

9613490.2746
START

B010J3-TMA-030

0045397

200

CASE NARRATIVE

LABORATORY: TMA/ARLI

CASE: 08-079

CONTRACT ID: WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE: August 8, 1991

1.0 DESCRIPTION OF CASE:

One soil sample was analyzed for TCL Volatile and Pesticide/PCB's according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision 2/88.

2.0 SAMPLE LIST:

<u>WESTINGHOUSE ID</u>	<u>LAB ID</u>	<u>ANALYSIS REQUESTED</u>	<u>MATRIX</u>
B010J3	A1-08-079-02A	V & P	SOIL

3.0 COMMENTS:

3.1 SHIPPING AND DOCUMENTATION:

All samples were received unbroken and properly documented.

3.2 ANALYSIS:

3.2.1 VOLATILE ANALYSIS PROBLEMS:

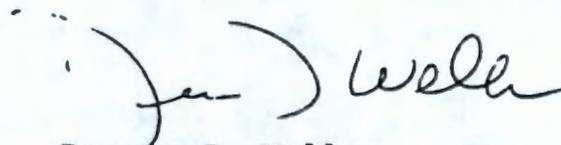
All QC results were within the limits specified in the EPA CLP SOW. There were no notable problems with the analysis.



3.2.2 PESTICIDE/PCB ANALYSIS COMMENTS:

All QC results were within the limits allowed by the EPA CLP SOW. There were no notable problems with the analysis.

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 in this package and on the accompanying data diskette is authorized by the Lab Manager as verified by the following signature.

A handwritten signature in cursive script, appearing to read "Dennis D. Wells".

Dennis D. Wells
Laboratory Manager

Westinghouse
Hanford Company

CHAIN OF CUSTODY

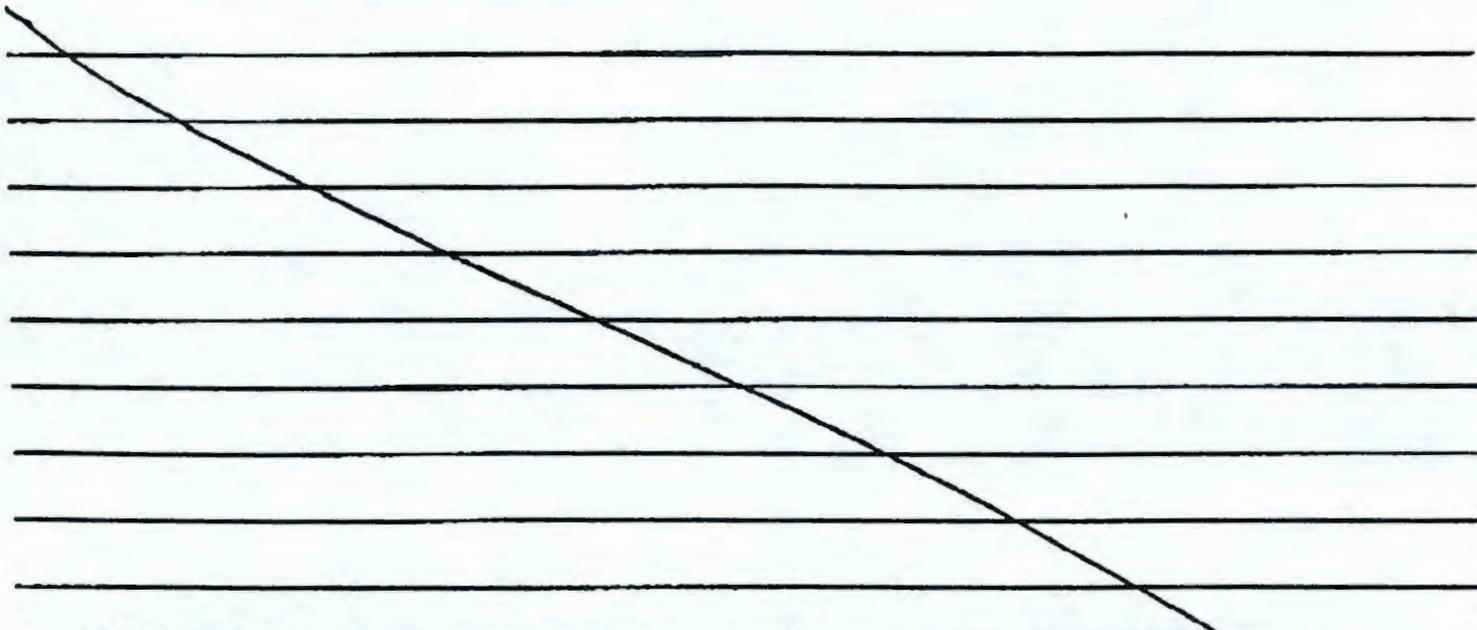
4

Custody Form Initiator J.D. Fancher
 Company Contact Jon D. Fancher 202-616141
 Project Designation/Sampling Locations 300-FF-1/ Well 4B-5B
 Ice Chest No. _____
 Bill of Lading/Airbill No. _____
 Method of Shipment AIR
 Shipped to TMA/NORCAL
 Possible Sample Hazards/Remarks None detected with field instruments.

Telephone (509) 376-2081
 Collection Date 8/6/91
 Field Logbook No. WHC-N-52
 Offsite Property No. W91-0214-4035/141
W91-0387-19
 PROJECT NO. 91-016

Sample Identification

1) Bolo J 500ml Amber Glass: PCB's; CLP Metals; Anions (F, SO4, NO2, NO3); pH; Ammonium
 500ml Clear Glass: Gross Alpha; Gross Beta; Co-60; Sr-90; Cs-137; U-235; U-238
 125ml Amber Glass: CLP VOA



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

Relinquished by: <u>J.D. FANCHER</u> <u>J.D. Fancher 8/7/91 OASS</u>	Received by: <u>Kermit Blum</u>	Date/Time: <u>8-8-91 1050</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:
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Comments:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 9

B010J3

Lab Name: TMA/ARLI Contract: WESTINHOUSE

Lab Code: TMALA Case No.: 08079V SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A108079-01B

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 821R08

Level: (low/med) LOW Date Received: 08/08/91

Moisture: not dec. 2 Date Analyzed: 08/21/91

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
74-87-3	-----Chloromethane	10	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-09-2	-----Methylene Chloride	5	J
67-64-1	-----Acetone	10	U
75-15-0	-----Carbon Disulfide	5	U
75-35-4	-----1,1-Dichloroethene	5	U
75-34-3	-----1,1-Dichloroethane	5	U
540-59-0	-----1,2-Dichloroethene (total)	5	U
67-66-3	-----Chloroform	5	U
107-06-2	-----1,2-Dichloroethane	5	U
78-93-3	-----2-Butanone	10	U
71-55-6	-----1,1,1-Trichloroethane	5	U
56-23-5	-----Carbon Tetrachloride	5	U
108-05-4	-----Vinyl Acetate	10	U
75-27-4	-----Bromodichloromethane	5	U
78-87-5	-----1,2-Dichloropropane	5	U
10061-01-5	-----cis-1,3-Dichloropropene	5	U
79-01-6	-----Trichloroethene	5	U
124-48-1	-----Dibromochloromethane	5	U
79-00-5	-----1,1,2-Trichloroethane	5	U
71-43-2	-----Benzene	5	U
10061-02-6	-----trans-1,3-Dichloropropene	5	U
110-75-8	-----2-Chloroethoxy ethene	10	U
75-25-2	-----Bromoform	5	U
108-10-1	-----4-Methyl-2-Pentanone	10	U
591-78-6	-----2-Hexanone	10	U
127-18-4	-----Tetrachloroethene	5	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5	U
108-88-3	-----Toluene	5	U
108-90-7	-----Chlorobenzene	5	U
100-41-4	-----Ethylbenzene	5	U
100-42-5	-----Styrene	5	U
1330-20-7	-----Xylenes (total)	5	U

9613490.2751

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. ¹⁰

B010J3

b Name: TMA/ARLI

Contract: WESTINHOUSE

b Code: TMALA

Case No.: 08079V

SAS No.: NA

SDG No.: NA

Matrix: (soil/water) SOIL

Lab Sample ID: A108079-01B

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: 821R08

Level: (low/med) LOW

Date Received: 08/08/91

Moisture: not dec. 2

Date Analyzed: 08/21/91

Column (pack/cap) PACK

Dilution Factor: 1.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

9613490.2752

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B010J3

Lab Name: TMA/ARLI Contract: WESTINGHOUS
 Lab Code: TMALA Case No.: 08079P SAS No.: NA SDG No.: NA
 Matrix: (soil/water) SOIL Lab Sample ID: A108079-02A
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____
 Level: (low/med) LOW Date Received: 08/08/91
 Moisture: not dec. 2 dec. Date Extracted: 08/21/91
 Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 08/28/91
 PC Cleanup: (Y/N) N pH: 9.0 Dilution Factor: 1.00

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

CAS NO. COMPOUND Q

319-84-6-----	alpha-BHC	8.2	U
319-85-7-----	beta-BHC	8.2	U
319-86-8-----	delta-BHC	8.2	U
58-89-9-----	gamma-BHC (Lindane)	8.2	U
76-44-8-----	Heptachlor	8.2	U
309-00-2-----	Aldrin	8.2	U
1024-57-3-----	Heptachlor epoxide	8.2	U
959-98-8-----	Endosulfan I	8.2	U
60-57-1-----	Dieldrin	16	U
72-55-9-----	4,4'-DDE	16	U
72-20-8-----	Endrin	16	U
33213-65-9-----	Endosulfan II	16	U
72-54-8-----	4,4'-DDD	16	U
1031-07-8-----	Endosulfan sulfate	16	U
50-29-3-----	4,4'-DDT	16	U
72-43-5-----	Methoxychlor	82	U
53494-70-5-----	Endrin ketone	16	U
5103-71-9-----	alpha-Chlordane	82	U
5103-74-2-----	gamma-Chlordane	82	U
8001-35-2-----	Toxaphene	160	U
12674-11-2-----	Aroclor-1016	82	U
11104-28-2-----	Aroclor-1221	82	U
11141-16-5-----	Aroclor-1232	82	U
53469-21-9-----	Aroclor-1242	82	U
12672-29-6-----	Aroclor-1248	82	U
11097-69-1-----	Aroclor-1254	160	U
11096-82-5-----	Aroclor-1260	160	U

CASE NARRATIVE

LABORATORY: TMA/ARLI

CASE: 08-079

CONTRACT ID: WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE: August 8, 1991

1.0 DESCRIPTION OF CASE:

One soil sample was analyzed for TCL Volatile and Pesticide/PCB's according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision 2/88.

