BNM1 and B0BNL3 which were classified as Category III. A review of the screening data revealed that the samples initially identified as Category III were in fact Category I samples, therefore they were batched with the other Category I samples.

Alpha Spectroscopy

Plutonium-238, -239/40 by method ITAS-RD-3209
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNL7) results are within contractual requirements. Sample B0BNP1 from SDG W0038 was inadvertently batched with this SDG for this analysis. That sample will be reported with SDG W0038.

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNL3) results are within contractual requirements. Sample B0BNP1 from SDG W0038 was inadvertently batched with this SDG for this analysis. That sample will be reported with SDG W0038.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BNL7 and B0BNP1) results are within contractual requirements. Sample B0BNP1 from SDG W0038 was inadvertently batched with this SDG for this analysis. That sample will be reported with SDG W0038.

Gross Beta by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BNL7 and B0BNP1) results are within contractual requirements. Sample B0BNP1 from SDG W0038 was inadvertently batched with this SDG for this analysis. That sample will be reported with SDG W0038.

Strontium-90 by method ITAS-RD-3204
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNL3) results are within contractual requirements.

Liquid Scintillation Counting

Technetium-99 by method ITAS-IT-RS-0001
Three matrix spikes were analyzed with the batch. The sample results were not yield corrected by the average matrix spike chemical yield. The LCS, matrix spike, batch blank, sample and sample duplicate (duplicate of sample B0BNM1) results are within contractual requirements. The result for the duplicate of sample B0BNK3 was just outside of the 3 sigma control limit. The duplicate difference is attributed to sediment in the sample and the batch is accepted and reported based on two acceptable LCS results, two acceptable batch blank results, four acceptable instrument blank results, three acceptable matrix spike results and one acceptable duplicate result.

Tritium by method ITAS-RD-3205
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNM1) results are within contractual requirements.

Total Uranium

Total Uranium by method ITAS-RD-4200
Two matrix spikes were analyzed with the batch. Neither spike produced useable data due the high activity (matrix effect) present in the sample. The samples were spiked with .09 μg of natural uranium and the activity for each of the samples measured 4.3 μg/L and 5.5 μg\L. No matrix spike yield correction was performed. The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BNL7 and B0BNJ5) results are within contractual requirements. Sample B0BNP1 from SDG W0038 was inadvertently batched with this SDG for this analysis. That sample will be reported with SDG W0038.

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

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

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

May 26, 1994

Job Number: 351; 379; 381; 382

This is the Certificate of Analysis for the following samples:

SDG:	W0027
Client Project ID:	Westinghouse Hanford
Date Received by Lab:	April 13, 1994; April 15, 1994, April 16, 1994
Number of Samples:	Twenty (20)
Sample Type:	Water

I. Introduction

On April 13, April 15, April 16, 1994, twenty (20) water 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.

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.

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.

Reviewed and Approved:

Sheree' A. Schneider
Project Manager

IT Corporation
May 26, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 351; 379; 381; 382

II. Analytical Results/Methodology (Continued)

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

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

The alkalinity of the samples was determined using EPA method 310.1.

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

The samples were analyzed for sulfate based on EPA method 375.4.

The total dissolved solids (TDS) content of the samples was determined using EPA method 160.1.

III. Quality Control

The samples for work order #351 were digested on May 3, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed from May 5 through May 14, 1994; the remaining metals were analyzed by ICP on May 4, 1994. All run QC was acceptable. Linear range for silicon was determined on May 24, 1994.

The samples for work order #379 were digested on May 3, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed from May 5 through May 14, 1994; the remaining metals were analyzed by ICP on May 5 and May 6, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample numbers BOBNJ5 and BOBNJ6. Spike recovery (accuracy) results were within acceptance limits for all requested parameters. Duplicate RPD (precision) results were within acceptance limits for all requested parameters. Blank spikes were performed for cyanide, due to insufficient sample volume.

