START 9713517.0351

B072P8-TMA-257

000001

0046224

WESTINGHOUSE HANFORD COMPANY

Results of Analyses For:

GENERAL CHEMISTRY
CASE NO. 08-010
(TMA/ARLI Work Order # A2-08-010)

ORGANICS
CASE NO. 08-010
(TMA/ARLI Work Order # A2-08-010

General Chemistry and Organics results are presented for the following WHC SOIL samples(s):

B072P8

Norcal Work Order # N2-08-017

Thermo Analytical Inc.
160 Taylor Street
Monrovia, CA 91016
(818) 357-3247

JAN 1997
RECEIVED
EDMC

9713517.0352

000002

Westinghouse Hanford Company	CHAIN OF CUSTODY	ARL1

Custody Form Initiator: W.W. SETZER

Company Contact: CM CHANCE — Telephone: 376-7619

Project Designation/Sampling Locations: 100-KR-4 — Collection Date: 7-30-92

Ice Chest No.: WHC-20 — Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: 2509869582 — Offsite Property No.: W92-0-0577 #3

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA/NORCAL

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

Sample Identification

1) B072P8
~~1,120ml aG:CLP;ICP/AA Metals,Hg~~
~~1,120ml aG:CLP;Cn~~
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/~~353.2~~;Anions(F,SO4,~~NO3~~)
* ~~1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am~~-241

2)
~~1,120ml aG:CLP;ICP/AA Metals,Hg~~
~~1,120ml aG:CLP;Cn~~
~~1,120ml aG:CLP;VOA~~
~~1,250ml aG:CLP;Semi-VOA,PCB/PEST~~
~~1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)~~
~~1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241~~

3)
~~1,120ml aG:CLP;ICP/AA Metals,Hg~~
~~1,120ml aG:CLP;Cn~~ WWS 7-30-92
~~1,120ml aG:CLP;VOA~~
~~1,250ml aG:CLP;Semi-VOA,PCB/PEST~~
~~1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)~~
~~1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241~~

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

Relinquished by:	Received by:	Date/Time:
W.W. Setzer	KB Halse (KB Halse)	7-30-92 1137
KB Halse	W.W. Setzer	7-30-92 1232
W.W. Setzer	Kermit Blum	8-4-92 1100
Kermit Blum 8-4-92	C. Harris	8/5/92 9am

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: * B072P8 Radiochemistry aliquot received cracked @ TMA/NORCAL - KB

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

9215517.0552

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST	000003

Collector W.W. SETZER Date 8-3-92

Company Contact CM CHANCE Telephone (509)376-7619

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B072P8	S	7-30-92	1121	~~1-120ml G CLP;ICP/AA Metals,Hg~~ ~~1-120ml G CLP;CN~~ 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/~~353.2~~;Anions(F,SO4,~~NO3~~) ~~1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241~~
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241 WWS 8-3-92
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241

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

Field Information FROM 100-KR-4 Drilling

Special Handling and/or Storage Maintain at 4C

Possible Sample Hazards NA

A-6000-406 (06/91) WEF060

SAMPLE LOG-IN SHEET

LAB NAME : TMA/ARLI

PAGE : 1 OF 1

RECEIVED BY (PRINT NAME): CAROLE HARRIS

LOG-IN-DATE : 8/5/98

RECEIVED BY (SIGNATURE): Carole Harris

CASE NUMBER:

SAMPLE DELIVERY GROUP NO.:

SAS NUMBER:

		CORRESPONDING		
	EPA SAMPLE #	SAMPLE TAG #	ASSIGNED LAB #	REMARKS: CONDITION OF SAMPLE SHIPMENT, ETC
REMARKS:		B072P8	A2-08-010-01	
1. Custody Seal(s) Present/Absent* Intact/Broken				
2. Custody Seal Nos:				
3. Chain of Custody Records Present/Absent*				
4. Traffic Reports or Packing List Present/Absent*				
5. Airbill Airbill/Sticker Present/Absent*				
6. Airbill No.: 2521031936				
7. Sample Tags Present/Absent*				
8. Sample Tags Numbers Listed/Not Listed on Chain of Custody				
9. Sample Condition: Intact/Broken*/ Leaking				
10. Does information on custody records, traffic reports, and sample tags agree Yes/No*				
11. Date Recieved at Lab: 8/5/98				
12. Temp of ice chest 4.0 °C				
13. Time Recieved: 9:00 AM				
SAMPLE TRANSFER				
Fraction:				
Area #:				
By:				
On:				

* Contact SMO and attach record of resolution

Reviewed By: _____ Logbook No.: _____

Date: _____ Logbook Page No.: _____

FORM DC-1

TMA/ARLI
Thermo Analytical Inc.

RADIATION DOSE RATE SURVEY FORM

Date 8/05/92 COMPANY ARCAL (WHC) OTHER ORD # 42153963

Surveyor's Name [illegible]

Model No. HP-210 / ESP-1 Model No. AC-3-7 / ESP-1

Serial Nos. 710289 / 02619 Serial Nos. 407726 / 02628

Calibration Date 3/25/92 Calibration Date OUT FOR CALIBRATION

Instrument Calibration Factor 0.288 Instrument Calibration Factor

Sample	Location	HP-210 CPM	HP-210 Factor	HP-210 DPM	AC-3-7 CPM	AC-3-7 Factor	AC-3-7 DPM	Spillage or Breakage?	Activity, uCi/mL or uCi/g
Background		35.4							
Consistency		7,440	0.2872						
Smears: SML 103		31.0						NONE	
SML 184		31.0						NONE	
Reported (WHC)		13 samples		each	< 50	pCi/gram			

Comments:

All OK ✓ Approved DUK.

Not OK Date 8/05/92

Form: ARLI RA-01 01/15/92

000006

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE

AIRBILL PACKAGE TRACKING NUMBER 2521031936

2521031936

RECIPIENT'S COPY

1 Date

From (Your Name) Please Print

Your Phone Number (very important)

Department/Floor No

Street Address

City State ZIP Required

2 To (Recipient's Name) Please Print

Company

Department

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

City State ZIP Required

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

H IF HOLD FOR PICK-UP Print FEDEX Address Here

Street Address

City State ZIP Required

PAYMENT 1 ☑ Bill Sender 2 ☐ Bill Recipient's FedEx Acct No 3 ☐ Bill 3rd Party FedEx Acct No 4 ☐ Bill Credit Card

3 ☐

4 SERVICES (Check only one box)

Priority Overnight	Standard Overnight
11 ☑ YOUR PACKAGING	51 ☐ YOUR PACKAGING
16 ☐ FEDEX LETTER *	56 ☐ FEDEX LETTER *
☐ FEDEX PAK *	☐ FEDEX PAK *
☐ FEDEX BOX	☐ FEDEX BOX
☐ FEDEX TUBE	☐ FEDEX TUBE

Economy Two-Day	Government Overnight
30 ☐ ECONOMY	46 ☐ GOV'T LETTER
	47 ☐ GOV'T PACKAGE

Freight Service

70 ☐ OVERNIGHT FREIGHT **	80 ☐ TWO-DAY FREIGHT **

5 DELIVERY AND SPECIAL HANDLING (Check services required)

1 ☐ HOLD FOR PICK-UP
2 ☑ DELIVER WEEKDAY
3 DELIVER SATURDAY ☐
4 ☐ DANGEROUS GOODS
5 ☐
6 ☐ DRY ICE
7 ☐ OTHER SPECIAL SERVICE
8 ☐
9 ☐ SATURDAY PICK-UP
10 ☐
11 ☐
12 ☐ HOLIDAY DELIVERY

6 PACKAGES WEIGHT YOUR DECLARED VALUE

Total Total Total

DIM SHIPMENT (Chargeable Weight) ☐ _____ lbs

_____ x _____ x _____ = _____

Received At

1 ☑ Regular Stop 3 ☐ Drop Box 4 ☐ BSC

2 ☐ On Call Stop 5 ☐ Station

Emp No Date

☐ Cash Received

☐ Return Shipment

☐ Third Party ☐ Chg To Del ☐ Chg To Hold

Street Address

City State Zip

Received By

X

Date/Time Received FedEx Employee Number

7 Release Signature

FedEx Emp No Date/Time

Federal Express Base Charges

Declared Value C

Other 1

Other 2

Total Charges

REVISION DATE 6/91 PART # 117204 FREE FORMAT

099

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GENERAL CHEMISTRY RESULTS

CASE NO. 08-010

Soil Sample #:

B072P8

CASE NARRATIVE

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

Ernesto Vazquez

Ernesto Vazquez

TNA Inc. REPORT Work Order # A2-08-010

Received: 08/04/92 09/15/92 15:37:29

REPORT TO: Westinghouse Hanford Company
2355 Stevens Dr.
Richland,WA,99352
MO-346/200 West/T6-08
ATTEN: Jeanette Duncan

PREPARED BY: Thermo Analytical, Inc.
160 Taylor Street
Monrovia, CA 91016
ATTEN: Ms. Carole Harris
PHONE: 818-357-3247

CERTIFIED BY: Ernesto Vazquez
CONTACT: EVV CIH

CLIENT: WHC SAMPLES: 2
COMPANY: Westinghouse Hanford Company
FACILITY:

This report is for the sole and exclusive use of the client to whom it is addressed and represents only those samples herein described. Samples not destroyed in testing are retained a maximum of 30 days unless otherwise requested.

WORK ID: 100-KR-4
TAKEN: By Westinghouse Staff
TRANS: Federal Express
TYPE: Soil
P.O. #: N2-08-017-SU-AR
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01	B072P8
01	B072P8 MS
01	B072P8 MSD
01	B072P8
01	B072P8 MS
01	B072P8 MSD
01	B072P8
01	B072P8 MS
01	B072P8 Duplicate
02	Wet Chemistry Blank

TEST CODES and NAMES used on this workorder

BNCLPS	CLP Semivol. Soils
PECLPS	CLP Pest\PCBs Soil - WH015
VOCLPS	CLP Vol. Org.Soils
WCCLPS	Anions in Solids - WH232
WCQCD	Quality Control Summary
WCQCS	Quality Control Summary
WF S	Fluoride in Solids
WMOIST	Moisture
WPH S	pH of Solids - WH217
WSO4 S	Sulfate (in Solids)

TMA Inc. REPORT Work Order # A2-08-010

Received: 08/04/92

Results by Sample

SAMPLE ID B072P8 FRACTION 01G TEST CODE VCCLPS NAME Anions in Solids - VM232

Date & Time Collected 07/30/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Fluoride	300.0	3	mg/Kg	1.
Sulfate	300.0	33	mg/Kg	10.

FORM I

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 08-010

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : August 4, 1992

1.0 DESCRIPTION OF CASE :

One soil sample was analyzed for TCL Organics-Volatiles, Semivolatiles and Pesticide/PCBs according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision OLM01.8.

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX
B072P8	A2-08-010-01A	V	SOIL
B072P8 RE	A2-08-010-01A	V	SOIL
B072P8 MS	A2-08-010-01B	V	SOIL
B072P8 MSD	A2-08-010-01C	V	SOIL
B072P8	A2-08-010-01D	SV & P	SOIL
B072P8 MS	A2-08-010-01E	SV & P	SOIL
B072P8 MSD	A2-08-010-01F	SV & P	SOIL

3.0 COMMENTS :

3.1 SHIPPING AND DOCUMENTATION :

The samples were received unbroken and properly documented.

3.2 ANALYSIS

3.2.1 VOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were analyzed by heated purge within the CLP SOW holding times. Sample B072P8 and blank VBLK081CR experienced retention time shifts of internal standards 1,4-Difluorobenzene and Chlorobenzene-d5 that exceeded the QC limits. A thorough evaluation of the data indicated that there were no target analytes detected in the samples with the exception of trace amounts of Methylene Chloride and Acetone. The MS and MSD analyses confirms the above. The sample was re-analyzed out of the holding time and the original results were confirmed. Sample B072P8RE has been included in this package.

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

TUNES :

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

3.2.2 SEMIVOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the CLP SOW holding times. All of the QC results were within the limits specified by the EPA CLP SOW.

3.2.3 PESTICIDE/PCB ANALYSIS COMMENTS :

SEQUENCE NOTES :

The sequence was started on 8/19/92 and was analyzed in accordance with the EPA CLP SOW. The sample was analyzed by single injection into a dual column system. The sequence met all of the QC limits specified in the CLP SOW.

The chromatograms are presented in the manner consistent with the capabilities of the Nelson 2600 Data System which normalizes the largest peak to scale.

SAMPLE NOTES :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the CLP SOW holding times. Sample B072P8MSD had a percent difference (%D) for the spiked compound gamma-BHC that exceeded the 25% limit. It appears that the high %D was due to a contamination peak that co-eluted on the DB-608 column. The recovery on the DB-1701 column for gamma-BHC was within the limits.

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

9713517.0362

We certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data in this hardcopy data package and in the computer-readable data submitted on diskette is authorized by the Laboratory Manager or his designee, as verified by the following signatures.

Nicole Roth

Nicole Roth
CLP Program Manager

Widayat

Wida Ang
Organics Supervisor

9213517.0565

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

000005

B072P8

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08010 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208010-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 20810R15

Level: (low/med) LOW Date Received: 08/04/92

% Moisture: not dec. 8 Date Analyzed: 08/10/92

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	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	5	BJ
67-64-1	Acetone	21	B
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

9213517.0364

000006
EPA SAMPLE NO.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B072P8

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08010 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208010-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 20810R15

Level: (low/med) LOW Date Received: 08/04/92

% Moisture: not dec. 8 Date Analyzed: 08/10/92

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

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

9213517.0365

000007

EPA SAMPLE NO.

B072P8RE

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08010 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208010-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 20818R04

Level: (low/med) LOW Date Received: 08/04/92

% Moisture: not dec. 8 Date Analyzed: 08/18/92

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	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	4	J
67-64-1	Acetone	24	B
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

9213517.0566

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B072P8RE

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08010 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208010-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 20818R04

Level: (low/med) LOW Date Received: 08/04/92

% Moisture: not dec. 8 Date Analyzed: 08/18/92

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

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALCOHOL	29.47	10	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072P8

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08010 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208010-01D

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 20813S09

Level: (low/med) LOW Date Received: 08/04/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 08/06/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/13/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)Ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	2,2'-oxybis(1-Chloropropane)	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-Di-n-Propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
111-91-1	bis(2-Chloroethoxy)Methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-Methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	840	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	840	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
99-09-2	3-Nitroaniline	840	U
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	840	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072P8

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08010 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208010-01D

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 20813S09

Level: (low/med) LOW Date Received: 08/04/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 08/06/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/13/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	840	U
132-64-9	Dibenzofuran	350	U
121-14-2	2,4-Dinitrotoluene	350	U
606-20-2	2,6-Dinitrotoluene	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	840	U
534-52-1	4,6-Dinitro-2-methylphenol	840	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	840	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
86-74-8	Carbazole	350	U
84-74-2	Di-n-Butylphthalate	350	U
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	350	U
56-55-3	Benzo(a)Anthracene	350	U
117-81-7	bis(2-Ethylhexyl)Phthalate	350	U
218-01-9	Chrysene	350	U
117-84-0	Di-n-Octyl Phthalate	350	U
205-99-2	Benzo(b)Fluoranthene	350	U
207-08-9	Benzo(k)Fluoranthene	350	U
50-32-8	Benzo(a)Pyrene	350	U
193-39-5	Indeno(1,2,3-cd)Pyrene	350	U
53-70-3	Dibenz(a,h)Anthracene	350	U
191-24-2	Benzo(g,h,i)Perylene	350	U

(1) - Cannot be separated from Diphenylamine

1F

EPA SAMPLE NO.