2.0 SAMPLE LIST:

<u>WESTINGHOUSE ID</u>	<u>LAB ID</u>	<u>ANALYSIS REQUESTED</u>	<u>MATRIX</u>
B010J3	A1-08-079-02A	V & P	SOIL

3.0 COMMENTS:

3.1 SHIPPING AND DOCUMENTATION:

All samples were received unbroken and properly documented.

3.2 ANALYSIS:

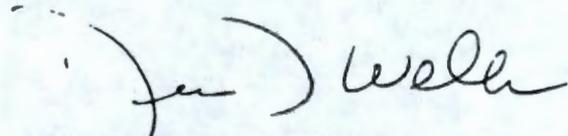
3.2.1 VOLATILE ANALYSIS PROBLEMS:

All QC results were within the limits specified in the EPA CLP SOW. There were no notable problems with the analysis.

3.2.2 PESTICIDE/PCB ANALYSIS COMMENTS:

All QC results were within the limits allowed by the EPA CLP SOW. There were no notable problems with the analysis.

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 in this package and on the accompanying data diskette is authorized by the Lab Manager as verified by the following signature.



Dennis D. Wells
Laboratory Manager

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B010J3

Name: TMA/ARLI Contract: WESTINHOUSE
 Code: TMALA Case No.: 08079V SAS No.: NA SDG No.: NA
 Matrix: (soil/water) SOIL Lab Sample ID: A108079-01B
 Sample wt/vol: 5.0 (g/mL) G Lab File ID: 821R08
 Level: (low/med) LOW Date Received: 08/08/91
 Moisture: not dec. 2 Date Analyzed: 08/21/91
 Column: (pack/cap) PACK Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
74-87-3	-----Chloromethane	10	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-09-2	-----Methylene Chloride	5	J
67-64-1	-----Acetone	10	U
75-15-0	-----Carbon Disulfide	5	U
75-35-4	-----1,1-Dichloroethene	5	U
75-34-3	-----1,1-Dichloroethane	5	U
540-59-0	-----1,2-Dichloroethene (total)	5	U
67-66-3	-----Chloroform	5	U
107-06-2	-----1,2-Dichloroethane	5	U
78-93-3	-----2-Butanone	10	U
71-55-6	-----1,1,1-Trichloroethane	5	U
56-23-5	-----Carbon Tetrachloride	5	U
108-05-4	-----Vinyl Acetate	10	U
75-27-4	-----Bromodichloromethane	5	U
78-87-5	-----1,2-Dichloropropane	5	U
10061-01-5	-----cis-1,3-Dichloropropene	5	U
79-01-6	-----Trichloroethene	5	U
124-48-1	-----Dibromochloromethane	5	U
79-00-5	-----1,1,2-Trichloroethane	5	U
71-43-2	-----Benzene	5	U
10061-02-6	-----trans-1,3-Dichloropropene	5	U
110-75-8	-----2-Chloroethoxy ethene	10	U
75-25-2	-----Bromoform	5	U
108-10-1	-----4-Methyl-2-Pentanone	10	U
591-78-6	-----2-Hexanone	10	U
127-18-4	-----Tetrachloroethene	5	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5	U
108-88-3	-----Toluene	5	U
108-90-7	-----Chlorobenzene	5	U
100-41-4	-----Ethylbenzene	5	U
100-42-5	-----Styrene	5	U
1330-20-7	-----Xylenes (total)	5	U

9613490.2756

1E

EPA SAMPLE NO. ³⁴

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B010J3

Lab Name: TMA/ARLI

Contract: WESTINHOUSE

Lab Code: TMALA

Case No.: 08079V

SAS No.: NA

SDG No.: NA

Matrix: (soil/water) SOIL

Lab Sample ID: A108079-01B

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: 821R08

Level: (low/med) LOW

Date Received: 08/08/91

Moisture: not dec. 2

Date Analyzed: 08/21/91

Column (pack/cap) PACK

Dilution Factor: 1.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

9613490.2757

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 97

B010J3

b Name: TMA/ARLI Contract: WESTINGHOUS

b Code: TMALA Case No.: 08079P SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A108079-02A

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

Level: (low/med) LOW Date Received: 08/08/91

Moisture: not dec. 2 dec. Date Extracted: 08/21/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 08/28/91

GC Cleanup: (Y/N) N pH: 9.0 Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
319-84-6	alpha-BHC	8.2	U
319-85-7	beta-BHC	8.2	U
319-86-8	delta-BHC	8.2	U
58-89-9	gamma-BHC (Lindane)	8.2	U
76-44-8	Heptachlor	8.2	U
309-00-2	Aldrin	8.2	U
1024-57-3	Heptachlor epoxide	8.2	U
959-98-8	Endosulfan I	8.2	U
60-57-1	Dieldrin	16	U
72-55-9	4,4'-DDE	16	U
72-20-8	Endrin	16	U
33213-65-9	Endosulfan II	16	U
72-54-8	4,4'-DDD	16	U
1031-07-8	Endosulfan sulfate	16	U
50-29-3	4,4'-DDT	16	U
72-43-5	Methoxychlor	82	U
53494-70-5	Endrin ketone	16	U
5103-71-9	alpha-Chlordane	82	U
5103-74-2	gamma-Chlordane	82	U
8001-35-2	Toxaphene	160	U
12674-11-2	Aroclor-1016	82	U
11104-28-2	Aroclor-1221	82	U
11141-16-5	Aroclor-1232	82	U
53469-21-9	Aroclor-1242	82	U
12672-29-6	Aroclor-1248	82	U
11097-69-1	Aroclor-1254	160	U
11096-82-5	Aroclor-1260	160	U

CASE SUMMARY**INORGANIC GENERAL CHEMISTRY DATA****CASE NO. 08-079****SCOPE**

One soil sample was analyzed for the parameters listed below:

METHODOLOGY

The following EPA methods were used:

Nitrite	300.0
Nitrate	300.0
Sulfate	300.0
pH	150.1
Ammonia	350.1

DISCUSSION

All QC results were acceptable. There were no unusual problems encountered during the analysis.

9613490.2759

TMA

Thermo Analytical Inc.

Skinner & Sherman Laboratories Inc.

300 Second Avenue

Post Office Box 521

Waltham, MA 02254-0521

(617) 890-7200

Federal Express 2914834650

September 13, 1991

TMA/ARLI
160 Taylor Street
Monrovia, CA 91016
Attention: Dennis Wells

Quality Control Narrative

Scope

One (1) soil sample was submitted to TMA/Skinner & Sherman Laboratories, Inc. on August 08, 1991 from Westinghouse Hanford Company. The sample was analyzed for the USEPA CLP metals. The analysis was performed under Skinner and Sherman work order 9108149.

Methodology

The samples were prepared, analyzed and reported in accordance with the USEPA Contract Laboratory Program Statement of Work 7/88 (CLP SOW788).

Discussion

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

The antimony and selenium matrix spike recovery exceeded control limits.

The ICP serial dilution exceeded the control limits for sodium and zinc.

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

Respectfully submitted,

TMA/SKINNER & SHERMAN LABORATORIES, INC.



David N. Peterson
Assistant Laboratory Manager

9613490.2761

WESTINGHOUSE/HANFORD

1
INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B010J3

Lab Name: SKINNER & SHERMAN LABS.

Contract: 68-09-0088

Lab Code: SKINNER

Case No.: N1-08-062SAS No.:

SDG No.: B010J3

Matrix (soil/water): SOIL

Lab Sample ID: 08149-015

Level (low/med): LOW

Date Received: 08/08/91

% Solids: 98.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4750.00			P
7440-36-0	Antimony	2.10	U	N	P
7440-38-2	Arsenic	1.10	B		F
7440-39-3	Barium	67.30			P
7440-41-7	Beryllium	0.19	U		P
7440-43-9	Cadmium	0.19	U		P
7440-70-2	Calcium	4570.00			P
7440-47-3	Chromium	6.30			P
7440-48-4	Cobalt	11.40			P
7440-50-8	Copper	20.50			P
7439-89-6	Iron	21600.00			P
7439-92-1	Lead	2.70			F
7439-95-4	Magnesium	4190.00			P
7439-96-5	Manganese	270.00			P
7439-97-6	Mercury	0.09	U		CV
7440-02-0	Nickel	9.10			P
7440-09-7	Potassium	608.00	B		P
7782-49-2	Selenium	0.78	U	NW	F
7440-22-4	Silver	0.38	U		P
7440-23-5	Sodium	245.00	B	E	P
7440-28-0	Thallium	0.20	U	W	F
7440-62-2	Vanadium	56.60			P
7440-66-6	Zinc	40.90		E	P
	Cyanide				NR

Color Before: GREY

Clarity Before:

Texture: FINE

Color After: GREY

Clarity After:

Artifacts: YES

Comments:

STONES

000002

9613490.2262

TMA/SKINNER & SHERMAN LABS SAMPLE LOG-IN

CLIENT Hanford-Arli

S&S WORKORDER 9108149

PROTOCOL: CLP

No. OF SAMPLES: 1

TURNAROUND: 33 DAYS (from receipt of parcel)

(Soil) (Water) (Specify)

CUSTODIAN: A. Benney

(Oil) (Sludge) (Drinking)

COOLER TEMP: 4 OC, or NA

SDG/Batch# N/A

CUSTODY SEAL - ~~PRESENT~~/ABSENT

CLIENT CASE# N1-08-062

~~INTACT~~/NOT

PO/CONTRACT# N/A

TAGS: PRESENT/ABSENT/NA/SEE COC

CONTACT Dennis Wells

CHAIN OF CUSTODY: ~~PRESENT~~/ABSENT/NA, #

COMMENTS: _____

AIRBILL # _____ TRANSPORTER: Fedex HAND DEL _____

SAMPLE CONTAINERS - ~~INTACT~~/BROKEN (COMMENTS) _____

CLIENT COMMENTS? (YES) / NO very low level radioactive Material

SAMPLE LABELS AGREE WITH CHAIN OF CUSTODY INFO? (YES) / NO (COMMENT)

CLIENT PAPERWORK AGREES WITH SAMPLES & COC? (YES) / NO (COMMENT)

CLIENT ID	MATRIX	RECEIVED	QC	TEST(S)	HOLD TIME (DATE/ TEST)
1 <u>B010J3</u>	<u>SOIL</u>	<u>08/08/01</u>	<u>D.S</u>	<u>TOTAL metals</u>	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					

COMPLETE
08/14/01
A.B.