The samples for work order #381 were digested on May 4, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed from May 9 through May 16, 1994; the remaining metals were analyzed by ICP from May 5 through May 19, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample numbers BOBNM1 and BOBNM2. Spike recovery (accuracy) results were within acceptance limits for all requested parameters for both samples. As the silicon concentration was greater than four times (4X) the spike added, spiking criteria did not apply for this analyte. Duplicate RPD (precision) results were within acceptance limits for all requested parameters for both samples except for iron on sample BOBNM1. Poor precision for iron appears to be attributable to contamination during the sample digestion procedure.

IT Corporation
May 26, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 351; 379; 381; 382

III. Quality Control (Continued)

The samples for work order # 382 were digested on May 3, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed from May 6 through May 16, 1994; the remaining metals were analyzed by ICP on May 6, 1994. All run QC was acceptable.

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.

"O" 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.

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.

Matrix spike/matrix spike duplicate analyses for anions, nitrate/nitrite and sulfate were performed on samples BOBNJ5 and BOBNM1 with acceptable results.

A duplicate analysis was performed for alkalinity on sample BOBNJ5 with acceptable results.

A duplicate analysis was performed for total dissolved solids on sample BOBNL7 with acceptable results.

IT Corporation
May 26, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 351; 379; 381; 382

III. Quality Control (Continued)

Table 1 is a cross reference between client sample IDs, laboratory sample IDs, matrix and tests.

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA6269	W404200-01	BOBNL7	Water	METALS (GFAA/ICP)
AA6270	"	"	"	ANIONS
AA6271	"	"	"	NO3NO2
AA6272	"	"	"	ALKALINITY
AA6273	"	"	"	TDS
AA6274	"	"	"	SULFATE
AA6275	"	"	"	CYANIDE
AA6327	W404200-02	BOBNL8	"	METALS (GFAA/ICP)
AA6695 OS/MS/MSD	W404257-01	BOBNJ5	"	METALS (GFAA/ICP)
AA6696 OS/MS/MSD	"	"	"	ANIONS
AA6697 OS/MS/MSD	"	"	"	NO3NO2
AA6698 OS/DUP	"	"	"	ALKALINITY
AA6699 OS/DUP	"	"	"	TDS
AA6700 OS/MS/MSD	"	"	"	SULFATE
AA6701 OS/MS/MSD	"	"	"	CYANIDE
AA6737	W404257-03	BOBNJ7	"	METALS (GFAA/ICP)
AA6738	"	"	"	ANIONS
AA6739	"	"	"	NO3NO2
AA6740	"	"	"	ALKALINITY
AA6741	"	"	"	TDS
AA6742	"	"	"	SULFATE
AA6743	"	"	"	CYANIDE
AA6744	W404257-05	BOBNK3	"	METALS (GFAA/ICP)
AA6745	"	"	"	ANIONS
AA6746	"	"	"	NO3NO2
AA6747	"	"	"	ALKALINITY
AA6748	"	"	"	TDS
AA6749	"	"	"	SULFATE
AA6750	"	"	"	CYANIDE

IT Corporation
May 26, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 351; 379; 381; 382

III. Quality Control (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA6752	W404257-07	BOBNK5	Water	ANIONS
AA6753	"	"	"	NO3NO2
AA6754	"	"	"	ALKALINITY
AA6755	"	"	"	TDS
AA6756	"	"	"	SULFATE
AA6757	"	"	"	CYANIDE
AA6758	W404257-09	BOBNN7	"	METALS (GFAA/ICP)
AA6760	"	"	"	NO3NO2
AA6761	"	"	"	ALKALINITY
AA6762	"	"	"	TDS
AA6763	"	"	"	SULFATE/ANIONS
AA6764	"	"	"	CYANIDE
AA6765 OS/MS/MSD	W404257-02	BOBNJ6	"	METALS (GFAA/ICP)
AA6766	W404257-04	BOBNJ8	"	METALS (GFAA/ICP)
AA6767	W404257-06	BKBNK4	"	METALS (GFAA/ICP)
AA6768	W404257-08	BOBNK6	"	METALS (GFAA/ICP)
AA6769	W404257-10	BOBNN8	"	METALS (GFAA/ICP)
AA6776 OS/MS/MSD	W404198-01	BOBNM1	"	METALS (GFAA/ICP)
AA6777 OS/MS/MSD	"	"	"	ANIONS
AA6778 OS/MS/MSD	"	"	"	NO3NO2
AA6779 OS/DUP	"	"	"	ALKALINITY
AA6780 OS/DUP	"	"	"	TDS
AA6781 OS/MS/MSD	"	"	"	SULFATE
AA6782 OS/MS/MSD	"	"	"	CYANIDE
AA6783	W404198-03	BOBNL3	"	METALS (GFAA/ICP)
AA6784	"	"	"	ANIONS
AA6785	"	"	"	NO3NO2
AA6786	"	"	"	ALKALINITY
AA6787	"	"	"	TDS
AA6788	"	"	"	SULFATE
AA6789	"	"	"	CYANIDE