B072P8

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08010 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208010-01D

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 20813S09

Level: (low/med) LOW Date Received: 08/04/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 08/06/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/13/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.3

Number TICs found: 9

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	5.35	2700	BJ
2.	UNKNOWN HYDROCARBON	5.75	70000	BJ
3.	UNKNOWN HYDROCARBON	6.72	140	BJ
4.	UNKNOWN HYDROCARBON	6.80	670	BJ
5.	UNKNOWN HYDROCARBON	7.23	180	BJ
6.	UNKNOWN KETONE	7.30	280	BJ
7.	UNKNOWN ALCOHOL	8.52	250	BJ
8.	UNKNOWN CARBOXYLIC ACID ESTE	20.28	110	J
9.	HEXANEDIOIC ACID ISOMER	24.90	21000	BJ

9213517.0570

000012

1D

EPA SAMPLE NO.

PESTICIDE ORGANICS ANALYSIS DATA SHEET

B072P8

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08010 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208010-01D

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

% Moisture: 6 decanted: (Y/N) N Date Received: 08/04/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 08/06/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 08/20/92

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 9.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.5	U
72-55-9	4,4'-DDE	3.5	U
72-20-8	Endrin	3.5	U
33213-65-9	Endosulfan II	3.5	U
72-54-8	4,4'-DDD	3.5	U
1031-07-8	Endosulfan sulfate	3.5	U
50-29-3	4,4'-DDT	3.5	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.5	U
7421-36-3	Endrin aldehyde	3.5	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	71	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U

Page 1 Skinner&Sherman REPORT Work Order # S2-08-065

Received: 08/05/92 09/28/92 10:26:39

REPORT TMA/NORCAL
TO 2030 Wright Avenue
Richmond, CA 94804

ATTEN Dan Steurmer

PREPARED TMA / Skinner & Sherman Labs,
BY 300 Second Avenue
P.O. Box 521
Waltham, MA 02254

ATTEN Client Services
PHONE (617) 890-7200

CERTIFIED BY

CONTACT DP

CLIENT HANFORD NOR SAMPLES 2
COMPANY TMA/NORCAL
FACILITY Richmond, CA

WORK ID N2-08-017
TAKEN BY CLIENT
TRANS FED EX# 2521031892
TYPE SOILS FOR NO3NO2
P.O. # N2-08-017
INVOICE under separate cover

SAMPLE IDENTIFICATION

01 B072P8
01 B072P8 DUPL
01 B072P8 SPIKE
02 LCSS

TEST CODES and NAMES used on this workorder

NO3NO2 Nitrate Plus Nitrite

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc. retains ownership of this report until associated submitted invoice is satisf Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Cl will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the inv amount. The results listed refer only to tested samples and applicable parameters. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc. exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

Page 2 Skinner&Sherman REPORT Work Order # S2-08-065

Received: 08/05/92 Results by Sample

SAMPLE ID B072P8 SAMPLE # 01 FRACTIONS: A

Date & Time Collected 07/30/92 11:21:00 Category SOIL

NO3NO2 <2.40

mg N/kg

SAMPLE ID B072P8 DUPL SAMPLE # 01 FRACTIONS: B

Date & Time Collected 07/30/92 11:21:00 Category SOIL

NO3NO2 <2.42

mg N/kg

SAMPLE ID B072P8 SPIKE SAMPLE # 01 FRACTIONS: C

Date & Time Collected 07/30/92 11:21:00 Category SOIL

NO3NO2 19.8

mg N/kg

SAMPLE ID LCSS SAMPLE # 02 FRACTIONS: A

Date & Time Collected not specified Category SOIL

NO3NO2 1.91

mg N/L

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc. retains ownership of this report until associated submitted invoice is satisf Expert witness service shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Cl will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the inv amount. The results listed refer only to tested samples and applicable parameters. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc. exercises due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are hel thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

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1-800-4 LAB TEST FAX (617) 890-3883

Page 4 Skinner&Sherman REPORT Work Order # S2-08-065
Received: 08/05/92 Test Methodology

TEST CODE NO3NO2 NAME Nitrate Plus Nitrite

Methods for Chemical Analysis of Water and Wastes
EPA - 600/4-79-020 March 1979 Method 353.2 (modified)

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.

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exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are hel
thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

9213517.0574

TMA/Skinner & Sherman Labs SAMPLE LOG-IN

WORKORDER S208065 CLIENT Hanford Nwe No. SAMPLES:

PROTCL CLP TURNARND 33 Days

COOLER TEMP: 5 oC, or NA (Soil) (Water) (Specify Other)

CUSTODIAN B. Proulx SDG/BATCH N/A

CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N208017

SHIPER & # Fed Ex 2521031892 PO/CONTRACT# ↓

TAGS: PRESENT/ABSENT/NA/SEE COC CONTACT D. Sanchez

CHAIN OF CUSTODY: PRESENT/ABSENT/NA, # N/A COMMENTS: None

SAMPLE CONTAINERS-INTACT/BROKEN COMMENTS

CLIENT COMMENT? YES/NO

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

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

SHIPMENT DATES 8-5-92

LIST ANY DATE WITH PAPERWORK/SHIPMENT PROBLEMS & SPECIFY THE PROBLEM:

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME UP
1	B072P8	Soil	8/5/92	N/A	D.S NO3 NO2	Due 8.21.92
2						
3						
4						
5						
6						
7						
8						
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23						
24						
25						
26						
27						

Samples are from site known to have Rad-Contamination: YES ✓ NO ___

Samples have detectable amounts of Radioactive Material: YES ___ NO ✓

SUBCONTRACT: YES/NO TO: DATE:

REVIEWED

complete 8/6/92 BP

* EPA/CLP required Rev 1.6 PAGE:

9213512.0575

000030

stinghouse
nford Company

CHAIN OF CUSTODY

S&S

ody Form Initiator W.V. SETZER

any Contact CM CHANCE

Telephone 376-7619

ect Designation/Sampling Locations 100-KR-4

Collection Date 7-30-92

Chest No. WHC-20

Field Logbook No. EFL-1022

of Lading/Airbill No. 2509869582

Offsite Property No. W92-0-0577 #3

od of Shipment OVERNIGHT AIR SERVICE

ped to TMA/NORCAL

ible Sample Hazards/Remarks None detected with field instruments. Maintain at 4C.

Sample Identification

B072P8 1,120ml aG:CLP;ICP/AA Metals,Hg
1,120ml aG:CLP;Cn
~~1,120ml aG:CLP;VOA~~
~~1,250ml aG:CLP;Semi-VOA,PCB/PEST~~
~~1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)~~
* ~~1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241~~

Container cracked

1,120ml aG:CLP;ICP/AA Metals,Hg
1,120ml aG:CLP;Cn
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

1,120ml aG:CLP;ICP/AA Metals,Hg
1,120ml aG:CLP;Cn
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

WVS 7-30-92

] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
inquished by: W.V. Setzer	Received by: KB Halse	Date/Time: 7-30-92 1137
inquished by: KB Halse	Received by: W.V. Setzer	Date/Time: 7-30-92 1232
inquished by: W.V. Setzer	Received by: Kermit Blum	Date/Time: 8-4-92 1100
inquished by: Kermit Blum 8-4-92	Received by: Barb Prince	Date/Time: 8-5-92 10:00

Final Sample Disposition

posal Method:	Disposed by:	Date/Time:

ments: * B072P8 radiochemistry aliquot received cracked

@ TMA / NORCAL - KB

30-407 (12/90) (EF) WEF061
n of Custody

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

Collector W.U. SETZER Date 8-3-92

Company Contact CM CHANCE Telephone (509)376-7619

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B0Z2P8	S	7-30-92	1121	1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN ~~1-120ml aG CLP;VOA~~ ~~1-250ml aG CLP;Semi-VOA,PCB/PEST~~ ~~1-120ml aG 300.0~~/353.2;Anions(~~F,SO4~~,NO3) ~~1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14~~ ~~U-235/238,Pu-239/240,Am-241~~
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241 WWS 8-3-92
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241

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

Field Information FROM 100-KR-4 Drilling

Special Handling and/or Storage Maintain at 4C

Possible Sample Hazards NA

9213517.0577

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B072P8

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

Lab Code: SKINER Case No.: N2-08-017SAS No.: SDG No.: B072P8

Matrix (soil/water): SOIL Lab Sample ID: 08063-01S

Level (low/med): LOW Date Received: 08/05/92

% Solids: 96.9

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4630			P
7440-36-0	Antimony	3.1	U	N	P
7440-38-2	Arsenic	1.2	B		F
7440-39-3	Barium	51.3			P
7440-41-7	Beryllium	0.11	B		P
7440-43-9	Cadmium	0.26	U		P
7440-70-2	Calcium	1890			P
7440-47-3	Chromium	10.8			P
7440-48-4	Cobalt	4.5	B		P
7440-50-8	Copper	9.0			P
7439-89-6	Iron	8570			P
7439-92-1	Lead	3.1			F
7439-95-4	Magnesium	2810			P
7439-96-5	Manganese	220			P
7439-97-6	Mercury	0.05	U	N	CV
7440-02-0	Nickel	10.7			P
7440-09-7	Potassium	887	B		P
7782-49-2	Selenium	1.0		*	F
7440-22-4	Silver	1.1	B		P
7440-23-5	Sodium	192	B		P
7440-28-0	Thallium	0.86	U		F
7440-62-2	Vanadium	17.1			P
7440-66-6	Zinc	26.4			P
	Cyanide	0.51	U		CA

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES

9713517.0578

TMA/Skinner & Sherman Labs SAMPLE LOG-IN

WORKORDER S208063 CLIENT Hanford NOR No. SAMPLES:

PROTCL CLP TURNARND 33 Day (Soil) (Water) (Specify Other)

COOLER TEMP: 5 oC, or NA

CUSTODIAN B Prouix SDG/BATCH N/A

CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N208017

SHIPER & # Fed Ex 252 1051892 PO/CONTRACT# ✓

TAGS: PRESENT/ABSENT/NA/SEE COC CONTACT D Sanchez

CHAIN OF CUSTODY: PRESENT/ABSENT/NA, # N/A COMMENTS: None

SAMPLE CONTAINERS-INTACT/BROKEN COMMENTS

CLIENT COMMENT? YES/NO

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

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

SHIPMENT DATES 8-5-92

LIST ANY DATE WITH PAPERWORK/SHIPMENT PROBLEMS & SPECIFY THE PROBLEM:

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME UP
1	B072P8	Soil	8-5-92	N/A	DSTm / CN	CN Due 8/11/92
2						Hg Due 8/19/92
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						

Samples are from site known to have Rad-Contamination: YES ✓ NO

Samples have detectable amounts of Radioactive Material: YES NO ✓

SUBCONTRACT: YES/NO TO: DATE: 8/6/92

REVIEWED

Complete 8/6/92 BP

* EPA/CLP required Rev 1.6 PAGE:

9213517.0529

Westinghouse Hanford Company	CHAIN OF CUSTODY	S&S

Custody Form Initiator: W.V. SETZER

Company Contact: CM CHANCE — Telephone: 376-7619

Project Designation/Sampling Locations: 100-KR-4 — Collection Date: 7-30-92

Ice Chest No.: WHC-20 — Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: 2509869582 — Offsite Property No.: W92-0-0577 #3

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA/NORCAL

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

Sample Identification

1) B072P8
- 1,120ml aG:CLP;ICP/AA Metals,Hg
- 1,120ml aG:CLP;Cn
- ~~1,120ml aG:CLP;VOA~~
- ~~1,250ml aG:CLP;Semi-VOA,PCB/PEST~~
- ~~1,120ml aG:300.0~~/353.2;Anions(~~F,SO4~~,NO3)
- * ~~1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241~~

2)
- 1,120ml aG:CLP;ICP/AA Metals,Hg
- 1,120ml aG:CLP;Cn
- 1,120ml aG:CLP;VOA
- 1,250ml aG:CLP;Semi-VOA,PCB/PEST
- 1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
- 1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

3)
- 1,120ml aG:CLP;ICP/AA Metals,Hg
- 1,120ml aG:CLP;Cn
- 1,120ml aG:CLP;VOA
- 1,250ml aG:CLP;Semi-VOA,PCB/PEST
- 1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
- 1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

WVS 7-30-92

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

Relinquished by:	Received by:	Date/Time:
W.V. Setzer	KB Halse (KB Halse)	7-30-92 1137
KB Halse	W.V. Setzer	7-30-92 1232
W.V. Setzer	Kermit Blum	8-4-92 1100
Kermit Blum 8-4-92	Barb Pavee	8-5-92 10:00

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: * B072P8 Radiochemistry aliquot received cracked

@ TMA / NORCAL - KB

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

9213517.0590

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

Collector W.W. SETZER Date 8-3-92

Company Contact CM CHANCE Telephone (509)376-7619

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B072P8	S	7-30-92	1121	1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN ~~1-120ml aG CLP;VOA~~ ~~1-250ml aG CLP;Semi-VOA,PCB/PEST~~ ~~1-120ml aG 300.0~~/353.2;Anions(~~F,SO4~~,NO3) ~~1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14~~ ~~U-235/238,Pu-239/240,Am-241~~
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241 WWS 8-3-92
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241

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

Field Information FROM 100-KR-4 Drilling

Special Handling and/or Storage Maintain at 4C

Possible Sample Hazards NA

A-6000-406 (06/91) WEF060

TMA

SDG 7071	Client Westinghouse Hanford
Contact Dinkar P. Kharkar	Contract MBH-SVV-069262

CASE NARRATIVE

1.0 GENERAL

Soil sample results from Location 100-KR-4 (TMA/Norcal Group 7071) are reported herein. TMA/Norcal Group 7071 is comprised of the three samples listed on the Chain-of-Custody documents and is identified as Samples 1, 2, and 3.

1.1 CHAINS-OF-CUSTODY

This report includes data from samples delivered under Chain-of-Custody documents Field Logbook No. EFL-1022.

1.2 SAMPLE VOLUME

1000 mL bottles of samples were received for the analyses.

1.3 MISSING SAMPLES

All samples were accounted for in an undamaged condition.

1.4 HOLDING TIMES

The collection was made between 7/30/92 and 8/05/92 and the sample processing was initiated within 180 days of collection.

2.0 QUALITY CONTROL

The internal quality control consisted of one sample each of a laboratory control, a blank, and a replicate. All original analyses were performed with QC samples 7071-4 through 8.

The QC samples were prepared and labelled by the quality control officer. Copies of The QC notebook pages are included in the data package.

2.1 LABORATORY CONTROL SAMPLES

LCS recoveries for all nuclides were good. The MDA for ^{90}Sr was 1.1 pCi/g, and above the RDL requirement of 1.0 pCi/g. The MDA's for all other nuclides meet the RDL requirement.

2.2 BLANKS

MDA's for all the analyses meet the RDL requirements.

001B
11/24/92

SDG 7071	Client Westinghouse Hanford
Contact Dinkar P. Kharkar	Contract MBH-SVV-069262

CASE NARRATIVE

2.3 REPLICATES

Results were satisfactory for all replicate analyses. The MDA for ^{90}Sr is underlined in the data sheets because the MDA's exceed RDL. The MDA of ^{90}Sr is 1.1 pCi/g instead of the RDL requirement of 1 pCi/g.

3.0 ANALYTICAL NOTES

3.1 Gross Alpha Analyses: The average MDA for gross alpha was 4.9 ± 1.5 pCi/g Positive gross alpha concentration above RDL was not found in any sample. All the results were less than RDL.

3.2 Gross Beta Analyses: The average MDA for gross beta was 5.7 ± 0.97 pCi/g. Positive gross beta concentration was found only in samples number 7071-1.

3.3 Carbon-14 Analyses: The average MDA was 33 ± 7.4 pCi/g. All the results were less than MDA. No positive ^{14}C was found in the samples.