COMMENTS: _____

9613490.2763

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator J.D. Fancher

Company Contact Jon D. Fancher

Project Designation/Sampling Locations 300-FF-5/ Well 7C

Ice Chest No. _____

Bill of Lading/Airbill No. _____

Method of Shipment AIR

Shipped to WESTON TMD/NORCAL

Possible Sample Hazards/Remarks None detected with field instruments.

Telephone (509) 376-2081

Collection Date 8/7/97

Field Logbook No. WHC-N-515

Offsite Property No. W91-0214 #
J.D. Fancher

PROJECT NO. 91-038

Sample Identification

1480 500ml Amber Glass: PCB's; CLP Metals; Anions by IC (F, SO4, NO2, NO3); pH; Ammar

BOOYN 500ml Clear Glass: Gross Alpha; Gross Beta; Co-60; Sr-90; Cs-137; U-235; U-238

125ml Amber Glass: CLP VOA

Field Transfer of Custody

Chain of Possession

(Sign and Print Names)

Relinquished by:
J.D. Fancher J.D. Fancher

Received by:
Kermit Blum

Date/Time:
8-9-91 1130

Relinquished by:

Received by:

Date/Time:

Relinquished by:

Received by:

Date/Time:

Relinquished by:

Received by:

Date/Time:

Final Sample Disposition

Disposal Method:

Disposed by:

Date/Time:

Comments:

EXP

QUESTIONS? CALL OUR 240-3333 TOLL FREE.

1211

6844394351

RECIPIENT'S COPY

Date: 8-12-91

From (Your Name) Please Print: Sample Control

Your Phone Number (Very Important):

To (Recipient's Name) Please Print: Sample Control

Recipient's Phone Number (Very Important):

Company: T M A / NORCAL

Department/Floor No.:

Company: TMA/Skinner & Sherman

Department/Floor No.:

Street Address: 2020 WRIGHT AVE

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes):

City: PITCHMONT CA State: CA ZIP Required: 04804

City: Waltham, MA State: MA ZIP Required: 02254

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice)

IF HOLD FOR PICK-UP, Print FEDEX Address Here

Street Address:

City:

State:

ZIP Required:

PAYMENT: Bill Sender Bill Recipient's FedEx Acct No Bill 3rd Party FedEx Acct No Bill Credit Card

Cash

SERVICES (Check only one box)		DELIVERY AND SPECIAL HANDLING				Package	WEIGHT to 1000 lbs	YOUR DECLARED VALUE	OVERSAY	Emp. No.	Date	Received By
Priority Overnight Service (Delivery by next business morning) <input type="checkbox"/> YOUR PACKAGING 51 <input type="checkbox"/> <input type="checkbox"/> FEDEX LETTER 56 <input type="checkbox"/> FEDEX LETTER * <input type="checkbox"/> FEDEX PAK 52 <input type="checkbox"/> FEDEX PAK * <input type="checkbox"/> FEDEX BOX 53 <input type="checkbox"/> FEDEX BOX <input type="checkbox"/> FEDEX TUBE 54 <input type="checkbox"/> FEDEX TUBE Economy Service (formerly Standard Air) (Delivery by second business day) <input type="checkbox"/> ECONOMY SERVICE 30 Heavyweight Service (for Extra Large or any package over 150 lbs) <input type="checkbox"/> HEAVYWEIGHT ** 70 <input type="checkbox"/> DEFERRED HEAVYWEIGHT ** 80 <small>*Declared Value Limit \$100. **Call for delivery schedule.</small>	1 <input type="checkbox"/> HOLD FOR PICK-UP (see box 14) 2 <input checked="" type="checkbox"/> DELIVER WEEKDAY 3 <input type="checkbox"/> DELIVER SATURDAY (also charge) (not available to all locations) 4 <input type="checkbox"/> DANGEROUS GOODS (also charge) (CBR not available for Dangerous Goods) 5 <input type="checkbox"/> CONSTANT SURVEILLANCE ENG. (CSE) (also charge) (Package Signature Not Required) 6 <input type="checkbox"/> DRY ICE 7 <input type="checkbox"/> OTHER SPECIAL SERVICE 8 <input type="checkbox"/> SATURDAY PICK-UP (also charge) 9 <input type="checkbox"/> HOLIDAY DELIVERY (also charge) (also charge)	1										
		DMM SHIPMENT (Heavyweight Services Only)										
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		2 <input type="checkbox"/> On-Call Stop 4 <input type="checkbox"/> BSC										
		5 <input type="checkbox"/> Station										
		FedEx Emp. No.:										
		Date/Time Received: 08/14/91 9:30										
		Release Signature: [Signature]										
		Date/Time:										

REVISION DATE 01/88
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TMA
Thermo Analytical Inc.

TMA/Norcal

2030 Wright Avenue

P.O. Box 4040

Richmond, CA 94804-0040

(415) 235-2633 Fax No. (415) 235-0438



November 25, 1991

SENT BY FEDERAL EXPRESS

Ref: TMA/Norcal N1-08-062-9518

Mr. John Bourgeault
Westinghouse Hanford Company
2355 Stevens Drive
Richland, WA 99352

Dear Mr. Bourgeault:

Enclosed in Section 1, Attachment 1, are the gross alpha, gross beta, ⁹⁰Sr, isotopic uranium, and gamma scan results for the soil samples from 300-FF-1/Well 5B and 7C, we received 8 August 1991. The QA/QC results are shown on Attachment 2.

Please call if you have any questions concerning this data.

Sincerely,

A handwritten signature in cursive script that reads "D.P. Kharkar".

Dinkar P. Kharkar, Ph.D.
Manager, Nuclear Programs

Sections 1 through 10

CASE NARRATIVE

1. Project 300-FF-1/Well 5B and 7C Soil Sample results of analysis are reported. The sample ID's are:

<u>Customer</u> <u>Sample ID</u>	<u>TMA/Norcal</u> <u>Group No.</u>
B010J3	9518-1
B00YN7	9518-2

2. The analysis reported are: Gross alpha, gross beta, ^{90}Sr , isotopic uranium, and gamma scan.

3. Results are reported pCi/gram dry material with 2σ errors.

4. Sample numbers 9518-1 and 2; 9521-1, 2, 3, and 4, 9523-1, 9524-1 and 2, 9526-1 and 2, were processed together. The following QC samples were processed with this batch:

9518-3 (Duplicate of 1) was processed for gross alpha and beta, ^{90}Sr , isotopic uranium, and gamma scan.

9521-8 (Duplicate of 4) was processed for ^{99}Tc .

9523-2 (Duplicate of 1) was processed for gross alpha and beta, ^{90}Sr , isotopic uranium, and gamma scan.

9524-3 (Duplicate of 1) was processed for gross alpha and beta, ^{90}Sr , isotopic uranium, ^{99}Tc , and gamma scan.

9526-2 (Duplicate of 1) was processed for gross alpha and beta, ^{90}Sr , isotopic uranium, and gamma scan.

9527-4 (Duplicate of 3) was processed for gross alpha and beta, isotopic uranium, total uranium, and gamma scan.

9521-5 was processed for QC of gross alpha and beta, isotopic uranium, and ^{99}Tc .

9521-6 and 7 were processed for QC of ^{99}Tc .

9527-5 was processed for QC of gross alpha and beta, isotopic uranium, and total uranium.

QC results are reported with every sample batch. However, the data sheets are included in the respective sample batches.

9613490.2768

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator J.D. Fancher
 Company Contact Jon D. Fancher 8/6/91
 Project Designation/Sampling Locations 300-FF-1/ Well 4B-5B
 Ice Chest No. _____
 Bill of Lading/Airbill No. _____
 Method of Shipment AIR
 Shipped to TMA/NORCAL
 Possible Sample Hazards/Remarks None detected with field instruments.

Telephone (509) 376-2081
 Collection Date 8/6/91
 Field Logbook No. WHC-N-52
 Offsite Property No. W91-0214 #19
W91-0387 #19
 PROJECT NO. 91-016

Sample Identification

1) 500ml Amber Glass: PCB's; CLP Metals; Anions (F, SO4, NO2, NO3); pH; Ammonium
500ml Clear Glass: Gross Alpha; Gross Beta; Co-60; Sr-90; Cs-137; U-235; U-238
125ml Amber Glass: CLP VOA

(This section is crossed out with a large diagonal line)

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

Relinquished by: <u>J.D. Fancher</u> <u>J.D. Fancher 8/7/91 0955</u>	Received by: <u>Kermit Blum</u>	Date/Time: <u>8-8-91 1050</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:
Comments:		

FORM OF PAYMENT				SERVICES			
CASH <input type="checkbox"/> GBL <input type="checkbox"/>		FCCOD <input type="checkbox"/>		UNITED STATES / CANADA		INTERNATIONAL	
PPD <input checked="" type="checkbox"/> COL <input type="checkbox"/> OTH <input type="checkbox"/> COMAT <input type="checkbox"/>		EMERY WORLDWIDE		Same Day <input type="checkbox"/> AM <input checked="" type="checkbox"/> Second Day <input type="checkbox"/>		Express <input type="checkbox"/> Preferred <input type="checkbox"/> Standard <input type="checkbox"/>	
				Saturday Delivery <input type="checkbox"/>		Business Documents <input type="checkbox"/> Customs Clearance <input type="checkbox"/> Delivery <input type="checkbox"/>	
Shipper's Account Number E 850281585		A CF Company		Date 08-08-91		Origin PSC	
				Shipment Number 247425180 2			
From: WESTINGHOUSE SHIPPING DEPT (509) 376-6665				To: ROBERT FOX		Tariff Dest. Gateway	
US DEPARTMENT OF ENERGY C/O WESTINGHOUSE HANFORD				TMA/NORCAL		Check to Shipper \$	
BLDG 1163 2355 STEVENS DRIVE				2030 WRIGHT AVENUE		Hold for Pick Up <input type="checkbox"/>	
RICHLAND WA		Canada <input type="checkbox"/>		RICHMOND CA		Canada <input type="checkbox"/>	
Customer's Reference Numbers W81241 EC403 W91-383#20		99352		Consignee's Account Number E 94804		EMERY WORLDWIDE will collect consignee's check made payable only to the shipper for the value of the goods in the amount shown above.	
Description 1 COOLER DELTA 4 SOIL SAMPLES BOOYN7 W91-383#20		Dimensions Pcs 1 L W H		Total Pieces 1		Total Weight (in Lbs.) 53	
TOOSR <input type="checkbox"/> Haz Mat <input type="checkbox"/> Edit <input type="checkbox"/>		A B C D E F G		1 2 3 4 5 6		FOR INFORMATION OR RATES CALL 1-800 HI EMERY (1-800-443-6379)	
OVERNIGHT DELIVERY		H I J K		7 8 9 0 1 2			
Shipper's Signature X		Envelope <input type="checkbox"/> 9X12		Pack <input checked="" type="checkbox"/> 12X15		2474251802 	
International Shipments		Third Party Account Number E					
Free Domicile <input type="checkbox"/>		Commodity Code		International Customs Value		International Insurance	
Base Charge		Total Transportation Charges		Other Charges/Advance at Origin OC/AO <input type="checkbox"/>		OAK Terms and Conditions on Back	
				\$			

PLEASE TYPE OR USE BALL POINT PEN. BEAR DOWN FIRMLY. KEEP MARKS WITHIN BOXES TO ASSURE ACCURACY.