IT Corporation
May 26, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 351; 379; 381; 382

III. **Quality Control** (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA6790 OS/MS/MSD	W404198-02	BOBNM2	Water	METALS (GFAA/ICP)
AA6791	W404198-04	BOBNL4	"	METALS (GFAA/ICP)
AA6792	404286-01	BOBNJ1	"	METALS (GFAA/ICP)
AA6793	"	"	"	ANIONS
AA6794	"	"	"	NO3NO2
AA6795	"	"	"	ALKALINITY
AA6796	"	"	"	TDS
AA6797	"	"	"	SULFATE
AA6798	"	"	"	CYANIDE
AA6799	404286-03	BOBNH9	"	METALS (GFAA/ICP)
AA6800	"	"	"	ANIONS
AA6801	"	"	"	NO3NO2
AA6802	"	"	"	ALKALINITY
AA6803	"	"	"	TDS
AA6804	"	"	"	SULFATE
AA6805	404286-02	BOBNJ2	"	CYANIDE
AA6806	"	"	"	METALS (GFAA/ICP)
AA6807	404286-03	BOBNJ0	"	METALS (GFAA/ICP)

IT Corporation
May 26, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 351; 379; 381; 382

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
Project Manager

Chain-of-Custody Information

9613490.1553

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
3200 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

Per Shipping Container

Date/Time Received 4/12/94 1230 Client Name WHC

Project/Client # 94-130 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) EROS

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 ☑ all in 1 bag.
7. Number of sample containers in cooler: 15
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 2°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 N/A
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 Tom Gilmore Date/Time 4/12/94 1236

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

000174

0033J

WO 382

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: ☐ Priority ☒ Normal

Collector: K.D Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-05	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: LT	Offsite Property No.: W74-0-C336-42	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None	Special Handling and/or Storage: Cool to 4 C. Stored in Refrig 3B by AJS 4/14/94 1346	

SAMPLE ANALYSIS: 40428602

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
Type of Container	G-P	G	P	P	P	P	P	P	Gs	P	G-P	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L-PC	1L	40mL			
	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2 40428702	TRITIUM	Tc-99	*3 40428603	TOTAL ACTIVITY			
	A	B	C	D	E	F	G				04A				

Sample No.	Matrix*	Date Sampled	Time Sampled														
B0BN H9	W	04/14/94	1000	X	X	X	X	X	X	X	X	X	X		X		
B0BN J0	W	04/14/94	1000											X			

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
K.D Lee	04/14/94 1135	Loren E Rogers	4-14-94 1135
Loren E Rogers	4-14-94 1340	AJ SIMPSON AJ Simpson	4/14/94 1346
AJ SIMPSON AJ Simpson	4/15/94 1000	L Sweeney L Sweeney	4/15/94 1000
L Sweeney L Sweeney	4/15/94 1040	Karen Gottlieb Lugg	4/15/94 14:40

Sign/Print Names

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

96134901-1559

00000053

WO 382

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: K. D. Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: GWSOAS	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W74-0-0336-42	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A				
Type of Container	G P	G	P	P	P	P	P	P	G	P	G P	G				
No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1				
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L 2L	1L	20mL				
SAMPLE ANALYSIS	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	TOTAL ACTIVITY				
404286001	A	B	C	D	E	F	G	1 02A	2 4/15 PA		02A					

Special Handling and/or Storage: Cool to 4 C. Stored in 3C AJ Simpson 4/14/94 1345