3.4 Strontium-90 Analyses: The average yield for six analyses was (59 ± 28%). The lowest yield was 46% and the highest was 87%. The average MDA was 0.94 ± 0.47 pCi/g. Positive ^{90}Sr concentration was not found in any samples. All sample results were below MDA.

3.5 Uranium-233, 234, 234, and 238 Analyses: The average yield for six analyses was (47 ± 34%). The lowest yield was 19% and the highest was 67%. The average MDA was 0.19 ± 0.17 pCi/g. Concentration of ^{234}U and ^{238}U slightly above RLD was found in the samples.

3.6 Plutonium-238, 239/240 Analyses: The average yield for six analyses was (73 ± 26%). The lowest yield was 56% and the highest was 88%. The average MDA was 0.036 ± 0.019 pCi/g. Positive plutonium concentration was not found in any of the samples. All sample results were below MDA.

3.7 Americium-241 Analyses: The average yield for six analyses was (70 ± 21%). The lowest yield was 52% and the highest was 85%. The average MDA was 0.018 ± 0.008 pCi/g. Positive americium concentration was not found in any of the samples. All sample results were below MDA.

3.8 Gamma Scan Analyses: Gamma scan analysis did not find positive concentration of gamma nuclides. MDA's for gamma nuclides were higher than RDL for samples 7071-1 and 2 because only small aliquots (233.5 and 244.7 gm) were available for gamma analysis instead of 750.0 gm required by MDA calculation. The quoted LLD was at the time of count while the MDA was at the time of collection. ^{59}Fe was above quoted RDL because of the short half life of ^{59}Fe.

001C
11/24/92

9713517.0583

N208023-01

TMA NORCAL
REPORTING GROUP 7071

DATA SHEET

B072P8

SDG	7071	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208023-01	Client sample id	B072P8
Dept sample id	7071-001	Matrix	SOIL
Received	08/04/92	Collected	07/30/92
% moisture		Chain of custody id	EFL-1022

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Gross Alpha	Alpha	4.4	3.8	4.5	10	U	80A
Gross Beta	Beta	15	4.3	5.5	15		80B
Uranium 233/234		0.45	0.18	0.13	0.30		U
Uranium 235	15117-96-1	0.042	0.042	0.16	0.30	U	U
Uranium 238	7440-61-1	0.47	0.18	0.13	0.30		U
Plutonium 238	13981-16-3	-0.007	0.018	0.037	0.050	U	PU
Plutonium 239/240		-0.002	0.004	0.017	0.050	U	PU
Americium 241	14596-10-2	-0.002	0.013	0.024	0.050	U	AM
Strontium 90	10098-97-2	0.14	0.25	0.70	1.0	U	Y
Carbon 14	14762-75-5	23	14	30	50	U	C
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	12	1.7				GAM
Iron 59		U		0.61	0.050	U	GAM
Chromium 51	14392-02-0	U		2.6		U	GAM
Cobalt 60	10198-40-0	U		0.078	0.050	U	GAM
Zinc 65	17982-39-3	U		0.26		U	GAM
Ruthenium 106	13967-48-1	U		0.70		U	GAM
Cesium 134	17967-70-9	U		0.11		U	GAM
Cesium 137	10045-97-3	U		0.090	0.050	U	GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Radium 226	13982-67-7	0.35	0.15		0.10		GAM
Thorium 228	14274-82-9	0.66	0.14				GAM
Thorium 232	7440-29-1	0.46	0.35				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/06/92

9213517.0384

TMA NORCAL

REPORTING GROUP 7071

DATA SHEET

N208023-02

B072Q2

SDG	7071	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208023-02	Client sample id	B072Q2
Dept sample id	7071-002	Matrix	SOIL
Received	08/06/92	Collected	08/03/92
% moisture		Chain of custody id	EFL-1022

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Gross Alpha	Alpha	6.3	4.2	4.7	10	J	80A
Gross Beta	Beta	12	4.5	6.4	15	J	80B
Uranium 233/234		0.40	0.30	0.35	0.30		U
Uranium 235	15117-96-1	0.089	0.090	0.34	0.30	U	U
Uranium 238	7440-61-1	0.33	0.23	0.28	0.30		U
Plutonium 238	13981-16-3	0	0.022	0.040	0.050	U	PU
Plutonium 239/240		-0.004	0.022	0.044	0.050	U	PU
Americium 241	14596-10-2	-0.001	0.011	0.020	0.050	U	AM
Strontium 90	10098-97-2	0	1.1	1.2	1.0	U	Y
Carbon 14	14762-75-5	6.6	15	33	50	U	C
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	9.0	1.5				GAM
Iron 59		U		0.51	0.050	U	GAM
Chromium 51	14392-02-0	U		1.9		U	GAM
Cobalt 60	10198-40-0	U		0.12	0.050	U	GAM
Zinc 65	17982-39-3	U		0.26		U	GAM
Ruthenium 106	13967-48-1	U		0.57		U	GAM
Cesium 134	17967-70-9	U		0.094		U	GAM
Cesium 137	10045-97-3	U		0.092	0.050	U	GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.095	0.10	U	GAM
Radium 226	13982-67-7	0.32	0.13		0.10		GAM
Thorium 228	14274-82-9	0.28	0.12				GAM
Thorium 232	7440-29-1	0.32	0.24				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/06/92

9214512.0585

TMA NORCAL

REPORTING GROUP 7071

DATA SHEET

N208023-03

B07204

SDG	7071	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208023-03	Client sample id	B07204
Dept sample id	7071-003	Matrix	SOIL
Received	08/10/92	Collected	08/05/92
% moisture		Chain of custody id	EFL-1022

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Gross Alpha	Alpha	5.7	5.0	6.4	10	U	80A
Gross Beta	Beta	11	3.9	5.1	15	J	80B
Uranium 233/234		0.21	0.14	0.19	0.30	J	U
Uranium 235	15117-96-1	0	0.043	0.16	0.30	U	U
Uranium 238	7440-61-1	0.46	0.18	0.13	0.30		U
Plutonium 238	13981-16-3	0.025	0.020	0.029	0.050	U	PU
Plutonium 239/240		0	0.011	0.023	0.050	U	PU
Americium 241	14596-10-2	0.012	0.012	0.017	0.050	U	AM
Strontium 90	10098-97-2	-1.1	3.7	0.92	1.0	U	Y
Carbon 14	14762-75-5	2.9	12	28	50	U	C
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	12	0.93				GAM
Iron 59		U		0.26	0.050	U	GAM
Chromium 51	14392-02-0	U		1.1		U	GAM
Cobalt 60	10198-40-0	U		0.041	0.050	U	GAM
Zinc 65	17982-39-3	U		0.10		U	GAM
Ruthenium 106	13967-48-1	U		0.31		U	GAM
Cesium 134	17967-70-9	U		0.045		U	GAM
Cesium 137	10045-97-3	U		0.035	0.050	U	GAM
Europium 152	14683-23-9	U		0.081	0.10	U	GAM
Europium 154	15585-10-1	U		0.053	0.10	U	GAM
Radium 226	13982-67-7	0.34	0.074		0.10		GAM
Thorium 228	14274-82-9	0.56	0.049				GAM
Thorium 232	7440-29-1	0.43	0.15				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/06/92

9213517.0586

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: W.V. SETZER

Company Contact: CM CHANCE — Telephone: 376-7619

Project Designation/Sampling Locations: 100-KR-4 — Collection Date: 7-30-92

Ice Chest No.: WHC-20 — Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: 2509869582 — Offsite Property No.: W92-0-0577 #3

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA/NORCAL

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

Sample Identification

1) B072P8
- 1,120ml aG:CLP;ICP/AA Metals,Hg
- 1,120ml aG:CLP;Cn
- 1,120ml aG:CLP;VOA
- 1,250ml aG:CLP;Semi-VOA,PCB/PEST
- 1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
- * 1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

CONTAINER CRACK

2)
- 1,120ml aG:CLP;ICP/AA Metals,Hg
- 1,120ml aG:CLP;Cn
- 1,120ml aG:CLP;VOA
- 1,250ml aG:CLP;Semi-VOA,PCB/PEST
- 1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
- 1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

3)
- 1,120ml aG:CLP;ICP/AA Metals,Hg
- 1,120ml aG:CLP;Cn
- 1,120ml aG:CLP;VOA
- 1,250ml aG:CLP;Semi-VOA,PCB/PEST
- 1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
- 1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

WVS 7-30-92

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

Relinquished by:	Received by:	Date/Time:
W.V. Setzer	KB Halse (KB Halse)	7-30-92 1137
KB Halse	W.V. Setzer	7-30-92 1232
W.V. Setzer	Kermit Blum	8-4-92 1100

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: * B072P8 Radiochemistry aliquot received cracked

@ TMA / NORCAL - KB

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

046

9213517.0587

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

Collector W.V. SETZER Date 8-3-92

Company Contact CM CHANCE Telephone (509)376-7619

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B072P8	S	7-30-92	1121	1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241 WDS 8-3-92
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241

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

Field Information FROM 100-KR-4 Drilling

Special Handling and/or Storage Maintain at 4C

Possible Sample Hazards NA

A-6000-406 (06/91) WEF060

9213517.0398

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: W.V. Setzer

Company Contact: CM CHANCE

Telephone: 376-7619

Project Designation/Sampling Locations: 100-KR-4

Collection Date: 8-3-92

Ice Chest No.: WHC 21

Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: 2509869736

Offsite Property No.: W92-0-0577#8

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA/NORCAL

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

Sample Identification

1) B072Q2
- 1,120ml aG:CLP;ICP/AA Metals,Hg
- 1,120ml aG:CLP;Cn
- 1,120ml aG:CLP;VOA
- 1,250ml aG:CLP;Semi-VOA,PCB/PEST
- 1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
- 1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

2)
- 1,120ml aG:CLP;ICP/AA Metals,Hg
- 1,120ml aG:CLP;Cn
- 1,120ml aG:CLP;VOA
- 1,250ml aG:CLP;Semi-VOA,PCB/PEST
- 1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
- 1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

3)
- 1,120ml aG:CLP;ICP/AA Metals,Hg
- 1,120ml aG:CLP;Cn
- 1,120ml aG:CLP;VOA
- 1,250ml aG:CLP;Semi-VOA,PCB/PEST
- 1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
- 1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

WVS 8-3-92

4) B072Q1 1,120mL aG CLP-VOA

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

Relinquished by:	Received by:	Date/Time:
W.V. Setzer	Kermit Blum	8-6-92 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:

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

048

9215517.0599

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector W.V. SETZER Date Sampled 8-3-92 Time 1135 hours

Company Contact ~~CM CHANCE~~ W.V. SETZER WVS 8-5-92 Telephone (509) 376-2084

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B072Q2 ✓	1-120ml aG	Soil	CLP:ICP/AA Metals,Hg
✓	1-120ml aG	Soil	CLP:Cn
✓	1-120ml aG	Soil	CLP:VOA
✓	1-250ml aG	Soil	CLP:Semi-VOA,PCB/PEST
✓	1-120ml aG	Soil	300.0/353.2;Anions(F,SO4,NO3)
✓	1-950ml aG	Soil	Gross alpha/beta,Gamma Spec,Sr-90,C-14,
			U-235/238,Pu-239/240,Am-241
	~~1-120ml aG~~	~~Soil~~	~~CLP:ICP/AA Metals,Hg~~
	~~1-120ml aG~~	~~Soil~~	~~CLP:Cn~~
	~~1-120ml aG~~ WVS 8-5-92	~~Soil~~	~~CLP:VOA~~
	~~1-250ml aG~~	~~Soil~~	~~CLP:Semi-VOA,PCB/PEST~~
	~~1-120ml aG~~	~~Soil~~	~~300.0/353.2;Anions(F,SO4,NO3)~~
	~~1-950ml aG~~	~~Soil~~	~~Gross alpha/beta,Gamma Spec,Sr-90,C-14~~
			~~U-235/238,Pu-239/240,Am-241~~
B072Q1 ✓	1-120mL aG	soil	CLP:VOA

Field Information** NA

Special Handling and/or Storage Maintain at 4C

Possible Sample Hazards NONE OBSERVED

049

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 8-6-92

Analysis Required

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406 (05/9(

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: W.W. SETZER

Company Contact: CM CHANCE

Telephone: 376-2084

Project Designation/Sampling Locations: 100-KR-4

Collection Date: 8-5-92

Ice Chest No.: SML 92

Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: 250986 9648

Offsite Property No.: WA92-0-0577 #10

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA/NORCAL

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

Sample Identification

1) B072Q4	1,120ml	aG:CLP;ICP/AA Metals,Hg
	1,120ml	aG:CLP;Cn
	1,120ml	aG:CLP;VOA
	1,250ml	aG:CLP;Semi-VOA,PCB/PEST
	1,120ml	aG:300.0/353.2;Anions(F,SO4,NO3)
	1,950ml	aG:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241
2)	1,120ml	aG:CLP;ICP/AA Metals,Hg
	1,120ml	aG:CLP;Cn
	1,120ml	aG:CLP;VOA
	1,250ml	aG:CLP;Semi-VOA,PCB/PEST
	1,120ml	aG:300.0/353.2;Anions(F,SO4,NO3)
	1,950ml	aG:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241
3)	1,120ml	aG:CLP;ICP/AA Metals,Hg WWS 8-5-92
	1,120ml	aG:CLP;Cn
	1,120ml	aG:CLP;VOA
	1,250ml	aG:CLP;Semi-VOA,PCB/PEST
	1,120ml	aG:300.0/353.2;Anions(F,SO4,NO3)
	1,950ml	aG:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

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

Relinquished by:	Received by:	Date/Time:
W.W. Setzer	Kermit Blum	8/10/92 0800 *
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: * Received @ TMA/NORCAL 8/8/92; opened 8/10/92 - KB

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

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

Collector W.V. SETZER — Date 8-7-92

Company Contact CM CHANCE — Telephone (509)376-7619

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B0T2Q4	S	8-5-92	1000	1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241 WVS 8-7-92
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241

*Type of Sample: A = Air; DL = Drum Liquids; DS = Drum Solids; L = Liquid; O = Oil; S = Soil; SE = Sediment; SL = Sludge; SO = Solid; T = Tissue; W = Water; WI = Wipe; X = Other

Field Information FROM 100-KR-4 Drilling

Special Handling and/or Storage Maintain at 4C

Possible Sample Hazards NA

051

A-6000-406 (06/91) WEF060

9213517.0592

BC72P8 TMA-257

000001

WESTINGHOUSE HANFORD COMPANY

Results of Analyses For:

GENERAL CHEMISTRY
CASE NO. 08-018
(TMA/ARLI Work Order # A2-08-018)

ORGANICS
CASE NO. 08-018
(TMA/ARLI Work Order # A2-08-018)

General Chemistry and Organics results are presented for the following WHC SOIL samples(s):

B072Q2 B072Q1

Norcal Work Order # N2-08-043

Thermo Analytical Inc.
160 Taylor Street
Monrovia, CA 91016
(818) 357-3247

9215517.0898

000002

Westinghouse Hanford Company	CHAIN OF CUSTODY	ARL I

Custody Form Initiator: W.V. Setzer

Company Contact: CM CHANCE

Telephone: 376-7619

Project Designation/Sampling Locations: 100-KR-4

Collection Date: 8-3-92

Ice Chest No.: WHC 21

Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: 2509869736

Offsite Property No.: W92-0-0577 #8

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA/NORCAL

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

Sample Identification

1) B072Q2 ~~1,120ml aG:CLP;ICP/AA Metals,Hg~~
~~1,120ml aG:CLP;Cn~~
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/~~353.2~~;Anions(F,SO4,~~NO3~~)
~~1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241~~

2) 1,120ml aG:CLP;ICP/AA Metals,Hg
1,120ml aG:CLP;Cn
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

3) 1,120ml aG:CLP;ICP/AA Metals,Hg
1,120ml aG:CLP;Cn
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

WVS 8-3-92

4) B072Q1 1,120mL aG CLP-VOA

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: W.V. Setzer	Received by: Kermit Blum	Date/Time: 8-6-92 1130
Relinquished by: Kermit Blum 8-6-92	Received by: C. Harris	Date/Time: 8/7/92 9:00
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9213512.0594

000003

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector W.V. SETZER Date Sampled 8-3-92 Time 1135 hours

Company Contact ~~CM CHANCE~~ W.V. SETZER WVS 8-5-92 Telephone (509) 376-2084

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B072Q2 ✓	~~1-120ml aG~~	~~Soil~~	~~CLP:ICP/AA Metals,Hg~~
✓	~~1-120ml aG~~	~~Soil~~	~~CLP:Cn~~
✓	1-120ml aG	Soil	CLP:VOA
✓	1-250ml aG	Soil	CLP:Semi-VOA,PCB/PEST
✓	1-120ml aG	Soil	300.0/~~353.2~~;Anions(F,SO4,~~NO3~~)
✓	~~1-950ml aG~~	~~Soil~~	~~Gross alpha/beta,Gamma Spec,Sr-90,C-14,~~
			~~U-235/238,Pu-239/240,Am-241~~
	~~1-120ml aG~~	Soil	CLP:ICP/AA Metals,Hg
	1-120ml aG	Soil	CLP:Cn
	1-120ml aG WVS 8-5-92	Soil	CLP:VOA
	1-250ml aG	Soil	CLP:Semi-VOA,PCB/PEST
	1-120ml aG	Soil	300.0/353.2-Anions(F,SO4,NO3)
	1-950ml aG	Soil	Gross alpha/beta,Gamma Spec,Sr-90,C-14
			U-235/238,Pu-239/240,Am-241
B072Q1 ✓	1-120mL aG	soil	CLP:VOA

Field Information** NA

Special Handling and/or Storage Maintain at 4C

Possible Sample Hazards NONE OBSERVED

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 8-6-92

Analysis Required

TMA/ARLI
Thermo Analytical Inc.