9613490.2770

FORM NO. 80001-46

PULL FOR SHPT. NO. TAB

CONSIGNEE - PACKAGE COPY - 4

CASE NARRATIVE

LABORATORY: TMA/ARLI

CASE: 08-082

CONTRACT ID: WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE: 08-13-91

1.0 DESCRIPTION OF CASE:

One sample was analyzed for TCL Organics, Volatiles and Pesticide/PCB's according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision 2/88.

2.0 SAMPLE LIST:

<u>WESTINGHOUSE ID</u>	<u>LAB ID</u>	<u>ANALYSIS REQUESTED</u>	<u>MATRIX</u>
B00YN7	A1-08-082-01A	V	SOIL
B00YN7 R	A1-08-082-01A	V	SOIL
B00YN7 MS	A1-08-082-01A	V	SOIL
BOOYN7 MSD	A1-08-082-01A	V	SOIL
VBL821	WB82191	V	SOIL
VBL822	WB82291	V	SOIL
B00YN7	A1-08-082-01B	P	SOIL
B00YN7	A1-08-082-01B 1	P	SOIL
B00YN7	A1-08-082-01B 2	P	SOIL
PBLK4	A1-08-082-BLK	P	SOIL

3.0 COMMENTS:

3.1 SHIPPING AND DOCUMENTATION:

All samples were received unbroken and properly documented.

CASE SUMMARY
INORGANIC GENERAL CHEMISTRY DATA
CASE NO. 08-082

SCOPE

One soil sample was analyzed for the parameters listed below:

METHODOLOGY

The following EPA methods were used:

Nitrite	300.1
Nitrate	300.1
Sulfate	300.1
pH	150.1
Ammonia	350.1

DISCUSSION

There were no notable problems with the analysis.

Jan Well

TABLE OF CONTENTS

I.	Results
II.	QC Summary
III.	Calibrations
IV.	Raw Data

9613490.2773

2A

PAGE 1

TMA/Norcal

CHAIN OF CUSTODY

ORD # NI-08-081

RCVD: 08/09/91 DUE: 08/16/91

08/12/91 14:00:53

KEEP: 11/14/91

DISP: S

DASH SAMPLE IDENTIFICATION STORED TESTS for FRACTIONS with work in DEPT: SU

01B	BDDYN7	S&S	1	SS_1						
01C	BDDYN7	ARL1	1	F_0	NB2_A	NB2	NB3_0	PCB_0	PH_5	SO4_5
01D	BDDYN7	ARL1	1	Q240						

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
<i>Kermit Blum</i>	<i>8-12-91</i>	<i>S&S</i>		<i>Antoine Benney</i>	<i>8/14/91</i>

Post-It™ brand fax transmittal memo 7871 # of pages *6*

To *Georgia Carroll* From *Antoine Benney*

Co. _____ Co. _____

Dept. _____ Phone # _____

Fax # _____ Fax # _____

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator J.D. Fancher
 Company Contact Jon D. Fancher
 Project Designation/Sampling Locations 300-FF-5/ Well 7C
 Ice Chest No. _____
 Bill of Lading/Airbill No. _____
 Method of Shipment AIR
 Shipped to WESTON TMA/NURCAL
 Possible Sample Hazards/Remarks None detected with field instruments.

Telephone (509) 376-2081
 Collection Date 8/7/91
 Field Logbook No. WHC-N-515
 Offsite Property No. W91-0214 #
W91-0214 #
 PROJECT NO. 91-038

Sample Identification

500ml Amber Glass: PCB's; CLP Metals; Anions by IC (F, SO4, NO2, NO3); pH; Ammonium
500ml Clear Glass: Gross Alpha; Gross Beta; Co-60; Sr-90; Cs-137; U-235; U-238
125ml Amber Glass: CLP VOA

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

Relinquished by: <u>J.D. Fancher</u>	Received by: <u>Kermit Blum</u>	Date/Time: <u>8-9-91 1130</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:
Comments:		

WESTINGHOUSE HANFORD CO.

1A

INORGANIC GENERAL CHEMISTRY DATA SHEET

CASE NO.: 08-082

LAB NAME: TMA/ARLI

WHC SAMPLE ID: B00YN7

LAB CODE: TMAARL

LAB SAMPLE ID: A1-08-082-01A

MATRIX (soil,water): SOIL

ANALYTE	RESULT	UNITS
Nitrite	<0.5	mg/Kg
Nitrate	11.1	mg/Kg
Sulfate	35.1	mg/Kg
Ammonia	13.3	mg/Kg
pH	9.55	-

FORM I

CASE NARRATIVE

LABORATORY: TMA/ARLI

CASE: 08-082

CONTRACT ID: WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE: 08-13-91

1.0 DESCRIPTION OF CASE:

One sample was analyzed for TCL Organics, Volatiles and Pesticide/PCB's according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision 2/88.

2.0 SAMPLE LIST:

<u>WESTINGHOUSE ID</u>	<u>LAB ID</u>	<u>ANALYSIS REQUESTED</u>	<u>MATRIX</u>
B00YN7	A1-08-082-01A	V	SOIL
B00YN7 R	A1-08-082-01A	V	SOIL
B00YN7 MS	A1-08-082-01A	V	SOIL
B00YN7 MSD	A1-08-082-01A	V	SOIL
VBL821	WB82191	V	SOIL
VBL822	WB82291	V	SOIL
B00YN7	A1-08-082-01B	P	SOIL
B00YN7	A1-08-082-01B 1	P	SOIL
B00YN7	A1-08-082-01B 2	P	SOIL
PBLK4	A1-08-082-BLK	P	SOIL

3.0 COMMENTS:

3.1 SHIPPING AND DOCUMENTATION:

All samples were received unbroken and properly documented.

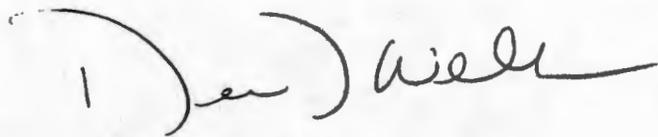
3.2 ANALYSIS:**3.2.1 VOLATILE ANALYSIS COMMENTS:**

All QC results were within the limits specified in the EPA CLP SOW. Sample BOOYN7 was reanalyzed because of a high Toluene surrogate recovery. The results of both the original and the reanalyzed sample have been included in the package.

3.2.3 PESTICIDE/PCB ANALYSIS COMMENTS:

All QC results were within the limits allowed by the EPA CLP SOW. There were no notable problems with the analysis.

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 in this package and on the accompanying data diskette is authorized by the Lab Manager as verified by the following signature.



Dennis D. Wells
Laboratory Manager

9613490.2779

4

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B00YN7

Lab Name: TMA/ARLI Contract: WESTINHOUSE

Lab Code: TMALA Case No.: 08082V SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A108082-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 821R11

Level: (low/med) LOW Date Received: 08/13/91

% Moisture: not dec. 13 Date Analyzed: 08/21/91

Column: (pack/cap) PACK Dilution Factor: 1.0

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

Q

CAS NO.

COMPOUND

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
74-87-3	-----Chloromethane	11	U
74-83-9	-----Bromomethane	11	U
75-01-4	-----Vinyl Chloride	11	U
75-00-3	-----Chloroethane	11	U
75-09-2	-----Methylene Chloride	200	
67-64-1	-----Acetone	13	
75-15-0	-----Carbon Disulfide	6	U
75-35-4	-----1,1-Dichloroethene	6	U
75-34-3	-----1,1-Dichloroethane	6	U
540-59-0	-----1,2-Dichloroethene (total)	6	U
67-66-3	-----Chloroform	6	U
107-06-2	-----1,2-Dichloroethane	6	U
78-93-3	-----2-Butanone	11	U
71-55-6	-----1,1,1-Trichloroethane	6	U
56-23-5	-----Carbon Tetrachloride	6	U
108-05-4	-----Vinyl Acetate	11	U
75-27-4	-----Bromodichloromethane	6	U
78-87-5	-----1,2-Dichloropropane	6	U
10061-01-5	-----cis-1,3-Dichloropropene	6	U
79-01-6	-----Trichloroethene	6	U
124-48-1	-----Dibromochloromethane	6	U
79-00-5	-----1,1,2-Trichloroethane	6	U
71-43-2	-----Benzene	6	U
10061-02-6	-----trans-1,3-Dichloropropene	6	U
110-75-8	-----2-Chloroethoxy ethene	11	U
75-25-2	-----Bromoform	6	U
108-10-1	-----4-Methyl-2-Pentanone	11	U
591-78-6	-----2-Hexanone	11	U
127-18-4	-----Tetrachloroethene	6	U
79-34-5	-----1,1,2,2-Tetrachloroethane	6	U
108-88-3	-----Toluene	6	U
108-90-7	-----Chlorobenzene	6	U
100-41-4	-----Ethylbenzene	6	U
100-42-5	-----Styrene	6	U
1330-20-7	-----Xylenes (total)	6	U

9613490.2780

5

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B00YN7

Lab Name: TMA/ARLI Contract: WESTINHOUSE

Lab Code: TMALA Case No.: 08082V SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A108082-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 821R11

Level: (low/med) LOW Date Received: 08/13/91

% Moisture: not dec. 13 Date Analyzed: 08/21/91

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B00YN7R

Lab Name: TMA/ARLI Contract: WESTINHOUSE
 Lab Code: TMALA Case No.: 08082V SAS No.: NA SDG No.: NA
 Matrix: (soil/water) SOIL Lab Sample ID: A108082-01A
 Sample wt/vol: 5.0 (g/mL) G Lab File ID: 822R06
 Level: (low/med) LOW Date Received: 08/13/91
 Moisture: not dec. 13 Date Analyzed: 08/22/91
 Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	40	B
67-64-1	Acetone	11	U
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	11	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
110-75-8	2-Chloroethoxy ethene	11	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylenes (total)	6	U