Sample No.	Matrix*	Date Sampled	Time Sampled														
B0BNJ1	W	04/14/94	1115	X	X	X	X	X	X	X	X	X	X		X		
B0BNJ2	W	04/14/94	1115											X			

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
K. D. Lee	04/14/94 1135	Karen E. Rogers	4-14-94 1135
Karen E. Rogers	4-14-94 1340	A J Simpson	4/14/94 1343
A J Simpson	4/15/94 1000	Dwenny L Sweeney	4/15/94 1000
Dwenny L Sweeney	4/15/94 1440	[illegible]	4/15/94 14:40

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613490.1555

9700176

0000052

'ND 379

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: P. H. Butcher	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: GWS 015	Field Logbook No.: FFL-1123	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: 1C-94-C-0336-37	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refris 2B		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3				
Type of Container	P G	G	P	P	P	P	P	P	Gs	G P	P	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2 1 1	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L 2L	1L	40 mL			
SAMPLE ANALYSIS	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3				
404257	01A	B	C	D	E	F	G	404258 01			02A				

Sample No.	Matrix*	Date Sampled	Time Sampled														
B0BNJ5	W	4/12/94	0902	X	X	X	X	X	X	X	X	X	X		X		
B0BNJ6	W	4/12/94	0902											X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Kirby P Lee	4/12/94 1230	AJ Simpson	4/12/94 1230
AJ Simpson AJ SIMPSON	4/12/94 1000	Sievering L Sievering	4/14/94 1000
Sievering L Sievering	4/14/94 1130	Tom Gilmore	4/14/94 1130

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613490.1556

0000045

0001277

WO 3714

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: ☐ Priority ☒ Normal

Collector: R. T. Whittier	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: GNL-118	Field Logbook No.: HNF-11125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: WHC-C-336-37	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3				
Type of Container	P	G	P	P	P	P	P	P	Gs	P	P	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L 2L	1L	40 mL			
SAMPLE ANALYSIS	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	TOTAL NITRATE			
404257	03A	B	C	D	E	F	G	404258 02			04A				

Sample No.	Matrix*	Date Sampled	Time Sampled														
B0BNJ7	W	4/12/94	1000	X	X	X	X	X	X	X	X	X	X				
B0BNJ8	W	4/12/94	1000											X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Kirby D. Lee	4/12/94 1238	AJ Simpson	4/12/94 1238
AJ Simpson AJ SIMPSON	4/14/94 1001	L Sweeney	4/14/94 1002
L Sweeney L Sweeney	4/14/94 1130	Tom Gilmore	4/14/94 1130

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613490.1557

0000046

WO 379

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: ☐ Priority ☒ Normal

Collector: B. J. [illegible]	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: CRC-5	Field Logbook No.: EFL-1625	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: WHC-CP-3360-46	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refers 313 AJS 4/12/94		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	n/a			
Type of Container	P	G	P	P	P	P	P	P	Gs	P	P	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	1	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	2L	1L	4 oz			
SAMPLE ANALYSIS 404257	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	TOTAL plutonium			
	05A	B	C	D	E	F	G	404258 03			06A				

Sample No.	Matrix*	Date Sampled	Time Sampled													
B0BNK3	W	4/12/94	1050	X	X	X	X	X	X	X	X	X	X		X	
B0BNK4	W	4/12/94	1050											X		

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	4/12/94 1239	AJ SIMPSON CJ Simpson	4/12/94 1239
AJ SIMPSON CJ Simpson	4/14/94 1002	J Simpson, L Simpson	4/14/94 1002
J Simpson, L Simpson	4/14/94 1130	Tom Gilmore	4/14/94 1130

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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

8C-6000-B28 (12/92)

0053196 0643196

0000047

WO 3791

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: ☐ Priority ☒ Normal

Collector	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No. (=A-17 thru =A-23)	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: WHC-SD-EN-TI-336-41	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3				
Type of Container	G P	G	P	P	P	P	P	P	Gs	P	G P	P			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2+	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L 2L	1L	2 mL			
SAMPLE ANALYSIS	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKALINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	TOTAL METALS			
404257	07A	B	C	D	E	F	G	40425804			08A				