RADIATION DOSE RATE SURVEY FORM

Date 8/07/92 COMPANY NORCAL (WHC) OTHER ORD # 2521032555

Surveyor's Name MARK S. McCray

Model No. HP-210 / ESP-1 Model No. AC-3-7 / ESP-1

Serial Nos. 710289 / 02619 Serial Nos. 407726 / 02628

Calibration Date 3/25/92 Calibration Date OUT FOR CALIBRATION

Instrument Calibration Factor 0.280 Instrument Calibration Factor

Sample	Location	HP-210 CPM	HP-210 Factor	HP-210 DPM	AC-3-7 CPM	AC-3-7 Factor	AC-3-7 DPM	Spillage or Readings?	Activity, uCi/mL or uCi/g
Background		45.0							
Consistency		7,450	0.2876						
Smears: RED & WHITE		36.0						NONE	
BLUE & WHITE		29.0						NONE	
Reported 2 samples each <50 pCi/gram									

Comments:

All OK ✓ Approved

Not OK Date 8/07/92

SAMPLE LOG-IN SHEET

LAB NAME : TMA/ARLI

PAGE : 1 OF 1

RECEIVED BY (PRINT NAME): CAROLE HARRIS

LOG-IN-DATE : 8/7/98

RECEIVED BY (SIGNATURE): Carole Harris

CASE NUMBER:

SAMPLE DELIVERY GROUP NO.:

SAS NUMBER:

REMARKS:

1. Custody Seal(s) Present/Absent* Intact/Broken
2. Custody Seal Nos:
3. Chain of Custody Records Present/Absent*
4. Traffic Reports or Packing List Present/Absent*
5. Airbill Airbill/Sticker Present/Absent*
6. Airbill No.: 2531032555
7. Sample Tags Present/Absent*
8. Sample Tags Numbers Listed/Not Listed on Chain of Custody
9. Sample Condition: Intact/Broken*/Leaking
10. Does information on custody records, traffic reports, and sample tags agree Yes/No*
11. Date Recieved at Lab: 8/7/98
12. Temp of ice chest 4.0 °C
13. Time Recieved: 9:00 AM

EPA SAMPLE #	CORRESPONDING SAMPLE TAG #	CORRESPONDING ASSIGNED LAB #	REMARKS: CONDITION OF SAMPLE SHIPMENT, ETC
	B072Q2	AJ-08-018-01	
	B072Q1	AJ-08-018-02	

SAMPLE TRANSFER

Fraction:

Area #:

By:

On:

* Contact SMO and attach record of resolution

Reviewed By:

Date:

Logbook No.:

Logbook Page No.:

FORM DC-1

9713517.0397

000006

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 2521032555

2521032555

RECIPIENT'S COPY

Date 4 6 92

From (Your Name) Please Print: SAMPLE CONTR...

Your Phone Number (Very Important): (213)235-2...

Company: ... /MEDICAL

Department/Floor No

Street Address: 2... WEIGHT AVE

City: ... State: CA

ZIP Required: 9 4 0 0

2 To (Recipient's Name) Please Print: SAMPLE CONTRACT

Recipient's Phone Number (Very Important): ( )

Company: THA / ARL

Department/Floor

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 160 Taylor street

City: MONROVIA State: CA

ZIP Required: 91016

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

H IF HOLD FOR PICK-UP, Print FEDEX Address Here

Street Address

City State ZIP Required

3 PAYMENT 1 ☑ Bill Sender 2 ☐ Bill Recipient's FedEx Acct No 3 ☐ Bill 3rd Party FedEx Acct No 4 ☐ Bill Credit Card 5 ☐ Cash/Check

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning)†
- 11 ☑ YOUR PACKAGING
- 16 ☐ FEDEX LETTER *
- 12 ☐ FEDEX PAK *
- 13 ☐ FEDEX BOX
- 14 ☐ FEDEX TUBE

Standard Overnight (Delivery by next business afternoon)†
- 51 ☐ YOUR PACKAGING
- 56 ☐ FEDEX LETTER *
- 52 ☐ FEDEX PAK *
- 53 ☐ FEDEX BOX
- 54 ☐ FEDEX TUBE

Economy Two-Day (Delivery by second business day)†
- 30 ☐ ECONOMY

Government Overnight (Required for authorized users only)
- 46 ☐ GOVT LETTER
- 41 ☐ GOVT PACKAGE

Freight Service (for 100 lbs. or more per shipment; 150 lbs. per piece)
- 70 ☐ OVERNIGHT FREIGHT ** (Additional information required)
- 80 ☐ TWO-DAY FREIGHT **

† Delivery commitment may be later in some areas. * Declared Value Limit $100. ** Call for Delivery Schedule.

5 DELIVERY AND SPECIAL HANDLING (Check services required)
- 1 ☐ HOLD FOR PICK-UP (If box in Box #1)
- 2 ☑ DELIVER WEEKDAY
- 3 DELIVER SATURDAY (Extra charge) (Not available to all locations) ☐
- 4 ☐ DANGEROUS GOODS (Extra charge)
- 5 ☐
- 6 ☐ DRY ICE LBS
- 7 ☐ OTHER SPECIAL SERVICE
- 8 ☐
- 9 ☐ SATURDAY PICK-UP (Extra charge)
- 10 ☐
- 11 ☐
- 12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

6 PACKAGES | WEIGHT (In Pounds only) | YOUR DECLARED VALUE

Total | Total | Total

2 14

DIM SHIPMENT (Chargeable Weight) ☐ _____ lbs

L x W x H = ____

Received At: 1 ☑ Regular Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ BSC 5 ☐ Station

Emp No | Date

☐ Cash Received
☐ Return Shipment
☐ Third Party ☐ Chg To Del ☐ Chg To Hold

Street Address

City State Zip

Received By: X

Date/Time Received | FedEx Employee Number

7 Release Signature

FedEx Emp No | Date/Time

Fedexs Express U...
Base Charges
Declared Value Char...
Other 1
Other 2
Total Charges

REVISION DATE 6/91 PART #137204 FXEM 4.5 FORMAT #099

099

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9713517.0398

GENERAL CHEMISTRY RESULTS

CASE NO. 08-018

Soil Sample #:

B072Q2

CASE NARRATIVE

The % RPD for the Fluoride analysis reported for the soil sample B072Q2 (A2-08-018-01) was 40%. The results for the sample and duplicate were near the instrument detection limit. These results are acceptable based on the level of Fluoride concentration.

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

Ernesto Vázquez

Ernesto Vazquez

TNA Inc. REPORT Work Order # A2-08-018

eceived: 08/06/92 10/19/92 16:37:01

REPORT Westinghouse Hanford Company
TO 2355 Stevens Dr.
Richland,WA,99352
MO-346/200 West/T6-08
ATTEN Jeanette Duncan

PREPARED Thermo Analytical, Inc.
BY 160 Taylor Street
Monrovia, CA 91016
ATTEN Ms. Carole Harris
PHONE 818-357-3247

CERTIFIED BY Ernest Hagopy
CONTACT EVV CIH

CLIENT WHC SAMPLES 3
COMPANY Westinghouse Hanford Company
ACILITY

This report is for the sole and exclusive use of the client to whom it is addressed and represents only those samples herein described. Samples not destroyed in testing are retained a maximum of 30 days unless otherwise requested.

WORK ID 100-KR-4
TAKEN By Westinghouse Staff
TRANS Federal Express
TYPE Soil
P.O. # N2-08-043-SU-AR
INVOICE under separate cover

SAMPLE IDENTIFICATION

1 B07202
1 B07202 MS
1 B07202 MSD
1 B07202
1 B07202 MS
1 B07202 Duplicate
2 B07201
2 B07201 MS
2 B07201 MSD
3 Wet Chemistry Blank

TEST CODES and NAMES used on this workorder

BNCLPS	CLP Semivol. Sol. - WH016
IC AN	Anions Extraction Solids
PECLPS	CLP Pest\PCBs Soil - WH015
VOCLPS	CLP Vol. Org.Soils - WH014
WCCLPS	Anions in Solids - WH232
WCQCD	Quality Control Summary
WCQCS	Quality Control Summary
WF S	Fluoride in Solids
WMOIST	Moisture
WPH S	pH of Solids - WH217
WSO4 S	Sulfate (in Solids)

TNA Inc. REPORT Work Order # A2-08-018

Received: 08/06/92

Results by Sample

SAMPLE ID B07292 FRACTION 01E TEST CODE WCCLPS NAME Anions in Solids - VH232

Date & Time Collected 08/03/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Fluoride	300.0	3	mg/Kg	1.
Sulfate	300.0	37	mg/Kg	10.

FORM I

9713517.0404

000001

3/18/93

Page 1 Skinner&Sherman REPORT Work Order # S2-08-113

Received: 08/07/92 10/13/92 13:40:54

REPORT TMA/NORCAL
TO 2030 Wright Avenue
Richmond, CA 94804

ATTEN Dan Steurmer

CLIENT HANFORD NOR SAMPLES 2
COMPANY TMA/NORCAL
FACILITY Richmond, CA

PREPARED TMA / Skinner & Sherman Labs.
BY 300 Second Avenue
P.O. Box 521
Waltham, MA 02254

ATTEN Client Services
PHONE (617) 890-7200

CERTIFIED BY

CONTACT DP

WORK ID N2-08-043
TAKEN BY CLIENT
TRANS FED EX# 2521032544
TYPE SOIL FOR NO3NO2
P.O. # N2-08-043
INVOICE under separate cover

SAMPLE IDENTIFICATION

01 B07292
01 B07292 DUPL
01 B07292 SPIKE
02 LCSS

TEST CODES and NAMES used on this workorder

NO3NO2 Nitrate Plus Nitrite

TMA
Thermo Analytical Inc.

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc. retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc. will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

Skinner & Sherman Laboratories Inc. 300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

Received: 08/07/92

Results by Sample

SAMPLE ID B07202 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 08/03/92 11:35:00 Category SOIL

NO3NO2 <2.47
mg N/kg

SAMPLE ID B07202 DUPL SAMPLE # 01 FRACTIONS: B
Date & Time Collected 08/03/92 11:35:00 Category SOIL

NO3NO2 <2.42
mg N/kg

SAMPLE ID B07202 SPIKE SAMPLE # 01 FRACTIONS: C
Date & Time Collected 08/03/92 11:35:00 Category SOIL

NO3NO2 19.0
mg N/kg

SAMPLE ID LCSS SAMPLE # 02 FRACTIONS: A
Date & Time Collected not specified Category SOIL

NO3NO2 1.97
mg N/L

TMA
Thermo Analytical Inc.

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc. retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc. will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

Skinner & Sherman Laboratories Inc. 300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

Page 4 Skinner&Sherman REPORT Work Order # S2-08-113
Received: 08/07/92 Test Methodology

TEST CODE NO3NO2 NAME Nitrate Plus Nitrite

Methods for Chemical Analysis of Water and Wastes
EPA - 600/4-79-020 March 1979 Method 353.2 (modified)

TMA
Thermo Analytical Inc.

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc. retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc. will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

Skinner & Sherman Laboratories Inc. 300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

000050

TMA/Skinner & Sherman Labs SAMPLE LOG-IN

WORKORDER S208113 CLIENT Hanford Nov No. SAMPLES:

PROTCL CLP TURNARND 33 Days 1 (Soil) (Water) (Specify Other)

COOLER TEMP: 5 oC, or NA

CUSTODIAN B. Provix SDG/BATCH N/A

CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N208043

SHIPER & # Fed Ex 7521032544 PO/CONTRACT# N

TAGS: PRESENT/ABSENT/NA/SEE COC CONTACT D Sanchez

CHAIN OF CUSTODY: PRESENT/ABSENT/NA, # N/A COMMENTS: Non

SAMPLE CONTAINERS-INTACT/BROKEN COMMENTS

CLIENT COMMENT? YES/NO

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

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

SHIPMENT DATES 8/7/92

LIST ANY DATE WITH PAPERWORK/SHIPMENT PROBLEMS & SPECIFY THE PROBLEM:

N/A

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME UP
1	B072Q2	soil	8/7/92	N/A	D.S NO3NO2	
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						

Samples are from site known to have Rad-Contamination: YES ✓ NO

Samples have detectable amounts of Radioactive Material: YES NO ✓

SUBCONTRACT: YES/NO, TO: DATE:

REVIEWED

Complete 8/7/92 BP

* EPA/CLP required Rev 1.6 PAGE:

Westinghouse Hanford Company

CHAIN OF CUSTODY

S&S

Custody Form Initiator W.V. Setzer

Company Contact CM CHANCE

Telephone 376-7619

Project Designation/Sampling Locations 100-KR-4

Collection Date 8-3-92

Ice Chest No. WHC 21

Field Logbook No. EFL-1022

Bill of Lading/Airbill No. 2509869736

Offsite Property No. W92-0-0577#8

Method of Shipment OVERNIGHT AIR SERVICE

Shipped to TMA/NORCAL

Possible Sample Hazards/Remarks None detected with field instruments. Maintain at 4C.