9613490.2782

7

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B00YN7R

Lab Name: TMA/ARLI Contract: WESTINHOUSE

Lab Code: TMALA Case No.: 08082V SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A108082-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 822R06

Level: (low/med) LOW Date Received: 08/13/91

% Moisture: not dec. 13 Date Analyzed: 08/22/91

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

9613490.2783

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 8

B00YN7

Name: TMA/ARLI Contract: WESTINGHOUS
 Code: TMALA Case No.: 08082P SAS No.: NA SDG No.: NA
 Matrix: (soil/water) SOIL Lab Sample ID: A108082-01B
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____
 Level: (low/med) LOW Date Received: 08/13/91
 Moisture: not dec. 13 dec. _____ Date Extracted: 08/21/91
 Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 08/23/91
 Cleanup: (Y/N) N pH: 9.6 Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
319-84-6	alpha-BHC	9.2	U
319-85-7	beta-BHC	9.2	U
319-86-8	delta-BHC	9.2	U
58-89-9	gamma-BHC (Lindane)	9.2	U
76-44-8	Heptachlor	9.2	U
309-00-2	Aldrin	9.2	U
1024-57-3	Heptachlor epoxide	9.2	U
959-98-8	Endosulfan I	9.2	U
60-57-1	Dieldrin	18	U
72-55-9	4,4'-DDE	18	U
72-20-8	Endrin	18	U
33213-65-9	Endosulfan II	18	U
72-54-8	4,4'-DDD	18	U
1031-07-8	Endosulfan sulfate	18	U
50-29-3	4,4'-DDT	18	U
72-43-5	Methoxychlor	92	U
53494-70-5	Endrin ketone	18	U
5103-71-9	alpha-Chlordane	92	U
5103-74-2	gamma-Chlordane	92	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	92	U
11104-28-2	Aroclor-1221	92	U
11141-16-5	Aroclor-1232	92	U
53469-21-9	Aroclor-1242	92	U
12672-29-6	Aroclor-1248	92	U
11097-69-1	Aroclor-1254	180	U
11096-82-5	Aroclor-1260	180	U

CASE NARRATIVE

LABORATORY: TMA/ARLI

CASE: 08-082

CONTRACT ID: WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE: 08-13-91

1.0 DESCRIPTION OF CASE:

One sample was analyzed for TCL Organics, Volatiles and Pesticide/PCB's according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision 2/88.

2.0 SAMPLE LIST:

<u>WESTINGHOUSE ID</u>	<u>LAB ID</u>	<u>ANALYSIS REQUESTED</u>	<u>MATRIX</u>
B00YN7	A1-08-082-01A	V	SOIL
B00YN7 R	A1-08-082-01A	V	SOIL
B00YN7 MS	A1-08-082-01A	V	SOIL
B00YN7 MSD	A1-08-082-01A	V	SOIL
VBL821	WB82191	V	SOIL
VBL822	WB82291	V	SOIL
B00YN7	A1-08-082-01B	P	SOIL
B00YN7	A1-08-082-01B 1	P	SOIL
B00YN7	A1-08-082-01B 2	P	SOIL
PBLK4	A1-08-082-BLK	P	SOIL

3.0 COMMENTS:

3.1 SHIPPING AND DOCUMENTATION:

All samples were received unbroken and properly documented.

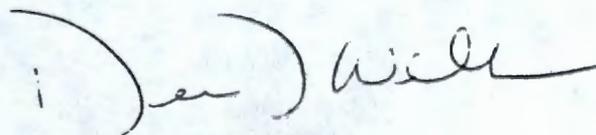
3.2 ANALYSIS:**3.2.1 VOLATILE ANALYSIS COMMENTS:**

All QC results were within the limits specified in the EPA CLP SOW. Sample BOOYN7 was reanalyzed because of a high Toluene surrogate recovery. The results of both the original and the reanalyzed sample have been included in the package.

3.2.3 PESTICIDE/PCB ANALYSIS COMMENTS:

All QC results were within the limits allowed by the EPA CLP SOW. There were no notable problems with the analysis.

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 in this package and on the accompanying data diskette is authorized by the Lab Manager as verified by the following signature.



Dennis D. Wells
Laboratory Manager

Custody Form Initiator J.D. Fancher
 Company Contact Jon D. Fancher
 Project Designation/Sampling Locations 300-FF-5/ Well 7C
 Ice Chest No. _____
 Bill of Lading/Airbill No. _____
 Method of Shipment AIR
 Shipped to WESTON TMD/NORCAL
 Possible Sample Hazards/Remarks None detected with field instruments.

Telephone (509) 376-2081
 Collection Date 8/7/91
 Field Logbook No. WHC-N-515
 Offsite Property No. W91-0214
W91-0214

PROJECT NO. 91-038

Sample Identification

500ml Amber Glass: PCB's; CLP Metals; Anions by IC (F, SO4, NO2, NO3); PH; Ammonium
500ml Clear Glass: Gross Alpha; Gross Beta; Co-60; Sr-90; Cs-137; U-235; U-238
125ml Amber Glass: CLP VOA

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

Relinquished by: <u>J.D. Fancher</u>	Received by: <u>Kermit Bohm</u>	Date/Time: <u>8-9-91 1130</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method: _____ Disposed by: _____ Date/Time: _____

Comments:

9613490.2788

1A

EPA SAMPLE NO. 42

VOLATILE ORGANICS ANALYSIS DATA SHEET

B00YN7

Lab Name: TMA/ARLI Contract: WESTINHOUSE
 Lab Code: TMALA Case No.: 08082V SAS No.: NA SDG No.: NA
 Matrix: (soil/water) SOIL Lab Sample ID: A108082-01A
 Sample wt/vol: 5.0 (g/mL) G Lab File ID: 821R11
 Level: (low/med) LOW Date Received: 08/13/91
 Moisture: not dec. 13 Date Analyzed: 08/21/91
 Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
 (ug/L or ug/Kg) UG/KG Q

74-87-3	-----Chloromethane	11	U
74-83-9	-----Bromomethane	11	U
75-01-4	-----Vinyl Chloride	11	U
75-00-3	-----Chloroethane	11	U
75-09-2	-----Methylene Chloride	200	
67-64-1	-----Acetone	13	
75-15-0	-----Carbon Disulfide	6	U
75-35-4	-----1,1-Dichloroethene	6	U
75-34-3	-----1,1-Dichloroethane	6	U
540-59-0	-----1,2-Dichloroethene (total)	6	U
67-66-3	-----Chloroform	6	U
107-06-2	-----1,2-Dichloroethane	6	U
78-93-3	-----2-Butanone	11	U
71-55-6	-----1,1,1-Trichloroethane	6	U
56-23-5	-----Carbon Tetrachloride	6	U
108-05-4	-----Vinyl Acetate	11	U
75-27-4	-----Bromodichloromethane	6	U
78-87-5	-----1,2-Dichloropropane	6	U
10061-01-5	-----cis-1,3-Dichloropropene	6	U
79-01-6	-----Trichloroethene	6	U
124-48-1	-----Dibromochloromethane	6	U
79-00-5	-----1,1,2-Trichloroethane	6	U
71-43-2	-----Benzene	6	U
10061-02-6	-----trans-1,3-Dichloropropene	6	U
110-75-8	-----2-Chloroethoxy ethene	11	U
75-25-2	-----Bromoform	6	U
108-10-1	-----4-Methyl-2-Pentanone	11	U
591-78-6	-----2-Hexanone	11	U
127-18-4	-----Tetrachloroethene	6	U
79-34-5	-----1,1,2,2-Tetrachloroethane	6	U
108-88-3	-----Toluene	6	U
108-90-7	-----Chlorobenzene	6	U
100-41-4	-----Ethylbenzene	6	U
100-42-5	-----Styrene	6	U
1330-20-7	-----Xylenes (total)	6	U

9613490.2789

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1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B00YN7

b Name: TMA/ARLI

Contract: WESTINHOUSE

b Code: TMALA

Case No.: 08082V

SAS No.: NA

SDG No.: NA

matrix: (soil/water) SOIL

Lab Sample ID: A108082-01A

sample wt/vol: 5.0 (g/mL) G

Lab File ID: 821R11

level: (low/med) LOW

Date Received: 08/13/91

Moisture: not dec. 13

Date Analyzed: 08/21/91

column (pack/cap) PACK

Dilution Factor: 1.0

number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

9613490-2790

1437A

PAGE 1

TMA/Norcal

CHAIN OF CUSTODY

ORD # NI-08-081

RCVD: 03/09/91 DUE: 08/16/91

08/12/91 14:00:53

KEEP: 11/14/91

DISP: S

DASH SAMPLE IDENTIFICATION STORED TESTS FOR FRACTIONS with work in DEPT: SU

01B	BODYN7	S&S	SS_1						
01C	BODYN7	ARL1	F_0	NEB_A	NEB	NEB_G	PCB_G	PH_S	SO4_S
01D	BODYN7	ARL1	0240						

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
<i>Kermit Blum</i>	<i>8-12-91</i>	<i>S&S</i>		<i>Antoine Benney</i>	<i>8/14/91</i>

Post-It™ brand fax transmittal memo 7671 # of pages = *6*

To *Georgia Carroll* From *Antoine Benney*

Co. _____

Dept. _____

Fax # _____

Phone # _____

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator J.D. Fancher
 Company Contact Jon D. Fancher
 Project Designation/Sampling Locations 300-FF-5/ Well 7C
 Ice Chest No. _____
 Bill of Lading/Airbill No. _____
 Method of Shipment AIR
 Shipped to WESTON TMA/NURCAL
 Possible Sample Hazards/Remarks None detected with field instruments.

Telephone (509) 376-2081
 Collection Date 8/7/91
 Field Logbook No. WHC-N-515
 Offsite Property No. W91-0214 #
J.D. Fancher
 PROJECT NO. 91-038

Sample Identification

W. B. Bate
BOOYN7
 500ml Amber Glass: PCB's; CLP Metals; Anions by IC (F, SO4, NO2, NO3); pH; Ammonium
 500ml Clear Glass: Gross Alpha; Gross Beta; Co-60; Sr-90; Cs-137; U-235; U-238
 125ml Amber Glass: CLP VOA

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

Relinquished by: <u>J.D. Fancher</u>	Received by: <u>Kermit Blum</u>	Date/Time: <u>8-9-91 1130</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method: _____ Disposed by: _____ Date/Time: _____

Comments:

CASE NARRATIVE

LABORATORY: TMA/ARLI

CASE: 08-082

CONTRACT ID: WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE: 08-13-91

1.0 DESCRIPTION OF CASE:

One sample was analyzed for TCL Organics, Volatiles and Pesticide/PCB's according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision 2/88.