Sample No.	Matrix*	Date Sampled	Time Sampled														
B0BNK5	W	04/13/94	0950	X	X	X	X	X	X	X	X	X	X		X		
B0BNK6	W	04/13/94	0950											X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	04/13/94 1252	Loren E. Rogers	4-13-94 1252
Loren E. Rogers	4-13-94 1440	L Sweeney L Sweeney	4-13-94 1440
L Sweeney L Sweeney	4/14/94 1130	[illegible]	4/14/94 1130
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

0081961-0081962

0000180

0000048

WO 381

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: ☐ Priority ☒ Normal

Collector: A.T WHITEN	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: GW Signed	Field Logbook No.:	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: WM4-C-C33G-35	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		

Sample No.	Matrix*	Date Sampled	Time Sampled	Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	NONE			
				Type of Container	G	G	P	P	P	P	P	P	Gs	P	P	P			
				No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1			
				Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L	1L	40 ml			
				SAMPLE ANALYSIS	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	Total Actinides			
				4C 4/98	03A	B	C	D	E	F	G				04A				
B0BN63	03	W	4/11/94	10 40	X	X	X	X	X	X	X	X	X	X		X			
B0BN64	04	W	4/11/94	10 40											X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By / Date/Time	Received By / Date/Time		
[signature] 4/11/94	AJ Simpson CJ Simpson 4/11/94 1368		
Relinquished By / Date/Time	Received By / Date/Time		
AJ Simpson 4/12/94 1007	L Sweeney L Sweeney 4/12/94 1007		
Relinquished By / Date/Time	Received By / Date/Time		
L Sweeney L Sweeney 4/12/94 1230	[signature] 4/12/94 1230		
Relinquished By / Date/Time	Received By / Date/Time		

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

Tritium Sample: Water Leaked in/air bubbles in sample. Value and bubbles could not be measured

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)

9613490-1590

0000051

281000

WO#351

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: ☐ Priority ☒ Normal

Collector: B T WHITTEN	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-05	Field Logbook No.:	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: WHC-C-336-341	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	none			
Type of Container	P	G	P	P	P	P	P	P	Gs	P	P	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L	1L	40ml			
SAMPLE ANALYSIS	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	Total activity			
404200	61A	B	C	D	E	F	G	✓	✓	✓	02A	-			

Sample No.	Matrix*	Date Sampled	Time Sampled														
B0BNL7 01	W	4/1/94	1145	X	X	X	X	X	X	X	X	X	X		X		
B0BNL8 02	W	4/1/94	1145											X			

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
B T Whitten B T Whitten	4/1/94 1154	A J Simpson AJSimpson	4/1/94 1355
A J Simpson AJSimpson	4/12/94 1007	L Sweeney LSweeney	4-12-94 1007
L Sweeney LSweeney	4/12/94 1230	[signature]	4/12/94 1230

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613490.1561

00000044

WO 381

000183

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: ☐ Priority ☒ Normal

Collector: B. WHITTEN	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: GW3015	Field Logbook No.:	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W74-0-C336-31	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		

Sample No.	Matrix*	Date Sampled	Time Sampled	Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	None			
				Type of Container	P	G	P	P	P	P	P	P	Gs	P	P+	G			
				No. of Container(s)	1	1	1	1	1	1	1	2	2 4L -2 1/2 gal	2 4L + 1L -2 1/2 gal	1	1			
				Special Handling and/or Storage: Cool to 4 C. Refrig 2C AJS 4/8/94	Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L -2 1/2 gal	1L	4ml			
				SAMPLE ANALYSIS: 404178		*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	Total Activity			
						01A	B	C	D	E	F	G				02A				
BOBNM1	01	W	4/11/94	1242	X	X	X	X	X	X	X	X	X	X		X			
BOBNM2	02	W	4/11/94	1242											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	4/4/94 1304	AJ Simpson	4/4/94 1354
AJ Simpson AJ SIMPSON	4/4/94 1007	L Sweeney L SWEENEY	4/12/94 1007
L Sweeney L SWEENEY	4-12-94 1230	[illegible] Tom Gilmore	4/12/94 1230
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613490.1562