Sample Identification

1) B07292
1,120ml aG:CLP;ICP/AA Metals,Hg
1,120ml aG:CLP;Cn
~~1,120ml aG:CLP;VOA~~
~~1,250ml aG:CLP;Semi-VOA,PCB/PEST~~
~~1,120ml aG:300.~~0/353.2;Anions(~~F,SO4~~,NO3)
~~1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-2~~41

2)
1,120ml aG:CLP;ICP/AA Metals,Hg
1,120ml aG:CLP;Cn
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

3)
1,120ml aG:CLP;ICP/AA Metals,Hg
1,120ml aG:CLP;Cn
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

WVS 8-3-92

~~4) B07Q01 1,120ml aG CLP-VOA~~

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)		
Relinquished by: W.V. Setzer	Received by: Kermit Blum	Date/Time: 8-6-92 1130
Relinquished by: Kermit Blum 8-6-92	Received by: [illegible]	Date/Time: 8/7/92 9:30
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9713517.0406

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B07202

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

ab Code: SKINER Case No : N2-08-0435AS No : SDG No : B07202

atrix (soil/water): SOIL Lab Sample ID: 08112-01S

evel (low/med): LOW Date Received: 08/07/92

Solids: 98.2

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5270			P
7440-36-0	Antimony	5.1	U	N	P
7440-38-2	Arsenic	1.6	B	N	F
7440-39-3	Barium	49.2			P
7440-41-7	Beryllium	0.13	U		P
7440-43-9	Cadmium	0.29	U		P
7440-70-2	Calcium	2690			P
7440-47-3	Chromium	17.3			P
7440-48-4	Cobalt	5.0	B		P
7440-50-8	Copper	16.5			P
7439-89-6	Iron	10100			P
7439-92-1	Lead	4.1			F
7439-95-4	Magnesium	3130			P
7439-96-5	Manganese	202			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	11.5			P
7440-09-7	Potassium	954			P
7782-49-2	Selenium	3.0		SN*	F
7440-22-4	Silver	0.91	U		P
7440-23-5	Sodium	262	B		P
7440-28-0	Thallium	0.33	U	W	F
7440-62-2	Vanadium	22.5			P
7440-66-6	Zinc	28.0			P
	Cyanide	0.51	U		CA

olor Before: BROWN Clarity Before: Texture: FINE

olor After: BROWN Clarity After: Artifacts: YES

omments:
STONES.

FORM I - IN Rev.6/89

TMA/Skinner & Sherman Labs SAMPLE LOG-IN

WORKORDER S208112 CLIENT HANFORD NOR No. SAMPLES:

PROTCL CLP TURNARND 33 Days 1 (Soil) (Water) (Specify Other)

COOLER TEMP: 5 oC, or NA

CUSTODIAN R PROULX SDG/BATCH N/A

CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N208043

SHIPER & # FedEx 2521032544 PO/CONTRACT#

TAGS: PRESENT/ABSENT/NA/SEE COC CONTACT D SANCHEZ

CHAIN OF CUSTODY: PRESENT/ABSENT/NA, # N/A COMMENTS: none

SAMPLE CONTAINERS-INTACT/BROKEN COMMENTS

CLIENT COMMENT? YES/NO

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

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

SHIPMENT DATES 8/7/92

LIST ANY DATE WITH PAPERWORK/SHIPMENT PROBLEMS & SPECIFY THE PROBLEM:

N/A

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME UP
1	B072Q2	Soil	8/7/92	N/A	D.S Tm/CN	
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						

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Samples are from site known to have Rad-Contamination: YES ✓ NO

Samples have detectable amounts of Radioactive Material: YES NO ✓

SUBCONTRACT: YES/NO TO: DATE:

REVIEWED

Complete 8/7/92

* EPA/CLP required Rev 1.6 PAGE: RP

9713517.0408

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 25210325'

2126M 2521032544

RECIPIENT'S COPY

1 Date 8-8-92

From (Your Name) Please Print: SAMPLE control

Your Phone Number (Very Important): (617) 339-2033

Company: T A INDUSTRIAL

Department/Floor No.

Street Address: 2221 WRIGHT AVE

City: RICHMOND State: CA ZIP Required: 94

2 To (Recipient's Name) Please Print: SAMPLE control

Recipient's Phone Number (Very Important): ( )

Company: SKINNER & SHERMAN

Department/Floor No.

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 300 SECOND AVE

City: WALTHAM State: MA ZIP Required: 02254

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

H IF HOLD FOR PICK-UP, Print FEDEX Address Here

Street Address

City State ZIP Required

3 PAYMENT 1 [X] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card 5 [ ] Cash/Check

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
- 11 [X] YOUR PACKAGING
- 16 [ ] FEDEX LETTER *
- 12 [ ] FEDEX PAK *
- 13 [ ] FEDEX BOX
- 14 [ ] FEDEX TUBE

Standard Overnight (Delivery by next business afternoon†)
- 51 [ ] YOUR PACKAGING
- 56 [ ] FEDEX LETTER *
- 52 [ ] FEDEX PAK *
- 53 [ ] FEDEX BOX
- 54 [ ] FEDEX TUBE

Economy Two-Day (Delivery by second business day†)
- 30 [ ] ECONOMY

Government Overnight (Restricted to authorized users only)
- 46 [ ] GOVT LETTER
- 41 [ ] GOVT PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)
- 70 [ ] OVERNIGHT FREIGHT ** (Contract rate required)
- 80 [ ] TWO-DAY FREIGHT **

† Delivery commitment may be later in some areas

* Declared Value Limit $100.

** Call for delivery schedule

5 DELIVERY AND SPECIAL HANDLING (Check services required)

1 [ ] HOLD FOR PICK-UP (Fill in Box H)

2 [X] DELIVER WEEKDAY

3 DELIVER SATURDAY (Extra charge) [ ] (Not available to all locations)

4 [ ] DANGEROUS GOODS (Extra charge)

5 [ ]

6 [ ] DRY ICE Lbs

7 [ ] OTHER SPECIAL SERVICE

8 [ ]

9 [ ] SATURDAY PICK-UP (Extra charge)

10 [ ]

11 [ ]

12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6 PACKAGES | WEIGHT (in Pounds Only) | YOUR DECLARED VALUE

Total | Total 16 | Total

DIM SHIPMENT (Chargeable Weight)

[ ] _____ lbs.

L x W x H = _____

Received At

1 [X] Regular Stop 3 [ ] Drop Box

2 [ ] On-Call Stop 4 [ ] BSC 5 [ ] Station

Emp. No. Date

[ ] Cash Received

[ ] Return Shipment

[ ] Third Party [ ] Chg To Del [ ] Chg To Hold

Street Address

City State Zip

Received By: X

Date/Time Received 8/7/92 9:30 FedEx Employee Number

7 Release Signature:

FedEx Emp. No. Date/Time

Federal Express Use

Base Charges

Declared Value Charge

Other 1

Other 2

Total Charges

REVISION DATE 6/91
PART #137204 FXEM 4/92
FORMAT #099

099

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9713517.0409

Westinghouse Hanford Company	CHAIN OF CUSTODY	S&S

Custody Form Initiator: W.V. Setzer

Company Contact: CM CHANCE

Telephone: 376-7619

Project Designation/Sampling Locations: 100-KR-4

Collection Date: 8-3-92

Ice Chest No.: WHC 21

Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: 2509869736

Offsite Property No.: W92-0-0577#8

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA/NORCAL

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

Sample Identification

1) B072Q2
- 1,120ml aG:CLP;ICP/AA Metals,Hg
- 1,120ml aG:CLP;Cn
- ~~1,120ml aG:CLP;VOA~~
- ~~1,250ml aG:CLP;Semi-VOA,PCB/PEST~~
- ~~1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)~~
- ~~1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241~~

2)
- 1,120ml aG:CLP;ICP/AA Metals,Hg
- 1,120ml aG:CLP;Cn
- 1,120ml aG:CLP;VOA
- 1,250ml aG:CLP;Semi-VOA,PCB/PEST
- 1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
- 1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

3)
- 1,120ml aG:CLP;ICP/AA Metals,Hg
- 1,120ml aG:CLP;Cn
- 1,120ml aG:CLP;VOA
- 1,250ml aG:CLP;Semi-VOA,PCB/PEST
- 1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
- 1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

WVS 8-3-92

~~4) B072Q1 1,120ml aG CLP-VOA~~

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

Relinquished by:	Received by:	Date/Time:
W.V. Setzer	Kermit Blum	8-6-92 1130
Relinquished by: Kermit Blum 8-6-92	Received by: [illegible]	Date/Time: 8/7/92 9:30
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9713517.0410

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector W.V. SETZER Date Sampled 8-3-92 Time 1135 hours

Company Contact ~~CM CHANCE~~ W.V. SETZER WVS 8-5-92 Telephone (509) 376-2084

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B072Q2	1-120ml aG	Soil	CLP:ICP/AA Metals,Hg
	1-120ml aG	Soil	CLP:Cn
	~~1-120ml aG~~	~~Soil~~	~~CLP:VOA~~
	~~1-250ml aG~~	~~Soil~~	~~CLP:Semi-VOA,PCB/PEST~~
	~~1-120ml aG~~	~~Soil~~	~~300.0~~/353.2;Anions(~~F,SO4~~,NO3)
	~~1-950ml aG~~	~~Soil~~	~~Gross alpha/beta,Gamma Spec,Sr-90,C-14;~~
			~~U-235/238,Pu-239/240,Am-241~~
	1-120ml aG	Soil	CLP:ICP/AA Metals,Hg
	1-120ml aG	Soil	CLP:Cn
	1-120ml aG WVS 8-5-92	Soil	CLP:VOA
	1-250ml aG	Soil	CLP:Semi-VOA,PCB/PEST
	1-120ml aG	Soil	300.0/353.2;Anions(F,SO4,NO3)
	1-950ml aG	Soil	Gross alpha/beta,Gamma Spec,Sr-90,C-14
			U-235/238,Pu-239/240,Am-241
~~B072Q1~~	~~1-120ml aG~~	~~Soil~~	~~CLP:VOA~~

Field Information** NA

Special Handling and/or Storage Maintain at 4C

Possible Sample Hazards NONE OBSERVED

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PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 8-6-92

Analysis Required

*Indicate whether sam... ...ne, water, etc.

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 08-018

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : August 6, 1992

1.0 DESCRIPTION OF CASE :

Two soil samples were analyzed for TCL Organics-Volatiles, Semivolatiles and Pesticide/PCBs according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision OLM01.8.

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX
B072Q2	A2-08-018-01A	V	SOIL
B072Q2	A2-08-018-01B	SV & P	SOIL
B072Q2 MS	A2-08-018-01C	SV & P	SOIL
B072Q2 MSD	A2-08-018-01D	SV & P	SOIL
B072Q1	A2-08-018-02A	V	SOIL
B072Q1 MS	A2-08-018-02B	V	SOIL
B072Q1 MSD	A2-08-018-02C	V	SOIL

3.0 COMMENTS :

3.1 SHIPPING AND DOCUMENTATION :

The samples were received unbroken and properly documented.

3.2 ANALYSIS

3.2.1 VOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were analyzed by heated purge within the CLP SOW holding times.

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

TUNES :

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

3.2.2 SEMIVOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

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

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

3.2.3 PESTICIDE/PCB ANALYSIS COMMENTS :

SEQUENCE NOTES :

The sequence was started on 9/3/92 and was analyzed in accordance with the EPA CLP SOW. The sequence was analyzed by single injection into a dual column system. After the sample injection at 19:15 on 9/9/92, the auto sampler malfunctioned. After maintenance was performed, the sequence was continued with the next injection of PIBLK06 at 8:07 on 9/10/92. Since the injection of PIBLK06 was outside of the 12 hour window, the samples injected between PIBLK05 and PIBLK06 were re-injected in another sequence. PIBLK06 failed to meet the TCX retention time window by 0.005 minutes. However, the next injection met the QC limit and the sequence was continued. The sequence met all of the QC requirements specified in the CLP SOW.

The Chromatograms are presented in the manner consistent with the capabilities of the Nelson 2600 Data System which normalizes the largest peak to scale.

SAMPLE NOTES :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the CLP SOW holding times. Samples B072Q2 on the DB-1701 column and PBLK0810S on the DB-608 column had TCX surrogate recoveries slightly below the advisory QC limits. Sample B072Q2MSD had a spike recovery of the DB-608 column that was above the advisory QC limit for gamma-BHC. Also, the quantitation percent difference between the DB-608 and DB-1701 columns was greater than the 25% advisory limit. The high gamma-BHC recovery on the DB-608 column was due to the co-elution of an interference peak with the analyte. All of the other QC results were within the limits specified by the EPA CLP SOW.

We certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data in this hardcopy data package and in the computer-readable data submitted on diskette is authorized by the Laboratory Manager or his designee, as verified by the following signatures.

Nicole Roth
Nicole Roth
CLP Program Manager

Widayati
Wida Ang
Organics Supervisor

9213517.0414

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

000005

EPA SAMPLE NO.

B072Q1

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08018 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208018-02A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 20812R11

Level: (low/med) LOW Date Received: 08/06/92

% Moisture: not dec. 0 Date Analyzed: 08/12/92

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

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

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

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

000006
EPA SAMPLE NO.

B072Q1

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08018 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208018-02A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 20812R11

Level: (low/med) LOW Date Received: 08/06/92

% Moisture: not dec. 0 Date Analyzed: 08/12/92

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

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALCOHOL	3.53	6	J

9213517.0416

000007

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072Q2

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08018 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208018-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 20812R10

Level: (low/med) LOW Date Received: 08/06/92

% Moisture: not dec. 2 Date Analyzed: 08/12/92

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

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

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

9213517.0417

000008

EPA SAMPLE NO.

B072Q2

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08018 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208018-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 20812R10

Level: (low/med) LOW Date Received: 08/06/92

% Moisture: not dec. 2 Date Analyzed: 08/12/92

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

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

9213517.0418

000009
EPA SAMPLE NO.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B072Q2

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08018 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208018-01B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 20817S03

Level: (low/med) LOW Date Received: 08/06/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 08/10/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/17/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	810	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072Q2

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08018 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208018-01B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 20817S03

Level: (low/med) LOW Date Received: 08/06/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 08/10/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/17/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
218-01-9	Chrysene	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

9213517.0420

000011

EPA SAMPLE NO.