2.0 SAMPLE LIST:

<u>WESTINGHOUSE ID</u>	<u>LAB ID</u>	<u>ANALYSIS REQUESTED</u>	<u>MATRIX</u>
B00YN7	A1-08-082-01A	V	SOIL
B00YN7 R	A1-08-082-01A	V	SOIL
B00YN7 MS	A1-08-082-01A	V	SOIL
BOOYN7 MSD	A1-08-082-01A	V	SOIL
VBL821	WB82191	V	SOIL
VBL822	WB82291	V	SOIL
B00YN7	A1-08-082-01B	P	SOIL
BOOYN7	A1-08-082-01B 1	P	SOIL
BOOYN7	A1-08-082-01B 2	P	SOIL
PBLK4	A1-08-082-BLK	P	SOIL

3.0 COMMENTS:

3.1 SHIPPING AND DOCUMENTATION:

All samples were received unbroken and properly documented.

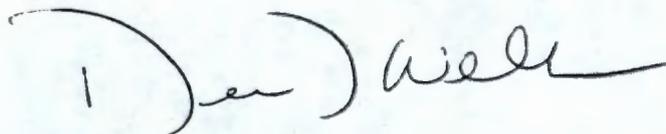
3.2 ANALYSIS:**3.2.1 VOLATILE ANALYSIS COMMENTS:**

All QC results were within the limits specified in the EPA CLP SOW. Sample BOOYN7 was reanalyzed because of a high Toluene surrogate recovery. The results of both the original and the reanalyzed sample have been included in the package.

3.2.3 PESTICIDE/PCB ANALYSIS COMMENTS:

All QC results were within the limits allowed by the EPA CLP SOW. There were no notable problems with the analysis.

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 in this package and on the accompanying data diskette is authorized by the Lab Manager as verified by the following signature.



Dennis D. Wells
Laboratory Manager

9613490.2795

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1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOOYN7

Name: TMA/ARLI Contract: WESTINGHOUS

Code: TMALA Case No.: 08082P SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A108082-01B

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

Level: (low/med) LOW Date Received: 08/13/91

Moisture: not dec. 13 dec. Date Extracted: 08/21/91

Fraction: (SepF/Cont/Sonc) SONC Date Analyzed: 08/23/91

Cleanup: (Y/N) N pH: 9.6 Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
319-84-6	alpha-BHC	9.2	U
319-85-7	beta-BHC	9.2	U
319-86-8	delta-BHC	9.2	U
58-89-9	gamma-BHC (Lindane)	9.2	U
76-44-8	Heptachlor	9.2	U
309-00-2	Aldrin	9.2	U
1024-57-3	Heptachlor epoxide	9.2	U
959-98-8	Endosulfan I	9.2	U
60-57-1	Dieldrin	18	U
72-55-9	4,4'-DDE	18	U
72-20-8	Endrin	18	U
33213-65-9	Endosulfan II	18	U
72-54-8	4,4'-DDD	18	U
1031-07-8	Endosulfan sulfate	18	U
50-29-3	4,4'-DDT	18	U
72-43-5	Methoxychlor	92	U
53494-70-5	Endrin ketone	18	U
5103-71-9	alpha-Chlordane	92	U
5103-74-2	gamma-Chlordane	92	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	92	U
11104-28-2	Aroclor-1221	92	U
11141-16-5	Aroclor-1232	92	U
53469-21-9	Aroclor-1242	92	U
12672-29-6	Aroclor-1248	92	U
11097-69-1	Aroclor-1254	180	U
11096-82-5	Aroclor-1260	180	U

TMA

Thermo Analytical Inc.

9613490.2796

Skinner & Sherman Laboratories Inc.

300 Second Avenue

Post Office Box 521

Waltham, MA 02254-0521

(617) 890-7200 • FAX (617) 890-3883

Federal Express 3313258524
September 24, 1991

TMA/ARLI
160 Taylor Street
Monrovia, CA 91016
Attention: Dennis Wells

Quality Control Narrative

Scope

One (1) soil sample was submitted to TMA/Skinner & Sherman Laboratories, Inc. on August 09, 1991 from Westinghouse Hanford Company. The sample was analyzed for the USEPA CLP metals. The analysis was performed under Skinner and Sherman work order 9108150.

Methodology

The samples were prepared, analyzed and reported in accordance with the USEPA Contract Laboratory Program Statement of Work 7/88 (CLP SOW788).

Discussion

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

The antimony, and mercury matrix spike recovery exceeded control limits.

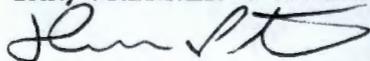
The lead duplicates exceeded the control limits,

The ICP serial dilution exceeded the control limits for zinc.

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

Respectfully submitted,

TMA/SKINNER & SHERMAN LABORATORIES, INC.



David N. Peterson
Assistant Laboratory Manager

1
INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

BODYN7

Lab Name: SKINNER & SHERMAN LABS.

Contract: 68-D9-0088

Lab Code: SKINER

Case No.: N1-08-081SAS No.:

SDG No.: BODYN7

Matrix (soil/water): SOIL

Lab Sample ID: 08150-01S

Level (low/med): LOW

Date Received: 08/09/91

Solids: 85.3

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4370.00			P
7440-36-0	Antimony	3.00	B	N	P
7440-38-2	Arsenic	4.30	U		F
7440-39-3	Barium	137.00			P
7440-41-7	Beryllium	0.30	B		P
7440-43-9	Cadmium	0.21	U		P
7440-70-2	Calcium	3440.00			P
7440-47-3	Chromium	4.90			P
7440-48-4	Cobalt	8.70	B		P
7440-50-8	Copper	15.50			P
7439-89-6	Iron	15800.00			P
7439-92-1	Lead	4.30		*	F
7439-95-4	Magnesium	2640.00			P
7439-96-5	Manganese	191.00			P
7439-97-6	Mercury	0.11	U	N	CV
7440-02-0	Nickel	5.80	B		P
7440-09-7	Potassium	826.00	B		P
7782-49-2	Selenium	0.87	U		F
7440-22-4	Silver	0.43	U		P
7440-23-5	Sodium	201.00	B		P
7440-28-0	Thallium	0.22	U		F
7440-62-2	Vanadium	50.50			P
7440-66-6	Zinc	32.70		E	P
	Cyanide				NR

Color Before: GREY

Clarity Before:

Texture: COARSE

Color After: GREY

Clarity After:

Artifacts: YES

Comments:

ROCKS

9613490-2799

TMA/SKINNER & SHERMAN LABS

SAMPLE LOG-IN

CLIENT HANFORD-ARLI

S&S WORKORDER 9108150

PROTOCOL: CLP

No. OF SAMPLES: _____

TURNAROUND: 33 DAY (From date of receipt at lab)

(Soil) (Water) (Specify)

CUSTODIAN: A. Benney

(Oil) (Sludge) (Drinking)

COOLER TEMP: 4 °C, or NA

SDG/Batch# _____

CUSTODY SEAL - PRESENT/ABSENT

CLIENT CASE# N1-08-081

INTACT/NOT

PO/CONTRACT# N/A

TAGS: PRESENT/ABSENT/NA/SEE COC

CONTACT Dennis Wells

CHAIN OF CUSTODY: PRESENT/ABSENT/NA, # _____

COMMENTS: _____

AIRBILL # _____ TRANSPORTER: Fedex HAND DEL N/A

SAMPLE CONTAINERS - INTACT/BROKEN (COMMENTS) _____

CLIENT COMMENTS? YES / NO Very low levels of radioactive materials

SAMPLE LABELS AGREE WITH CHAIN OF CUSTODY INFO? YES/NO (COMMENT)

CLIENT PAPERWORK AGREES WITH SAMPLES & COC? YES/NO (COMMENT)

CLIENT ID	MATRIX	RECEIVED	QC	TEST(S)	HOLD TIME UP DATE/ TEST
-----------	--------	----------	----	---------	----------------------------

1	BODYN7	SOIL	08/09/91	D.S	Total metals	
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						

COMMENTS:

Complete 08/14/91
D.B.

900144039

SUBCONTRACT: YES NO, TO: _____ DATE: _____

EXPIRE

QUESTIONS? CALL 800-238-5355 TOLL FREE.

4810-10-00-000000000000

1711

6844394351

RECIPIENT'S COPY

Date **8-12-91**

From (Your Name) Please Print: **Sample Control**
 Your Phone Number (Very Important):
 Company: **T M A / NORCAL**
 Street Address: **2020 WRIGHT AVE**
 City: **RICHMOND** State: **CA** ZIP Required: **94804**

To (Recipient's Name) Please Print: **Sample Control**
 Recipient's Phone Number (Very Important):
 Company: **TMA/Skinner & Sherman**
 Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes):
300 Second Avenue
 City: **Waltham,** State: **MA** ZIP Required: **02254**

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice.)

IF HOLD FOR PICK-UP, Print FEDEX Address Here
 Street Address:
 City: State: ZIP Required:

PAYMENT Bill Sender Bill Recipient's FedEx Acct No Bill 3rd Party FedEx Acct No Bill Credit Card

Cash

SERVICES (Check only one box)		DELIVERY AND SPECIAL HANDLING				INCREAS	WEIGHT & PACKING	YOUR DECLARED VALUE	OVERSIZ	Emp. No.	Date
Priority Overnight Service (Delivery by next business morning!)	Standard Overnight Service (Delivery by next business afternoon!)	1 <input type="checkbox"/> HOLD FOR PICK-UP (if B in Box 14)									
11 <input checked="" type="checkbox"/> YOUR PACKAGING 51 <input type="checkbox"/>		2 <input checked="" type="checkbox"/> DELIVER WEEKDAY									
16 <input type="checkbox"/> FEDEX LETTER* 56 <input type="checkbox"/> FEDEX LETTER*		3 DELIVER SATURDAY (Extra charge) (Not available to all locations)									
12 <input type="checkbox"/> FEDEX PAK 5 52 <input type="checkbox"/> FEDEX PAK*		4 <input type="checkbox"/> DANGEROUS GOODS (Extra charge) (CSS not available for Dangerous Goods shipments)									
13 <input type="checkbox"/> FEDEX BOX 53 <input type="checkbox"/> FEDEX BOX		5 <input type="checkbox"/> CONSTANT SURVEILLANCE SVC. (CSS) (Extra charge) (Pleasee Signature Not Applicable)	Total	Total	Total						
14 <input type="checkbox"/> FEDEX TUBE 54 <input type="checkbox"/> FEDEX TUBE		6 <input type="checkbox"/> DRY ICE lbs									
Economy Service (Formerly Standard Air) (Delivery by second business day!)	Heavyweight Service (for Extra Large or any package over 150 lbs.)	7 <input type="checkbox"/> OTHER SPECIAL SERVICE									
30 <input type="checkbox"/> ECONOMY SERVICE	70 <input type="checkbox"/> HEAVYWEIGHT**	8 <input type="checkbox"/>									
	80 <input type="checkbox"/> DEFERRED HEAVYWEIGHT**	9 <input type="checkbox"/> SATURDAY PICK-UP (Extra charge)									
↑ Delivery commitment may be later in some areas.	*Declared Value Limit \$100. **Call for delivery schedule.	10 <input type="checkbox"/>									
		11 <input type="checkbox"/> DESCRIPTION									
		12 <input type="checkbox"/> HOLIDAY DELIVERY (if offered) (Extra charge)									