0500000

WC 379

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: ☐ Priority ☒ Normal

Collector: K.D. Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: Cooler	Field Logbook No.: EFL-11.24	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W-761-C-0336-40	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	n/a			
Type of Container	P	G	P	P	P	P	P	P	Gs	P	P	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2 1	1	1			
Special Handling and/or Storage: Cool to 4 C. — Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L 2L	1L	2L			
SAMPLE ANALYSIS 404257	*1 09A	IC ANIONS-F, Cl, SO4, NO2 PO4. B	NO2, NO3. C	ALKA-LINITY D	TDS E	SULFATE F	CYANIDE G	*2	TRITIUM 404258 05	Tc-99	*3 10A	TOTAL Acidity			

Sample No.	Matrix*	Date Sampled	Time Sampled														
B0BNN7	W	04/13/94	1232	X	X	X	X	X	X	X	X	X	X		X		
B0BNN8	W	04/13/94	1232											X			

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K.D. Lee	04/13/94 1252	Lorene E. Rogers	4-13-94 1252
Lorene E. Rogers	4-13-94 1440	Suzanne L. Sweeney	4-13-94 1440
Suzanne L. Sweeney	4/14/94 1130	[illegible]	4/14/94 1130
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613490.1563

0000049

9613490.1564

0 000007B

INTERNATIONAL TECHNOLOGY CORPORATION

COPY

CUR # 1477

Work Order No.: 375

Condition Upon Receipt Variance Report
ITAS - Knoxville Laboratory/Middlebrook Facility

nt: ITAS- Richland Date: 4-15-94

ect No: Westinghouse Hanford Initiated by: KAK

lysis Requested: Anions + Metals RFA/COC Numbers: 340373

nt Sample Numbers Affected: W0425709B + W0425707A

dition/Variance (Check all that apply):

- ☐ Not enough sample received for proper analysis. Received approximately: _____
- ☑ Sample received broken/leaking.
- ☐ Sample received without proper preservative.
  - ☐ Cooler temperature not within 4°C ± 2°C. Record temperature: _____
  - ☐ pH _____
  - ☐ other: _____
- ☐ Sample received in improper container.
- ☐ Sample received without proper paperwork. Explain: _____
- ☐ Paperwork received without sample.
- ☐ No sample ID on sample container.
- 8. ☐ Custody tape disturbed/broken/missing.
- 9. ☐ Sample splits performed by lab.
- 10. ☐ Volatile sample received with approximately _____ mm headspace.
- 11. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
- 12. ☐ All coolers on airbill not received with shipment.
- 13. ☐ Other (explain below): _____

:

ctive Action:

Client's Name: _____ Informed verbally on: _____ By: _____

Client's Name: _____ Informed in writing on: _____ By: _____

Sample(s) processed "as is". Comments: _____

Sample(s) on hold until: _____ If released, notify: _____

e Control Supervisor Review: Kenneth K Kramm Date: 5/19/94

t Management Review:

0000184A

VEDD Printout

VALIDATION ELECTRONIC DELIVERABLE SDG W0027-ITC-036

Wednesday, September 14, 1994

HEIS-SN	Form	FormNr	LabCode	ConstID	Media	Value	ConcFlag	Qual	CountErr	Units
B0BNH9	NCLP	NA	ITC	7439-89-6	SW			U		
B0BNJ0	NCLP	NA	ITC	7439-89-6	SW			U		
B0BNJ2	NCLP	NA	ITC	7439-89-6	SW			U		
B0BNJ1	NCLP	NA	ITC	7439-89-6	SW			U		
B0BNM1	NCLP	NA	ITC	7439-89-6	SW			J		
B0BNM2	NCLP	NA	ITC	7439-89-6	SW			BJ		
B0BNL3	NCLP	NA	ITC	7439-89-6	SW			J		
B0BNL4	NCLP	NA	ITC	7439-89-6	SW			J		
B0BNL7	NCLP	NA	ITC	7439-96-5	SW			U		
B0BNL8	NCLP	NA	ITC	7439-89-6	SW			U		
B0BNJ5	NCLP	NA	ITC	7439-89-6	SW			U		
B0BNJ6	NCLP	NA	ITC	7439-89-6	SW			U		
B0BNJ7	NCLP	NA	ITC	7439-89-6	SW			U		
B0BNJ8	NCLP	NA	ITC	7439-89-6	SW			U		
B0BNK4	NCLP	NA	ITC	7439-89-6	SW			U		
B0BNK6	NCLP	NA	ITC	7439-89-6	SW			U		
B0BNN7	NCLP	NA	ITC	7439-89-6	SW			U		
B0BNN8	NCLP	NA	ITC	7439-89-6	SW			U		
B0BNJ8	NCLP	NA	ITC	7439-96-5	SW			U		
B0BNK3	NCLP	NA	ITC	7439-96-5	SW			U		
B0BNK4	NCLP	NA	ITC	7439-96-5	SW			U		
B0BNJ5	NCLP	NA	ITC	14797-65-0	SW			UR		
B0BNJ5	NCLP	NA	ITC	7723-14-0	SW			UR		
B0BNK5	NCLP	NA	ITC	14797-65-0	SW			UR		
B0BNK5	NCLP	NA	ITC	7723-14-0	SW			UR		
B0BNJ7	NCLP	NA	ITC	14797-65-0	SW			UR		
B0BNJ7	NCLP	NA	ITC	7723-14-0	SW			UR		
B0BNK3	NCLP	NA	ITC	14797-65-0	SW			UR		
B0BNK3	NCLP	NA	ITC	7723-14-0	SW			UR		
B0BNN7	NCLP	NA	ITC	14797-65-0	SW			UR		
B0BNN7	NCLP	NA	ITC	7723-14-0	SW			UR		
B0BNL7	NCLP	NA	ITC	14797-65-0	SW			UR		
B0BNL7	NCLP	NA	ITC	7723-14-0	SW			UR		

Entered by: 9/15/94

Checked by: BM 9-15-94

HEIS-SN	Form	FormNr	LabCode	ConstID	Media	Value	ConcFlag	Qual	CountErr	Units
B0BNL7	NCLP	NA	ITC	ALKALINITY	SW			J		
B0BNM1	NCLP	NA	ITC	ALKALINITY	SW			J		
B0BNL3	NCLP	NA	ITC	ALKALINITY	SW			J		
B0BNM1	NCLP	NA	ITC	TDS	SW			J		
B0BNL3	NCLP	NA	ITC	TDS	SW			J		
B0BNH9	NCLP	NA	ITC	TDS	SW			J		
B0BNM1	NCLP	NA	ITC	14797-65-0	SW			UR		
B0BNM1	NCLP	NA	ITC	7723-14-0	SW			J		
B0BNL3	NCLP	NA	ITC	14797-65-0	SW			UR		
B0BNL3	NCLP	NA	ITC	7723-14-0	SW			UR		
B0BNJ1	NCLP	NA	ITC	14797-65-0	SW			UR		
B0BNJ1	NCLP	NA	ITC	7723-14-0	SW			UR		
B0BNH9	NCLP	NA	ITC	14797-65-0	SW			UR		
B0BNH9	NCLP	NA	ITC	7723-65-0	SW			UR		
B0BMN1	NCLP	NA	ITC	14133-76-7	SW			J		
B0BNL3	NCLP	NA	ITC	14133-76-7	SW			J		
B0BNL7	NCLP	NA	ITC	14133-76-7	SW			J		
B0BNJ5	NCLP	NA	ITC	14133-76-7	SW			J		
B0BNJ7	NCLP	NA	ITC	14133-76-7	SW			J		
B0BNK3	NCLP	NA	ITC	14133-76-7	SW			J		
B0BNN7	NCLP	NA	ITC	14133-76-7	SW			J		
B0BNJ1	NCLP	NA	ITC	14133-76-7	SW			J		
B0BNH9	NCLP	NA	ITC	14133-76-7	SW			J		
B0BNN8	NCLP	NA	ITC	7782-49-2	SW			UJ		

Entered by: Jm 9/15/94

Checked by: BM 9-15-94