B072Q2

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08018 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208018-01B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 20817S03

Level: (low/med) LOW Date Received: 08/06/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 08/10/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/17/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

Number TICs found: 11

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN KETONE	5.13	200	J
2.	UNKNOWN HYDROCARBON	5.30	2100	BJ
3.	UNKNOWN HYDROCARBON	5.72	54000	BJ
4.	UNKNOWN HYDROCARBON	6.70	240	BJ
5.	UNKNOWN HYDROCARBON	6.80	670	BJ
6.	UNKNOWN HYDROCARBON	7.25	740	BJ
7.	UNKNOWN ALCOHOL	8.47	1100	BJ
8.	PROPANOIC ACID ISOMER	17.20	100	J
9.	UNKNOWN CARBOXYLIC ACID ESTE	20.30	470	J
10.	HEXANEDIOIC ACID ISOMER	24.85	170	J
11.	UNKNOWN HYDROCARBON	27.73	67	J

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072Q2

ab Name: TMA/ARLI Contract: WHC

ab Code: TMALA Case No.: 08018 SAS No.: NA SDG No.: NA

atrix: (soil/water) SOIL Lab Sample ID: A208018-01B

ample wt/vol: 30.6 (g/mL) G Lab File ID: _____

Moisture: 2 decanted: (Y/N) N Date Received: 08/06/92

xtraction: (SepF/Cont/Sonc) SONC Date Extracted: 08/10/92

oncentrated Extract Volume: 5000 (uL) Date Analyzed: 09/09/92

njection Volume: 1.00 (uL) Dilution Factor: 1.00

PC Cleanup: (Y/N) Y pH: 9.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.3	U
72-55-9	4,4'-DDE	3.3	U
72-20-8	Endrin	3.3	U
33213-65-9	Endosulfan II	3.3	U
72-54-8	4,4'-DDD	3.3	U
1031-07-8	Endosulfan sulfate	3.3	U
50-29-3	4,4'-DDT	3.3	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.3	U
7421-36-3	Endrin aldehyde	3.3	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	67	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U

9713517.0422

B072P8-TMA-257
000001

WESTINGHOUSE HANFORD COMPANY

Results of Analyses For:

GENERAL CHEMISTRY
CASE NO. 08-023
(TMA/ARLI Work Order # A2-08-023)

ORGANICS
CASE NO. 08-023
(TMA/ARLI Work Order # A2-08-023)

General Chemistry and Organics results are presented
for the following WHC WATER samples(s):

B072Q4 B072Q5

Norcal Work Order # N2-08-071
Norcal Work Order # N2-08-073

Thermo Analytical Inc.
160 Taylor Street
Monrovia, CA 91016
(818) 357-3247

Westinghouse Hanford Company

CHAIN OF CUSTODY

ARL1

Custody Form Initiator: W.W. SETZER

Company Contact: CM CHANCE

Telephone: 376-2084

Project Designation/Sampling Locations: 100-KR-4

Collection Date: 8-5-92

Ice Chest No.: SML 92

Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: 2509869648

Offsite Property No.: WA20-0577 #10

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA/NORCAL

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

Sample Identification

1) B07294
~~1,120ml aG:CLP;ICP/AA Metals,Hg~~
~~1,120ml aG:CLP;Cn~~
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/~~353.2~~;Anions(F,SO4,~~NO3~~)
~~1,950ml aG:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241~~

2)
~~1,120ml aG:CLP;ICP/AA Metals,Hg~~
~~1,120ml aG:CLP;Cn~~
~~1,120ml aG:CLP;VOA~~
~~1,250ml aG:CLP;Semi-VOA,PCB/PEST~~
~~1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)~~
~~1,950ml aG:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241~~

3)
1,120ml aG:CLP;ICP/AA Metals,Hg WWS 8-5-92
1,120ml aG:CLP;Cn
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
1,950ml aG:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

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

Relinquished by:	Received by:	Date/Time:
W.W. Setzer	Kermit Blum	8/10/92 0800 *
Kermit Blum 8-10-92	C. Harris	8/11/92 9^00

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: * Received @ TMA/NORCAL 8/8/92; opened 8/10/92 - KB

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

9213517.0424

000003

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

Collector W.V. SETZER — Date 8-7-92

Company Contact CM CHANCE — Telephone (509)376-7619

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B0TZQ4	S	8-5-92	1000	~~1-120ml G CLP;ICP/AA Metals,Hg~~ ~~1-120ml G CLP;CN~~ 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/~~353.2~~;Anions(F,SO4,~~NO3~~) ~~1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241~~
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241 WVS 8-7-92
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241

*Type of Sample: A = Air; DL = Drum Liquids; DS = Drum Solids; L = Liquid; O = Oil; S = Soil; SE = Sediment; SL = Sludge; SO = Solid; T = Tissue; W = Water; WI = Wipe; X = Other

Field Information FROM 100-KR-4 Drilling

Special Handling and/or Storage Maintain at 4C

Possible Sample Hazards NA

A-6000-406 (06/91) WEF060

9213517.0425

000004

Westinghouse Hanford Company

CHAIN OF CUSTODY

ARL1

Custody Form Initiator: W.V. SETZER

Company Contact: W.V. SETZER — Telephone: (509) 376-2413

Project Designation/Sampling Locations: 100 KR-4 — Collection Date: 8-6-92

Ice Chest No.: WHC 23 — Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: 250986 9648 — Offsite Property No.: W92-0-0577#10

Method of Shipment: AIR DELIVERY

Shipped to: TMA / NORCAL

Possible Sample Hazards/Remarks: NONE OBSERVED

Sample Identification

B072Q5 - SOIL, CHEMICAL	PRESERVATIVE
~~1-P 1000mL : ICP/METALS, HG~~	HNO3
~~1-P 1000mL: CN~~	NaOH
3-Gs 40mL: VOA	CHILL ON ICE
~~1-P 500mL: ADIODS (NO2, NO3) CHLORIDE, SULFATE, ETC~~	H_2SO_4
~~1-P 1000mL: SR90, U235/238, Pu 239/240, AM241~~	HNO3
~~1-P 1000mL: TC 99~~	HCL
1-G 500 mL : SULFIDE	ZINC ACETATE/NaOH
1-G 500mL : AMMONIA, CHEM. OXYGEN DEMAND	H_2SO_4
~~1-G 125mL: TOC~~	H_2SO_4
~~1-G 250mL: TOX~~	H_2SO_4
~~1-G - 40mL: HYDROCARBONS~~	HCL
~~1-G 250mL: TOTIUM~~	CHILL ON ICE
1 P - 1000mL : ANIONS (IC) SO4, F	CHILL ON ICE
1aG 1000mL: ALKALINITY, TOTAL DISSOLVED SOLIDS	CHILL ON ICE

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
W.V. Setzer	Kermit Blum	8-10-92 0800 *
Kermit Blum 8-10-92	C Harris	8/11/92 9:00

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: *Received @ TMA/NORCAL 8-8-92 ; opened 8-10-92 - KB

A-6000-407 (12/90)

9713517.0426

000005

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

Collector W.V. SETZER Date 8-7-92

Company Contact W.V. SETZER Telephone (509) 376-2413

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Requested	PRESERVATIVE
8072Q5	W	8-7-92	0860	✓ ~~1-P-500mL: ICP/AA METALS, Hg~~	HNO3
				✓ ~~1-P 1000mL. CN~~	NaOH
				✓ 3-GS-40mL: VOA	CHILL ON ICE
				✓ 3-aG-2360mL: SEMI VOA, ACB, PEST	CHILL ON ICE
				✓ ~~1-P 500 WVS 8-7-92, NO2~~ ~~1000mL: ANIONS (F, SO4, NO3)~~	H2SO4
				✓ ~~2-P 1000mL: GROSS ALPHA, BETA, GAMMA SPEC, SR-90, U-238/U-238, Pu 239/240, Am 241~~	HNO3
				✓ ~~1-P 1000mL TC-99~~	HCL
				✓ 1-B-500mL SULFIDE	ZINC/ACETATE/NaOH
				✓ 1-G-500mL AMMONIA, CHEMICAL OXYGEN DEMAND	H2SO4
				✓ ~~1-aG-125mL TOC~~	H2SO4
				✓ ~~1-aGS-250mL TOX~~	H2SO4
				✓ ~~1-GS-40mL HYDRAZINE~~	HCL
				✓ ~~1-GS 250mL TRITIUM~~	CHILL ON ICE
				✓ 1-P-1000mL (ANIONS (IC) SO4, F, PO4, Cl,	CHILL ON ICE
				~~1-aG-WVS 8-7-92~~ COND, PH)	
				✓ 1-aG-1000mL (ALKALINITY, TOTAL DISSOLVED solids	CHILL ON ICE

*Type of Sample

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

Field Information

Special Handling and/or Storage

Possible Sample Hazards NONE OBSERVED

A-6000-406 (06/91)

SAMPLE LOG-IN SHEET

LAB NAME : TNA/ARLI

PAGE : OF

RECEIVED BY (PRINT NAME): CAROLE HARRIS

LOG-IN-DATE : 8-11-92

RECEIVED BY (SIGNATURE): Carole Harris

CASE NUMBER:

SAMPLE DELIVERY GROUP NO.:

SAS NUMBER:

REMARKS:

1. Custody Seal(s) — Present/Absent* Intact/Broken
2. Custody Seal Nos: _____
3. Chain of Custody Records — Present/Absent*
4. Traffic Reports or Packing List — Present/Absent*
5. Airbill — Airbill/Sticker Present/Absent*
6. Airbill No.: 2521032582
7. Sample Tags — Present/Absent*
8. Sample Tags Numbers — Listed/Not Listed on Chain of Custody
9. Sample Condition: — Intact/Broken*/Leaking
10. Does information on custody records, traffic reports, and sample tags agree — Yes/No*
11. Date Recieved at Lab: 8-11-92
12. Temp of ice chest 4.0 °C
13. Time Recieved: 9:00 AM

SAMPLE TRANSFER

Fraction: _____

Area #: _____

By: _____

On: _____

EPA SAMPLE #	CORRESPONDING SAMPLE TAG #	CORRESPONDING ASSIGNED LAB #	REMARKS: CONDITION OF SAMPLE SHIPMENT, ETC
	B072@4	A2-08-023-01	
	B072@5	A2-08-023-02	

* Contact SMO and attach record of resolution

Reviewed By: _____ Logbook No.: _____

Date: _____ Logbook Page No.: _____

FORM DC-1

000007

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL-FREE

AIRBILL PACKAGE TRACKING NUMBER 2521032592

212 2521032592

RECIPIENT'S COPY

Date 8-10-92

From (Your Name) Please Print: SAMPLE CONTROL

Your Phone Number (Very Important): 510-235-2633

Department/Floor No

Company: T.M.A. /NORCAL

Street Address: 203 WEIGHT AVE

City: RICHMOND State: CA ZIP Required: 94804

To (Recipient's Name) Please Print: SAMPLE CONTROL ( )

Recipient's Phone Number (Very Important)

Department/Floor

Company: T.M.A. ARI

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes): 160 TAYLOR STREET

City: MONROVIA State: CA ZIP Required: 91016

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice): 2320 6406

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

PAYMENT: 1 [X] Bill Sender 2 [ ] Bill Recipient's FedEx Acct No 3 [ ] Bill 3rd Party FedEx Acct No 4 [ ] Bill Credit Card 5 [ ] Cash/Check

SERVICES (Check only one box)

Priority Overnight: 11 [X] YOUR PACKAGING; 16 [ ] FEDEX LETTER *; 12 [ ] FEDEX PAK *; 13 [ ] FEDEX BOX; 14 [ ] FEDEX TUBE

Standard Overnight: 51 [ ] YOUR PACKAGING; 56 [ ] FEDEX LETTER *; 52 [ ] FEDEX PAK *; 53 [ ] FEDEX BOX; 54 [ ] FEDEX TUBE

Economy Two-Day: 30 [ ] ECONOMY

Government Overnight: 46 [ ] GOVT LETTER; 41 [ ] GOVT PACKAGE

Freight Service: 70 [ ] OVERNIGHT FREIGHT **; 80 [ ] TWO-DAY FREIGHT **

DELIVERY AND SPECIAL HANDLING (Check services requested)

1 [ ] HOLD FOR PICK-UP
2 [X] DELIVER WEEKDAY
3 [ ] DELIVER SATURDAY
4 [ ] DANGEROUS GOODS
5 [ ]
6 [ ] DRY ICE
7 [ ] OTHER SPECIAL SERVICE
8 [ ]
9 [ ] SATURDAY PICK-UP
10 [ ]
11 [ ]
12 [ ] HOLIDAY DELIVERY

PACKAGES / WEIGHT / YOUR DECLARED VALUE

Total 1 Total 59 Total

DIM SHIPMENT (Chargeable Weight) [ ] _____ lbs

L x W x H =

Received At: 1 [X] Regular Stop; 2 [ ] On-Call Stop; 3 [ ] Drop Box; 4 [ ] BSC; 5 [ ] Station

Emp No. Date

[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg To Del [ ] Chg To Hold

Street Address

City State Zip

Received By: X

Date/Time Received FedEx Employee Number

Release Signature

FedEx Emp No Date/Time

Federal Express Use: Base Charges; Declared Value Charge; Other 1; Other 2; Total Charges

REVISION DATE 6/91 PART #137204 FXEM 4/9 FORMAT 6089

099

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TMA/ARLI
Thermo Analytical Inc.

RADIATION DOSE RATE SURVEY FORM

Date 8/11/92 COMPANY NORCAL/(WHC) OTHER ORD # 2521032592

Surveyor's Name MARK S. McCray

Model No. HP-210 / ESP-1 Model No. AC-3-7 / ESP-1

Serial Nos. 710289 / 02619 Serial Nos. 407726 / 02628

Calibration Date 3/25/92 Calibration Date 8/01/92

Instrument Calibration Factor 0.280 Instrument Calibration Factor .188

Sample	Location	HP-210 CPM	HP-210 Factor	HP-210 DPM	AC-3-7 CPM	AC-3-7 Factor	AC-3-7 DPM	Spillage or Breakage?	Activity, uCi/mL or uCi/g
Background		27.0			0				
Consistency		7,450	0.2876		5,200	0.1911			
Smear: SML-195		42.0			0				
Reported (WHC) 2 samples each < 50 pCi/gram									

Comments:

All OK ✓ Approved [signature]

Not OK Date 8/11/92

GENERAL CHEMISTRY RESULTS

CASE NO. 08-023

Water Sample #:

B072Q4 B072Q5

CASE NARRATIVE

Because the Fluoride concentration level was near and below the instrument detection limit, the % RPD for the Fluoride analysis reported for soil sample B070Q4 (A2-08-023-01) was not calculated. A matrix spike and matrix spike duplicate were performed for the sulfide analysis due to lack of sample volume.

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

Ernesto Vázquez

Ernesto Vazquez

TMA Inc. REPORT Work Order # A2-08-023

Received: 08/10/92 10/22/92 15:12:29

REPORT TO: Westinghouse Hanford Company
2355 Stevens Dr.
Richland,WA,99352
MO-346/200 West/T6-08
ATTEN: Jeanette Duncan

PREPARED BY: Thermo Analytical, Inc.
160 Taylor Street
Monrovia, CA 91016
ATTEN: Ms. Carole Harris
PHONE: 818-357-3247

CERTIFIED BY: Ernesto Vázquez
CONTACT: EVV CIH

CLIENT: WHC SAMPLES: 3
COMPANY: Westinghouse Hanford Company
FACILITY:

This report is for the sole and exclusive use of the client to whom it is addressed and represents only those samples herein described. Samples not destroyed in testing are retained a maximum of 30 days unless otherwise requested.

WORK ID: 100-KR-4
TAKEN: By Westinghouse Staff
TRANS: Federal Express
TYPE: Solid & Liquid
P.O. #: N2-08-071/73-SU-AR
INVOICE: under separate cover

SAMPLE IDENTIFICATION	TEST CODES and NAMES used on this workorder	
01 B07204	BNCLPS	CLP Semivol. Sol. - WH016
01 B07204 MS	BNCLPW	CLP Semivol. Water
01 B07204 MSD	IC AN	Anions Extraction Solids
01 B07204	PECLPL	CLP Pesticides Liq.-WH019
01 B07204 MS	PECLPS	CLP Pest\PCBs Soil - WH015
01 B07204 MSD	VOCLPL	CLP Volatile Org.Liq.
01 B07204	VOCLPS	CLP Vol. Org.Soils - WH014
01 B07204 MS	WCCLPL	Anions & Wet Chem. - WH043
01 B07204 Duplicate	WCCLPS	Anions in Solids - WH232
02 B07205	WCL L	Chloride - WH120
02 B07205 MS	WCQCD	Quality Control Summary
02 B07205 MSD	WCQCS	Quality Control Summary
02 B07205	WF L	Fluoride in Water
02 B07205 MS	WF S	Fluoride in Solids
02 B07205 MSD	WMOIST	Moisture
02 B07205	WNH3 L	Ammonia in Water - WH140
02 B07205 MS	WPH L	pH of Liquid - WH121
02 B07205 Duplicate	WPH S	pH of Solids - WH217
02 B07205	WPO4 L	Phosphate in Liquids
02 B07205 Duplicate	WSO4 L	Sulfate (in Waters)
02 B07205	WSO4 S	Sulfate (in Solids)
02 B07205 MS	WSULFI	Sulfide - WH114
02 B07205 MSD	W ALK	Alkalinity - WH131
02 B07205	W COD	COD Water - WH132
02 B07205 MS	W COND	Conductivity-Water WH135
02 B07205 Duplicate	W TDS	Dissolved Solids WH128

9716517.0432

TMA Inc. REPORT

Work Order # A2-08-023

eceived: 08/10/92

09/18/92 09:14:38

Work Not Complete

SAMPLE IDENTIFICATION

3 Wet Chemistry Blank

TMA Inc. REPORT Work Order # A2-08-023

eceived: 08/10/92 Results by Sample

AMPLE ID B07204 FRACTION 016 TEST CODE VCCLPS NAME Anions in Solids - VM232

Date & Time Collected 08/05/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Fluoride	300.0	3	mg/Kg	1.
Sulfate	300.0	35	mg/Kg	10.