Received At:
 Regular Stop BSC On-Call Stop Drop Box Station

Received By: **X [Signature]**
 Date/Time Received: **08/14/91 9:30**
 FedEx Employee Number: **014**

Release Signature: _____ Date/Time: _____

REVISION DATE 11/80
 FORMAT #014
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INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 300-FF-1 RIFS	REVIEWER: SS	DATE: 5-29-92
LABORATORY: TMA/SKinner	CASE: NI-08-062	SDG:
SAMPLES/MATRIX: B010J3 (30:1)		

1. COMPLETENESS AND CONTRACT COMPLIANCE

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		✓	—	—
Cover Page		✓	—	—
Traffic Reports		✓	—	—
Sample Data		✓	—	—
Inorganic Analysis Data Sheets		✓	—	—
Standards Data		✓	—	—
Initial and Continuing Calibration Verification		✓	—	—
CRDL Standard for AA and ICP		✓	—	—
QC Summary		✓	—	—
Blanks		✓	—	—
ICP Interference Check Summary		✓	—	—
Spike Sample Recovery		✓	—	—
Post-Digestion Spike Sample Recovery		✓	—	—
Duplicate		✓	—	—
Laboratory Control Sample		✓	—	—
Standard Addition Results		✓	—	—
ICP Serial Dilutions		✓	—	—
Instrument Detection Limits		✓	—	—
ICP Interelement Correction Factors		✓	—	—
ICP Linear Ranges		✓	—	—
Preparation Log		✓	—	—
Analysis Run Log		✓	—	—
Raw Data		✓	—	—
ICP Raw Data		✓	—	—
Furnace AA Raw Data		✓	—	—
Mercury Raw Data		✓	—	—
Cyanide Raw Data		✓	—	—
Additional Data		✓	—	—
Internal laboratory chain-of-custody		✓	—	—
Laboratory Sample Preparation Records		✓	—	—

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Percent Solids Analysis Records		—	✓	—
Reduction Formulae		—	✓	—
Instrument Run Logs		—	✓	—
Chemist Notebook Pages		—	✓	—

2. HOLDING TIMES

Have all samples been analyzed within holding times? Yes No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? Yes No N/A

Are the correlation coefficients ≥ 0.995 ? Yes No N/A

Was a midrange cyanide standard distilled? Yes No N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results $> IDL$ as estimated (J) and results $< IDL$ as estimated (UJ), if the correlation coefficient is < 0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? Yes No N/A

Are the AB solution %R values within control? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS

Are target analytes present in the laboratory blanks? Yes No N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations <10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

Are target analytes present in the field blanks? Yes No N/A

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

8. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the control limits? Yes No N/A

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify the sample data according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or >120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS result is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

10. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit sample analyses in the data validation narrative.

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? Yes No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? Yes No N/A

Is there evidence of negative interference? Yes No N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

14. FIELD SPLIT SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? Yes No N/A

Are applicable duplicate injection RSD values within control? Yes No N/A

If no, were samples rerun once as required? Yes No N/A

Does the RSD for the rerun fall within the control limits? Yes No N/A

Were analytical spike recoveries within the control limits? Yes No N/A

If no, were MSA analyses performed when required?	Yes	No	N/A
Are MSA correlation coefficients ≥ 0.995 ?	Yes	No	N/A
If no, was a second MSA analysis performed?	Yes	No	N/A

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for nondetects). If the analytical spike recovery is $< 40\%$ qualify detects as estimated (J). If the analytical spike recovery is $\geq 10\%$ but $< 40\%$, qualify all nondetects as estimated (UJ) and if the analytical spike recovery is $< 10\%$, reject all nondetects (R). If the sample absorbance is $< 50\%$ of the analytical spike absorbance and the analytical spike recovery is $< 85\%$ or $> 115\%$, qualify all results as estimated (J for detects and UJ for nondetects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correlation coefficient was < 0.995 , qualify the associated detected results as estimated (J).

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?	Yes	No	N/A
Are results within the calibrated range of the instruments and within the linear range of the ICP?	Yes	No	N/A
Are all detection limits below the CRQL?	Yes	No	N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

18. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	Yes	No	N/A
Were project specific data quality objectives met for this analysis?	Yes	No	N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used?	Yes	No	N/A
Are the correlation coefficients ≥ 0.995 ?	Yes	No	N/A
Was a balance check conducted prior to the TDS analysis?	Yes	No	N/A
Was the titrant normality checked?	Yes	No	N/A

ACTION: Qualify all data as unusable (R) if reported from an analysis in which the above criteria were not met.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Have ICV and CCV been analyzed at the proper frequency?	Yes	No	N/A
Are ICV and CCV percent recoveries within control?	Yes	No	N/A
Are there calculation errors?	Yes	No	N/A

ACTION: Qualify all affected data in accordance with the validation requirements.

5. LABORATORY BLANKS

Are target analytes present in the laboratory blanks?	Yes	No	N/A
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ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U) and list the affected samples and analytes below.

6. FIELD BLANKS

Are target analytes present in the field blanks?	Yes	No	N/A
--	-----	----	-----

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

7. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the acceptance limits?	Yes	No	N/A
--	-----	----	-----

ACTION: If the sample concentration exceeds the spike concentration by a factor of 4 or more, and spike recoveries are outside the acceptance limits, no qualification is necessary. If spike recovery is outside the control limits and the sample results are > CRQL, qualify the data as estimated (J). If the spike recovery is <30% and the sample results are less than the IDL qualify the data as unusable (R).

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COMMENTS (attach additional sheets as necessary): _____

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VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 300-FF-1 RIFS	REVIEWER: SS	DATE: 5-29-92
LABORATORY: TMA/ARLI	CASE: 08-079	SDG:
SAMPLES/MATRIX: B010J3		

I. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		✓	—	—
Data Summary		✓	—	—
Chain-of-Custody		✓	—	—
QC Summary				
Surrogate report		✓	—	—
MS/MSD report		✓	—	—
Blank summary report		✓	—	—
GC/MS tuning report		✓	—	—
Internal standard summary report		✓	—	—
Sample Data				
Sample reports		✓	—	—
TIC reports for each sample		✓	—	—
RIC reports for all samples		✓	—	—
Raw and corrected spectra for all detected results		✓	—	—
Raw and corrected library search data for all reported TIC		✓	—	—
Quantitation and calculation data for all TIC		—	—	✓
Standards Data				
Initial calibration report		✓	—	—
RIC and quantitation reports for initial calibration		✓	—	—
Continuing calibration reports		✓	—	—
RIC and quantitation reports for cont. calibrations		✓	—	—
Internal standard summary report		✓	—	—
Raw QC Data				
Tuning report, spectra and mass lists		✓	—	—
Blank analysis reports		✓	—	—
TIC reports for all blanks		✓	—	—
RIC and quantitation reports for blanks		✓	—	—
Raw and corrected spectra for all detected results in blanks		—	—	—
Raw and corrected library search data for all reported TIC		—	—	✓

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Quantitation and calculation data for all TIC		—	—	✓
MS/MSD report forms		✓	—	—
RIC and quantitation reports for MS/MSD		✓	—	—
Additional Data				
Moisture/% solids data sheets		—	✓	—
Reduction formulae		—	✓	—
Instrument time logs		—	✓	—
Chemist notebook pages		—	✓	—
Sample preparation sheets		—	✓	—

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

Were all samples analyzed within holding time? Yes No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period? Yes No N/A

Do all tunes on all instruments meet the tuning criteria? Yes No N/A

Do all tunes on all instruments meet the expanded criteria? Yes No N/A

Has the laboratory made any calculation or transcription errors? Yes No N/A

Have the proper significant figures been reported? Yes No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? Yes No N/A

Are all RSD values $\leq 30\%$ (2/88 SOW)? Yes No N/A

Are all RRF values ≥ 0.05 (2/88 SOW)? Yes No N/A

Are all applicable RSD values $\leq 20.5\%$ (3/90 SOW)?	Yes	No	N/A
Are all applicable RSD values $\leq 40\%$ (3/90 SOW)?	Yes	No	N/A
Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥ 0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed?	Yes	No	N/A
Are all RRF values ≥ 0.05 (2/88 SOW)?	Yes	No	N/A
Are all %D values $\leq 25\%$ (2/88 or 3/90 SOW)?	Yes	No	N/A
Are all %D values $\leq 40\%$ (3/90 SOW)?	Yes	No	N/A
Are all RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥ 0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed?	Yes	No	N/A
Are TCL compounds present in the laboratory blanks?	Yes	No	N/A

ACTION: Qualify all sample results ≤ 10 time the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is $< CRQL$. Qualify all remaining sample results ≤ 5 times the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are TCL compounds present in the field blanks?	Yes	No	N/A
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ACTION: Qualify all detected sample results ≤ 5 times the amount in any valid field blank as nondetects (U) and note the field blank results in the validation narrative.

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification?	Yes	No	N/A
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Are any surrogate recoveries $< 10\%$?	Yes	No	N/A
---	-----	----	-----

Are any method blank surrogate recoveries out of specification?	Yes	No	N/A
---	-----	----	-----

ACTION: Qualify all associated sample results as estimated (J for detects or UJ for nondetects) for surrogates out of specification but $> 10\%$. Qualify all associated positive sample results as estimated (J) and all nondetect results as unusable (R) for all surrogates below 10% . If method blank surrogates are out of specification and the associated sample surrogates are acceptable no qualification is necessary, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group?	Yes	No	N/A
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Are MS/MSD recoveries within specification?	Yes	No	N/A
---	-----	----	-----

Are there any calculation errors?	Yes	No	N/A
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ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit sample in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are $> 5 \times \text{CRQL}$ qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

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

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

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

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? Yes No N/A

Are retention times for any internal standard outside the ± 30 second windows established by the most recent calibration check? Yes No N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects or UJ for nondetects). If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ± 0.06 relative retention time units of the associated calibration standard? Yes No N/A

Are all ions at a relative intensity of $\geq 10\%$ in the standard spectra present in the sample spectra? Yes No N/A

Do the relative intensities between the standard and sample spectra agree within 20%? Yes No N/A

Have all ions $> 10\%$ in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination? Yes No N/A

Are molecular ions present in the reference spectrum present in the sample spectrum? Yes No N/A

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R). Note the results in the validation narrative.

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standard(s) for quantitation? Yes No N/A

Are results and quantitation limits calculated properly? Yes No N/A

Has the laboratory reported the sample quantitation limits within 5xCRQL values? Yes No N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW? Yes No N/A

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

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?

Yes No N/A

Were project specific data quality objectives met for this analysis?

Yes No N/A

ACTION: Summarize all the data qualifications recommended in the foregoing sections, and complete the data validation narrative according to the requirements of Section 10.0 of the data validation requirements.

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: 300-FF-1 RIFS	REVIEWER: SS	DATE: 5-29-92
LABORATORY: TMA/ SK ARLI	CASE: 08-079	SDG:
SAMPLES/MATRIX: B010J3 (soil)		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for resubmittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		KK	—	—
Data Summary		KK	—	—
Chain-of-Custody		KK	—	—
QC Summary				
Surrogate report		KK	—	—
MS/MSD report		KK	—	—
Blank summary report		KK	—	—
Sample Data				
Sample reports		KK	—	—
Chromatograms		KK	—	—
GC integration reports		KK	—	—
Worksheets		—	KK	—
UV traces from GPC		—	KK	—
GC/MS confirmation spectra		—	KK	—
Standards Data				
Pesticides Evaluation Standards Summary		KK	—	—
Pesticides/PCB Standards Summary		KK	—	—
Pesticides/PCB identification		—	KK	—
Pesticides standard chromatograms		KK	—	—
Raw QC Data				
Blank analysis report forms and chromatograms		KK	—	—
MS/MSD report forms and chromatograms		—	—	—

Data Package Item	Present?:	Yes	No	N/A
Additional Data				
Moisture/% solids data sheets		—	✓	—
Reduction formulae		—	✓	—
Instrument time logs		—	✓	—
Chemist notebook pages		—	✓	—
Sample preparation sheets		—	✓	—

2. HOLDING TIMES

Were all samples extracted within holding time? Yes No N/A

Were all samples analyzed within holding time? Yes No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

3.1 INSTRUMENT PERFORMANCE (2/88 SOW)

Are DDT retention times greater than 12 minutes? Yes No N/A

ACTION: If DDT retention time is ≤ 12 minutes and resolution is $< 25\%$ qualify associated data as unusable (R).

Is resolution between DDT peaks acceptable? Yes No N/A

ACTION: If resolution between DDT peaks is unacceptable qualify associated data as unusable (R).

Do all pesticide standards elute within the established retention time windows? Yes No N/A

ACTION: If the standards do not meet the retention time criteria and peaks are not present near or within the retention time windows no sample qualification is necessary. If peaks are near or within the retention time windows and the standards and matrix spikes do not fall within the expanded retention time windows calculated according to the validation requirements, qualify all associated sample results from the last in-control point as unusable (R).

Are DDT breakdowns $\leq 20\%$? Yes No N/A

ACTION: If the DDT percent breakdown exceeds 20%, qualify all detected results for DDT as estimated (J) and all nondetects as unusable (R) if DDD and DDE are detected. In addition qualify all results for DDD or DDE as presumptive and estimated (NJ).

Are endrin breakdowns $\leq 20\%$? Yes No N/A

ACTION: If the endrin breakdown exceeds 20%, qualify all detected results for endrin as estimated (J) and all nondetects as unusable (R) if endrin aldehyde or endrin ketone are detected. In addition, qualify all results for endrin ketone as presumptive and estimated (NJ).

Are DBC retention time differences within specification? Yes No N/A

ACTION: If DBC %D values are outside the limits and the shift is occurring repeatedly in samples and standards, qualify affected sample results as unusable (R).

3.2 CALIBRATIONS (2/88 SOW)

Are RSD values for aldrin, endrin, DDT and DBC $\leq 10\%$? Yes No N/A

Have all standards been analyzed within 72 h of any sample? Yes No N/A

Has a 3-point calibration been conducted for DDT or toxaphene? Yes No N/A

Have all standards been analyzed at the start of each 72-h sequence? Yes No N/A

Have evaluation standards A, B, and C been analyzed within 72 h of any sample? Yes No N/A

Has the confirmation standard mix been analyzed after every five samples? Yes No N/A

Has evaluation standard B analyzed every 10 samples? Yes No N/A

Are %D values for initial and subsequent standards $\leq 15\%$ for quantitation standards and $\leq 20\%$ for confirmation standards? Yes No N/A

ACTION: If the RSD criteria were exceeded or three point calibrations not conducted qualify associated detects as estimated (J). If all standards were not analyzed at the beginning of each 72-h sequence qualify associated data as unusable (R). If the confirmation standards were not analyzed properly qualify associated detects as estimated (J). If the continuing calibration criteria were not met qualify associated quantitation data as estimated (J).

3.3 INSTRUMENT PERFORMANCE AND INITIAL CALIBRATION (3/90 SOW)

Is peak resolution acceptable? Yes No N/A

ACTION: If the resolution criteria are not met, reject positive sample results generated after initial calibration (R).

Are DDT and endrin breakdowns $\leq 20.0\%$ Yes No N/A

ACTION: If the breakdown criteria are not met qualify sample results as described in Section 5.3.1 of the validation requirements.

Are single component target compounds in the PEMs, INDA, INDB and the calibration standards within the retention time windows? Yes No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples within two times the retention time windows (± 0.04 , ± 0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the retention time window a review is made of the raw data to determine expanded retention time windows (see Section 5.3.1 of the validation requirements). If all standards and matrix spikes fall within the expanded windows then no qualification of sample results is necessary. If all standards and matrix spikes do not fall within the expanded windows then all affected sample results are qualified as unusable (R).

Are the RPDs acceptable for the PEMs? Yes No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are the RSDs for the calibration factors $< 10.0\%$ ($< 15.0\%$ for the BHC series, DDT, endrin, and methoxychlor)? Yes No N/A

ACTION: If the RSD criteria are not met qualify associated positive sample results as estimated (J).

3.4 CALIBRATION VERIFICATION (3/90 SOW)

Have the analytical sequence requirements been met for the analysis of instrument blanks, PEMs, INDA and INDB mixes? Yes No N/A

ACTION: If the analytical sequence requirements are not followed and any of the resolution or retention time criteria listed below are exceeded, reject associated positive results (R).

Is peak resolution acceptable for PEMs, INDA and INDB mixes? Yes No N/A

ACTION: If the resolution criteria are not met reject positive sample results generated after a noncompliant standard analysis (R).

Are single component target compounds in the PEMs, INDA and INDB mixes within the retention time windows? Yes No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples analyzed after the noncompliant standard within two times the retention time windows (± 0.04 , ± 0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the expanded windows rejected associated positive and nondetect results (R).

Are RPDs between the calculated and true amounts in the PEMs, INDA and INDB mixes $\leq 25.0\%$? Yes No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are DDT and endrin breakdowns in the PEMs $\leq 20.0\%$ ($\leq 30.0\%$ total combined)? Yes No N/A

ACTION: If the breakdown criteria are not met qualify associated positive sample results in accordance with the criteria specified in Section 5.3.1.

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory analyzed the method blanks at the required frequency? Yes No N/A

Has the laboratory analyzed a sulfur clean-up blank if required? Yes No N/A

Has the laboratory analyzed instrument blanks at the required frequency? Yes No N/A

Are target compounds present in the blanks? Yes No N/A

ACTION: Qualify all associated positive results as nondetects (U) that are < 5 times the highest concentration in any acceptable blank.

4.2 FIELD BLANKS

Are target compounds present in the field blanks? Yes No N/A

ACTION: If target compounds are present in the field blanks qualify all positive sample results < 5 times the highest valid field blank concentrations as nondetects (U) and note the results in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY

Are any surrogate recoveries out of specification? Yes No N/A

Do any samples show nondetects for surrogates? Yes No N/A

Are any method blank surrogates out of specification? Yes No N/A

ACTION: Qualify all associated sample results as estimated (J for detects and UI for nondetects) for surrogates out of specification. If the surrogate was not detected (0% recovery) in the sample qualify associated nondetects as unusable (R). If method blank surrogates are out of specification and sample surrogates are acceptable, no qualification is required however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has the laboratory analyzed a MS/MSD per matrix for the the sample group? Yes No N/A

Are MS/MSD recoveries within specification? Yes No N/A

Are there any calculation or transcription errors? Yes No N/A

ACTION: If MS/MSD analyses have not been conducted contact the laboratory for clarification. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by the low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATE SAMPLES

Are the RPD values within specification? Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPD values are out of specification and sample results are $> 5 \times \text{CRQL}$ qualify positive results as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

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

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

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

ACTION: Note the results of the field split samples in the validation narrative.

7. COMPOUND IDENTIFICATION AND QUANTITATION

7.1 COMPOUND IDENTIFICATION

Do positive results meet the retention time window criteria? Yes No N/A

Were positive results analyzed on disimilar columns? Yes No N/A

If dieldrin and DDE were reported was a 3% OV-1 column used for confirmation (2/88 SOW data only)? Yes No N/A

Do retention times and relative peak height ratios match the expected patterns for multipeak compounds (PCB, toxaphene or chlordane)? Yes No N/A

Has GC/MS confirmation been conducted on sample extract concentrations $> 10 \text{ ppm}$? Yes No N/A

ACTION: If positive results do not meet the retention time criteria qualify all detected results as nondetects as follows: If the misidentified peak is outside the retention time windows and no interferences are noted report the CRQL and if the misidentified peak interferes with a target peak then the report value is qualified as estimated and nondetected (UJ). If positive results were not confirmed on disimilar columns, reject affected results (R). If a 3% OV-1 was used to confirm dieldrin and DDE, reject the affected data (R). If PCB, chlordane or toxaphene identification is questionable qualify the results as presumptive and estimated (NJ). If GC/MS confirmation was not conducted contact the laboratory for explanation and note in the validation narrative.

7.2 REPORTED RESULTS AND QUANTITATION LIMITS

Are results and quantitation limits calculated properly? Yes No N/A

Has the laboratory reported the sample quantitation limits within 5xCRQL values? Yes No N/A

ACTION: If results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? Yes No N/A

Were project specific data quality objectives met for this analysis? Yes No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

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