FORM I

TMA Inc. REPORT Work Order # A2-08-023

Received: 08/10/92 Results by Sample

SAMPLE ID B07205 FRACTION 02G TEST CODE VCCLPL NAME Anions & Wet Chem. - VH043

Date & Time Collected 08/07/92 Category

ANIONS AND WET CHEMISTRY - LIQUIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	1.3	mg/L	0.2
Elect. Conductivity	120.1	138	umho/cm	6
Fluoride	300.0	0.2	mg/L	0.1
Phosphate	300.0	<0.4	mg/L	0.4
pH	150.1	8.1	pH	0.1
Sulfate	300.0	12	mg/L	1

FORM I

9213517.0435

TMA Inc. REPORT Work Order # A2-08-023

eceived: 08/10/92 Results by Sample

AMPLE ID B07205 FRACTION 02J TEST CODE VCCLPL NAME Anions & Wet Chem. - VN043

Date & Time Collected 08/07/92 Category

ANIONS AND WET CHEMISTRY - LIQUIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Alkalinity	310.1	76	mg/L	2
Tot. Dissolved Solids	160.1	96	mg/L	5

FORM I

9215517.0456

TMA Inc. REPORT Work Order # A2-08-023

'eceived: 08/10/92 Results by Sample

AMPLE ID B07205 FRACTION 02L TEST CODE WCCLPL NAME Anions & Wet Chem. - WN043

Date & Time Collected 08/07/92 Category

ANIONS AND WET CHEMISTRY - LIQUIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Sulfide	376.1	<1	mg/L	1

FORM I

TMA Inc. REPORT Work Order # A2-08-023

eceived: 08/10/92 Results by Sample

AMPLE ID B07205 FRACTION 020 TEST CODE WCCLPL NAME Anions & Wet Chem. - WH043

Date & Time Collected 08/07/92 Category

ANIONS AND WET CHEMISTRY - LIQUIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Ammonia Nitrogen	350.3	<0.05	mg/L	0.05
COD	410.0	<30	mg/L	30

FORM I

9713517.0438

 Skinner&Sherman REPORT Work Order # S2-08-138

Received: 08/11/92 10/13/92 13:41:23

REPORT TMA/NORCAL
TO 2030 Wright Avenue
Richmond, CA 94804

ATTEN Dan Steurmer

CLIENT HANFORD NOR SAMPLES 2
COMPANY TMA/NORCAL
FACILITY Richmond, CA

PREPARED TMA / Skinner & Sherman Labs.
BY 300 Second Avenue
P.O. Box 521
Waltham, MA 02254

ATTEN Client Services
PHONE (617) 890-7200

CERTIFIED BY

CONTACT DP

WORK ID N2-08-071
TAKEN BY CLIENT
TRANS FED EX# 2521032581
TYPE SOIL FOR NO3NO2
P.O. # N2-08-071
INVOICE under separate cover

SAMPLE IDENTIFICATION

01 B07204
01 B07204 DUPL
01 B07204 SPIKE
02 LCSS

TEST CODES and NAMES used on this workorder

NO3NO2 Nitrate Plus Nitrite

TMA Thermo Analytical Inc.

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc. retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc. will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

Skinner & Sherman Laboratories Inc. 300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

Received: 08/11/92

Results by Sample

SAMPLE ID B07294 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 08/05/92 Category SOIL

NO3NO2 <2.48
mg N/kg

SAMPLE ID B07294 DUPL SAMPLE # 01 FRACTIONS: B
Date & Time Collected 08/05/92 Category SOIL

NO3NO2 <2.41
mg N/kg

SAMPLE ID B07294 SPIKE SAMPLE # 01 FRACTIONS: C
Date & Time Collected 08/05/92 Category SOIL

NO3NO2 19.1
mg N/kg

SAMPLE ID LCSS SAMPLE # 02 FRACTIONS: A
Date & Time Collected not specified Category SOIL

NO3NO2 1.97
mg N/L

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.

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300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

Received: 08/11/92 Test Methodology

TEST CODE NO3NO2 NAME Nitrate Plus Nitrite

Methods for Chemical Analysis of Water and Wastes
EPA - 600/4-79-020 March 1979 Method 353.2 (modified)

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.

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300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

TMA/Skinner & Sherman Labs SAMPLE LOG-IN

WORKORDER S208138 CLIENT HANFORD NOR NO. SAMPLES:

PROTCL CLP TURNARND 33 Day 1 ____ ____

COOLER TEMP: 5 oC, or NA (Soil) (Water) (Specify Other)

CUSTODIAN B Brown SDG/BATCH N/A

CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N208071

SHIPER & # Fed Ex 2521032581 PO/CONTRACT# ↓

TAGS: PRESENT/ABSENT/NA/SEE COC CONTACT D. SANCHEZ

CHAIN OF CUSTODY: PRESENT/ABSENT/NA, # N/A COMMENTS: None

SAMPLE CONTAINERS-INTACT/BROKEN COMMENTS

CLIENT COMMENT? YES/NO

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

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

SHIPMENT DATES 8-11-92

LIST ANY DATE WITH PAPERWORK/SHIPMENT PROBLEMS & SPECIFY THE PROBLEM:

N/A

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME UP
1	B072Q4	Soil	8/11/92	N/A	DS NO3 NO2	
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						

Samples are from site known to have Rad-Contamination: YES ✓ NO ____

Samples have detectable amounts of Radioactive Material: YES ____ NO ✓

SUBCONTRACT: YES/NO TO: ____ DATE: ____

REVIEWED ____ Complete 8/11/92

* EPA/CLP required Rev 1.6 PAGE: BP

9219517.0942

Westinghouse Hanford Company	CHAIN OF CUSTODY	S&S

Custody Form Initiator: W.V. SETZER

Company Contact: CM CHANCE

Telephone: 376-2084

Project Designation/Sampling Locations: 100-KR-4

Collection Date: 8-5-92

Ice Chest No.: SML 92

Field Logbook No.: EFL- 1022

Bill of Lading/Airbill No.: 2509869648

Offsite Property No.: WA20-0577 #10

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA/NORCAL

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

Sample Identification

1) B072Q4
- 1,120ml aG:CLP;ICP/AA Metals,Hg
- 1,120ml aG:CLP;Cn
- ~~1,120ml aG:CLP;VOA~~
- ~~1,250ml aG:CLP;Semi-VOA,PCB/PEST~~
- ~~1,120ml aG:300.0~~/353.2;Anions(~~F,SO4~~,NO3)
- ~~1,950ml aG:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241~~

2)
- ~~1,120ml aG:CLP;ICP/AA Metals,Hg~~
- 1,120ml aG:CLP;Cn
- 1,120ml aG:CLP;VOA
- 1,250ml aG:CLP;Semi-VOA,PCB/PEST
- 1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
- 1,950ml aG:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

3)
- 1,120ml aG:CLP;ICP/AA Metals,Hg WVS 8-5-92
- 1,120ml aG:CLP;Cn
- 1,120ml aG:CLP;VOA
- 1,250ml aG:CLP;Semi-VOA,PCB/PEST
- 1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
- 1,950ml aG:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

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

Relinquished by:	Received by:	Date/Time:
W.V. Setzer	Kermit Blum	8/10/92 0800 *
Relinquished by: 8-10-92 Kermit Blum	Received by: [illegible]	Date/Time: 8/11/92 9:30
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: * Received @ TMA/NORCAL 8/8/92; opened 8/10/92 - KB

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

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

Collector W.U. SETZER — Date 8-7-92

Company Contact CM CHANCE — Telephone (509)376-7619

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B0T2Q4	S	8-5-92	1000	1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN ~~1-120ml aG CLP;VOA~~ ~~1-250ml aG CLP;Semi-VOA,PCB/PEST~~ ~~1-120ml aG 300.0/~~353.2;Anions(~~F,SO4~~,NO3) 1 ~~1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-1~~4 ~~U-235/238,Pu-239/240,Am-241~~
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241 WWS 8-7-92
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241

*Type of Sample: A = Air; DL = Drum Liquids; DS = Drum Solids; L = Liquid; O = Oil; S = Soil; SE = Sediment; SL = Sludge; SO = Solid; T = Tissue; W = Water; WI = Wipe; X = Other

Field Information FROM 100-KR-4 Drilling

Special Handling and/or Storage Maintain at 4C

Possible Sample Hazards NA

9213517.0444

 Skinner&Sherman REPORT Work Order # S2-08-140

Received: 08/11/92 09/21/92 10:07:24

REPORT TMA/NORCAL
TO 2030 Wright Avenue
Richmond, CA 94804

ATTEN Dan Steurmer

CLIENT HANFORD NOR SAMPLES 2
COMPANY TMA/NORCAL
FACILITY Richmond, CA

PREPARED TMA / Skinner & Sherman Labs.
BY 300 Second Avenue
P.O. Box 521
Waltham, MA 02254

ATTEN Client Services
PHONE (617) 890-7200

CERTIFIED BY

CONTACT DP

WORK ID N2-08-073
TAKEN BY CLIENT
TRANS FED EX# 2521032581
TYPE WATER FOR NO3NO2
P.O. # N2-08-073
INVOICE under separate cover

SAMPLE IDENTIFICATION

01 B07205
01 B07205 DUPL
01 B07205 SPIKE
02 LCSW

TEST CODES and NAMES used on this workorder

NO3NO2 Nitrate Plus Nitrite

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.

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will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invo
amount. The results listed refer only to tested samples and applicable parameters. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc. w
exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held
thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

Received: 08/11/92

Results by Sample

SAMPLE ID B07205 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 08/06/92 Category WATER

NO3NO2 <0.25
mg N/L

SAMPLE ID B07205 DUPL SAMPLE # 01 FRACTIONS: B
Date & Time Collected 08/06/92 Category WATER

NO3NO2 <0.25
mg N/L

SAMPLE ID B07205 SPIKE SAMPLE # 01 FRACTIONS: C
Date & Time Collected 08/06/92 Category WATER

NO3NO2 1.92
mg N/L

SAMPLE ID LCSW SAMPLE # 02 FRACTIONS: A
Date & Time Collected not specified Category WATER

NO3NO2 2.07
mg N/L

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.

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300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

Received: 08/11/92

Test Methodology

TEST CODE NO3NO2 NAME Nitrate Plus Nitrite

Methods for Chemical Analysis of Water and Wastes
EPA - 600/4-79-020 March 1979 Method 353.2 (modified)

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.

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300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

TMA/Skinner & Sherman Labs SAMPLE LOG-IN

WORKORDER S208140 CLIENT Hanford Nov No. SAMPLES:

PROTCL CLP TURNARND 33 Day _____ 1 _____

COOLER TEMP: ___ oC, or NA (Soil) (Water) (Specify Other)

CUSTODIAN B. Prowl SDG/BATCH N/A

CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N208073

SHIPER & # Fed Ex 252 1032581 PO/CONTRACT# ↓

TAGS: PRESENT/ABSENT/NA/SEE COC CONTACT D. Sanchez

CHAIN OF CUSTODY: PRESENT/ABSENT/NA, # N/A COMMENTS: None

SAMPLE CONTAINERS-INTACT/BROKEN COMMENTS

CLIENT COMMENT? YES/NO

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

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

SHIPMENT DATES 8-11-92

LIST ANY DATE WITH PAPERWORK/SHIPMENT PROBLEMS & SPECIFY THE PROBLEM:

N/A

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME UP
1	B022Q5	water	8/11/92	1.71	D,S N03 N02	
2						
3						
4						
5						
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22						
23						
24						
25						
26						
27						

Samples are from site known to have Rad-Contamination: YES ✓ NO ___

Samples have detectable amounts of Radioactive Material: YES ___ NO ✓

SUBCONTRACT: YES/NO, TO: _____ DATE: _____

REVIEWED _____ Complete 8/11/92

* EPA/CLP required Rev 1.6 PAGE: B1

Westinghouse Hanford Company

CHAIN OF CUSTODY

S & S

Custody Form Initiator: W.V. SETZER

Company Contact: W.V. SETZER

Telephone: (509) 376-2413

Project Designation/Sampling Locations: 100 KR-4

Collection Date: 8-6-92

Ice Chest No.: WHC 23

Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: 250986 9648

Offsite Property No.: W92-0-0577#1

Method of Shipment: AIR DELIVERY

Shipped to: TMA/NORCAL

Possible Sample Hazards/Remarks: NONE OBSERVED

Sample Identification

B072Q5 - ~~Bord~~, CHEMICAL	PRESERVATIVE
1-P-1000mL : ICP/AA METALS, HG	HNO3
1-P-1000mL: CN	NaOH
~~BG5 40mL: VOA~~	CHILL ON ICE
1-P 500mL: ANIONS (NO2 NO3)	H2SO4
~~1 P 1000mL: SR 90, U 235/238, Pu 239/240, AmAm~~	HNO3
~~1 P 1000mL: FE 99~~	HCL
~~1 G 500mL: SULFIDE~~	ZINC ACETATE/NaOH
~~1 G 500mL: Ammonia, Chem. oxygen demand~~	H2SO4
~~1 G 125mL: TOC~~	H2SO4
~~1 G 250mL: TOX~~	H2SO4
~~1 G - 40mL: Hydrazine~~	HCL
~~1 G 250mL: Tritium~~	CHILL ON ICE
~~1 P 1000mL: ANIONS (Cl, Br, F)~~	CHILL ON ICE
~~1 G 1000mL: HEATH-NH, TOTAL DISSOLVED~~ solids	CHILL ON ICE

☐ Field Transfer of Custody

CHAIN OF POSSESSION

(Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
W.V. Setzer	Kermit Blum	8-10-92 0800 *
Relinquished by: 8-10-92 Kermit Blum	Received by: [illegible]	Date/Time: 8/11/92 9:30
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: *Received @ TMA/NORCAL 8-8-92; opened 8-10-92 - KB

A-6000-407 (12/90)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

Collector W.V. SETZER Date 8-7-92

Company Contact W.V. SETZER Telephone (509) 376-2413

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Requested	PRESERVATIVE
B072Q5	W	8-7-92	0860	✓ 1-P-1000mL: ICP/AA METALS, Hg	HNO3
				✓ 1-P-1000mL: CN	NAOH
				~~1 GS-40mL: VOA~~	CHILL ON ICE
				~~1 GS 250mL: SEMI VOA, PCB, PEST~~	CHILL ON ICE
				✓ 1-P-~~1000~~ 500 mL: ANIONS (~~F, SO4~~ NO2, NO3) WVS 8-7-92	H2SO4
				✓ ~~1-P-1000mL: GROSS ALPHA, BETA, GAMMA SPEC, SR-90, U238/238, Pu239/240, AM 241~~	~~HNO3~~
				✓ ~~1-P 1000mL TC-99~~	HCL
				✓ ~~1-P-500mL SULFIDE~~	ZINC/ACETATE/NAOH
				✓ ~~1-P-500mL AMMONIA, CHEMICAL OXYGEN DEMAND~~	H2SO4
				✓ ~~1-GS-125mL TOC~~	H2SO4
				✓ ~~1-GS-250mL TOX~~	H2SO4
				✓ ~~1-GS-40mL HYDRAZINE~~	HCL
				✓ ~~1-GS 250mL TRITIUM~~	CHILL ON ICE
				✓ ~~1-P-1000mL (ANIONS (IC) SO4, F, Br, Cl,~~	CHILL ON ICE
				~~1 GS-1000mL (ALKALINITY, TOTAL DISSOLVED SOLIDS~~	CHILL ON ICE
				✓ ~~1 GS-1000mL (ALKALINITY, TOTAL DISSOLVED SOLIDS~~	CHILL ON ICE

*Type of Sample

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

Field Information

Special Handling and/or Storage

Possible Sample Hazards NONE OBSERVED

A-6000-406 (06/91)

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 08-023

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : August 10, 1992

1.0 DESCRIPTION OF CASE :

One water and one soil samples were analyzed for TCL Organics-Volatiles, Semivolatiles and Pesticide/PCBs according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision OLM01.8.

Due to software limitations, the re-analysis of the Pesticide/PCB sample extracts are reported under case R8-023. Case R8-023 is appended to this package.

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX	pH
B072Q4	A2-08-023-01A	V	SOIL	
B072Q4 MS	A2-08-023-01B	V	SOIL	
B072Q4 MSD	A2-08-023-01C	V	SOIL	
B072Q4	A2-08-023-01D	SV & P	SOIL	
B072Q4 RE	A2-08-023-01D	P	SOIL	
B072Q4 MS	A2-08-023-01E	SV & P	SOIL	
B072Q4 MSD	A2-08-023-01F	SV & P	SOIL	
B072Q4 MSRE	A2-08-023-01E	P	SOIL	
B072Q4 MSDRE	A2-08-023-01F	P	SOIL	
B072Q5	A2-08-023-02A	V	WATER	7
B072Q5 MS	A2-08-023-02B	V	WATER	7
B072Q5 MSD	A2-08-023-02C	V	WATER	7
B072Q5	A2-08-023-02D	SV & P	WATER	
B072Q5 RE	A2-08-023-02D	P	WATER	
B072Q5 MS	A2-08-023-02E	SV & P	WATER	
B072Q5 MSD	A2-08-023-02F	SV & P	WATER	
B072Q5 MSRE	A2-08-023-02E	P	WATER	
B072Q5 MSDRE	A2-08-023-02F	P	WATER	

3.0 COMMENTS :

3.1 SHIPPING AND DOCUMENTATION :

The samples were received unbroken and properly documented.

3.2 ANALYSIS

3.2.1 VOLATILE ANALYSIS COMMENTS :

LOW LEVEL WATER :

The samples were analyzed within the CLP SOW holding times. In each sample analysis there was a peak between scans 146-148 that was identified as Carbon Dioxide. This compound was not reported as a TIC on Form 1E.

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

LOW LEVEL SOIL :

The samples were analyzed by heated purge within the CLP SOW holding times.

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

TUNES :

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

3.2.2 SEMIVOLATILE ANALYSIS COMMENTS :

LOW LEVEL WATER :

The samples were extracted and analyzed within the CLP SOW holding times. The 4-Nitrophenol spike recoveries in both the MS and MSD were slightly above the QC limits. However, the %RPD between both MS and MSD samples was 1. In accordance with protocol, no further action was required.

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

LOW LEVEL SOIL :

The samples were extracted and analyzed within the CLP SOW holding times. Sample B072Q4MSD had a surrogate recovery for Terphenyl-d14 above the QC limits. In accordance with protocol, no further action was required.

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

3.2.3 PESTICIDE/PCB ANALYSIS COMMENTS :

CASE COMMENTS :

Due to the limitations and difficulties in reporting of the sample results, two Pesticide/PCB cases were created and reported in this package. Case 08-023 contains all of the results for the original analyses from the 9/8/92 sequence. Case R8-023 contains all of the results from the re-analyzed samples from the 9/24/92 sequence.

SEQUENCE NOTES (CASE 08-023) :

The sequence was started on 9/8/92 and was analyzed in accordance with the EPA CLP SOW. The sequence was analyzed by single injection into a dual column system. After the sample injection at 19:15 on 9/9/92, the auto sampler malfunctioned. After maintenance was performed, the sequence was continued with the next injection of PIBLK06 at 8:07 on 9/10/92. Since the injection of PIBLK06 was outside of the 12 hour window, the samples injected between PIBLK05 and PIBLK06 were re-injected in another sequence. PIBLK06 failed to meet the TCX retention time window by 0.005 minutes. However, the next injection met the QC limit and the sequence was continued. The sequence met all of the QC requirements specified in the CLP SOW.

The Chromatograms are presented in the manner consistent with the capabilities of the Nelson 2600 Data System which normalizes the largest peak to scale.

SAMPLE NOTES (CASE 08-023) :

LOW LEVEL WATER :

The samples were extracted and analyzed within the CLP SOW holding times. The matrix spike recoveries were within the QC limits for the MS and MSD samples. However, the %RPD for the MS/MSD pair was slightly above the advisory QC limit for gamma-BHC, Dieldrin and Endrin.

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

LOW LEVEL SOIL :

The samples were extracted and analyzed within the CLP SOW holding times. Sample B072Q4MS (DB-608 column), B072Q4MSD (DB-608 and DB-1701 columns) and PBLK0812S (DB-608 column) had TCX surrogate recoveries slightly below the advisory QC limits. In accordance with protocol, no further action was required.

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

SEQUENCE NOTES (CASE R8-023) :

The original analyses of the samples on the 9/8/92 sequence were not bracketed by instrument blanks and standards injected within the 12 hour period. Therefore, the samples were re-analyzed on the 9/24/92 sequence.

The sequence was started on 9/24/92 and was analyzed in accordance with the EPA CLP SOW. The sequence was analyzed by single injection into a dual column system. The sequence met all of the QC limits specified in the CLP SOW.

The Chromatograms are presented in the manner consistent with the capabilities of the Nelson 2600 Data System which normalizes the largest peak to scale.

SAMPLE NOTES (CASE R8-023) :

LOW LEVEL WATER :

The samples were extracted within the CLP SOW holding times. The extractions were re-analyzed out of the CLP SOW holding times with approval from Westinghouse Hanford Company (ROD-92-00158). The matrix spike recoveries were within the QC limits for the MS and MSD samples. However, the %RPD for the MS/MSD pair was slightly above the advisory QC limits for gamma-BHC, Heptachlor, Dieldrin and 4,4'-DDT.

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

LOW LEVEL SOIL :

The samples were extracted within the CLP SOW holding times. The extracts were re-analyzed out of the CLP SOW holding times with approval from Westinghouse Hanford Company (ROD-92-00158). On the DB-608 column samples B072Q4MSRE, B072Q4MSDRE and PBLK0812SRE had TCX recoveries below the advisory QC limit. In accordance with protocol, no further action was required.

The matrix spike recoveries on both columns were within the QC limits for gamma-BHC on sample B072Q4MSRE. However, the percent difference (%D) in the quantitation of gamma-BHC on both columns exceeded the 25% limit. The higher recovery on the DB-608 column appears to be due to the co-elution of an interference peak. Hence, a "P" qualifier was reported on Form 1D.

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

We certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data in this hardcopy data package and in the computer-readable data submitted on diskette is authorized by the Laboratory Manager or his designee, as verified by the following signatures.

Nicole Roth
CLP Program Manager

Wida Ang
Organics Supervisor

9213517.0455

0000061

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-92-00158
Record of Disposition No.

DATE: September 27, 1992	LABORATORY: TMA
PROJECT TITLE/NO.: 100-KR-4/92-266	NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS:

- B072Q4
- B072Q5

DESCRIPTION OF EVENT:

▸▸ Due to an equipment malfunction at the TMA Laboratory, hold times were exceeded for the above listed samples. *(Hold times expired on September 19 and 20, analysis was completed on September 25.)*

DISPOSITION OF SAMPLES:

▸▸ With concurrence from Bob Henkel (for J. W. Roberts), approval was given to run the samples out of hold time.

APPROVAL SIGNATURES:

K. N. Pool — 9/28/92
OSM Project Coordinator (Print/Sign Name) — Date

J. W. Roberts — 10/5/92
Technical Representative (Print/Sign Name) — Date

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

9213517.0456

1A

000007

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

B072Q4

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208023-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 20812R14

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: not dec. 13 Date Analyzed: 08/12/92

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

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

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

9713517.0157

1E

000008
EPA SAMPLE NO.

VOLATIL[illegible]ICS ANALYSIS DATA SHEET
TENTA[illegible] IDENTIFIED COMPOUNDS

B072Q4

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208023-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 20812R14

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: not dec. 13 Date Analyzed: 08/12/92

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

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

9713517.0458

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

000009
EPA SAMPLE NO.

B072Q5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A208023-02A

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 20812B03

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: not dec. ____ Date Analyzed: 08/12/92

GC Column: WIDE ID: 0.250 (mm) Dilution Factor: 1.0

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

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

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

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000010

EPA SAMPLE NO.

B072Q5

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A208023-02A

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 20812B03

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: not dec. ____ Date Analyzed: 08/12/92

GC Column: WIDE ID: 0.250 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

000011
EPA SAMPLE NO.

B072Q4

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208023-01D

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 20901S03

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: 13 decanted: (Y/N) N Date Extracted: 08/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/01/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	370	U
111-44-4	bis(2-Chloroethyl)Ether	370	U
95-57-8	2-Chlorophenol	370	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
95-50-1	1,2-Dichlorobenzene	370	U
95-48-7	2-Methylphenol	370	U
108-60-1	2,2'-oxybis(1-Chloropropane)	370	U
106-44-5	4-Methylphenol	370	U
621-64-7	N-Nitroso-Di-n-Propylamine	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
88-75-5	2-Nitrophenol	370	U
105-67-9	2,4-Dimethylphenol	370	U
111-91-1	bis(2-Chloroethoxy)Methane	370	U
120-83-2	2,4-Dichlorophenol	370	U
120-82-1	1,2,4-Trichlorobenzene	370	U
91-20-3	Naphthalene	370	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
59-50-7	4-Chloro-3-Methylphenol	370	U
91-57-6	2-Methylnaphthalene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
88-06-2	2,4,6-Trichlorophenol	370	U
95-95-4	2,4,5-Trichlorophenol	900	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	900	U
131-11-3	Dimethylphthalate	370	U
208-96-8	Acenaphthylene	370	U
99-09-2	3-Nitroaniline	900	U
83-32-9	Acenaphthene	370	U
51-28-5	2,4-Dinitrophenol	900	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072Q4

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208023-01D

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 20901S03

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: 13 decanted: (Y/N) N Date Extracted: 08/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/01/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	900	U
132-64-9	Dibenzofuran	370	U
121-14-2	2,4-Dinitrotoluene	370	U
606-20-2	2,6-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-phenylether	370	U
86-73-7	Fluorene	370	U
100-01-6	4-Nitroaniline	900	U
534-52-1	4,6-Dinitro-2-methylphenol	900	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
87-86-5	Pentachlorophenol	900	U
85-01-8	Phenanthrene	370	U
120-12-7	Anthracene	370	U
86-74-8	Carbazole	370	U
84-74-2	Di-n-Butylphthalate	370	U
206-44-0	Fluoranthene	370	U
129-00-0	Pyrene	370	U
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(a)Anthracene	370	U
117-81-7	bis(2-Ethylhexyl)Phthalate	370	U
218-01-9	Chrysene	370	U
117-84-0	Di-n-Octyl Phthalate	370	U
205-99-2	Benzo(b)Fluoranthene	370	U
207-08-9	Benzo(k)Fluoranthene	370	U
50-32-8	Benzo(a)Pyrene	370	U
193-39-5	Indeno(1,2,3-cd)Pyrene	370	U
53-70-3	Dibenz(a,h)Anthracene	370	U
191-24-2	Benzo(g,h,i)Perylene	370	U

(1) - Cannot be separated from Diphenylamine

9213517.0462

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

000013
EPA SAMPLE NO.

B072Q4

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208023-01D

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 20901S03

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: 13 decanted: (Y/N) N Date Extracted: 08/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/01/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

Number TICs found: 10

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	5.15	2300	BJ
2.	UNKNOWN HYDROCARBON	5.62	53000	BJ
3.	UNKNOWN COMPOUND	6.05	110	J
4.	UNKNOWN HYDROCARBON	6.63	190	BJ
5.	UNKNOWN HYDROCARBON	6.73	520	BJ
6.	UNKNOWN KETONE	7.05	110	J
7.	UNKNOWN COMPOUND	7.15	490	BJ
8.	UNKNOWN ALCOHOL	8.40	1400	BJ
9.	UNKNOWN HYDROCARBON	18.35	150	J
10.	UNKNOWN CARBOXYLIC ACID ESTE	20.22	450	BJ

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072Q5

ab Name: TMA/ARLI Contract: WHC

ab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

atrix: (soil/water) WATER Lab Sample ID: A208023-02D

ample wt/vol: 1000 (g/mL) ML Lab File ID: 20814S08

evel: (low/med) LOW Date Received: 08/10/92

Moisture: _____ decanted: (Y/N) ___ Date Extracted: 08/10/92

oncentrated Extract Volume: 1000 (uL) Date Analyzed: 08/14/92

njection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	25	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072Q5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A208023-02D

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 20814S08

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: ____ decanted: (Y/N) ___ Date Extracted: 08/10/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 08/14/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
218-01-9	Chrysene	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

9213517.0465

000016
EPA SAMPLE NO.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B072Q5

ab Name: TMA/ARLI Contract: WHC

ab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

atrix: (soil/water) WATER Lab Sample ID: A208023-02D

ample wt/vol: 1000 (g/mL) ML Lab File ID: 20814S08

evel: (low/med) LOW Date Received: 08/10/92

Moisture: _____ decanted: (Y/N) ___ Date Extracted: 08/10/92

oncentrated Extract Volume: 1000 (uL) Date Analyzed: 08/14/92

njection Volume: 2.0(uL) Dilution Factor: 1.0

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

umber TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	5.73	3	J

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072Q4

b Name: TMA/ARLI Contract: WHC

b Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

trix: (soil/water) SOIL Lab Sample ID: A208023-01D

mple wt/vol: 30.8 (g/mL) G Lab File ID:

Moisture: 13 decanted: (Y/N) N Date Received: 08/10/92

traction: (SepF/Cont/Sonc) SONC Date Extracted: 08/12/92

ncentrated Extract Volume: 5000 (uL) Date Analyzed: 09/09/92

jection Volume: 1.00 (uL) Dilution Factor: 1.00

C Cleanup: (Y/N) Y pH: 9.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.7	U
72-55-9	4,4'-DDE	3.7	U
72-20-8	Endrin	3.7	U
33213-65-9	Endosulfan II	3.7	U
72-54-8	4,4'-DDD	3.7	U
1031-07-8	Endosulfan sulfate	3.7	U
50-29-3	4,4'-DDT	3.7	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.7	U
7421-36-3	Endrin aldehyde	3.7	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	75	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	37	U
11096-82-5	Aroclor-1260	37	U

9213517.0467

000018

EPA SAMPLE NO.

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

B072Q4RE

ab Name: TMA/ARLI Contract: WHC

ab Code: TMALA Case No.: R8023 SAS No.: NA SDG No.: NA

atrix: (soil/water) SOIL Lab Sample ID: A208023-01DR

ample wt/vol: 30.8 (g/mL) G Lab File ID:

Moisture: 13 decanted: (Y/N) N Date Received: 08/10/92

xtraction: (SepF/Cont/Sonc) SONC Date Extracted: 08/12/92

oncentrated Extract Volume: 5000 (uL) Date Analyzed: 09/25/92

njection Volume: 1.00 (uL) Dilution Factor: 1.00

PC Cleanup: (Y/N) Y pH: 9.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.7	U
72-55-9	4,4'-DDE	3.7	U
72-20-8	Endrin	3.7	U
33213-65-9	Endosulfan II	3.7	U
72-54-8	4,4'-DDD	3.7	U
1031-07-8	Endosulfan sulfate	3.7	U
50-29-3	4,4'-DDT	3.7	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.7	U
7421-36-3	Endrin aldehyde	3.7	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	75	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	37	U
11096-82-5	Aroclor-1260	37	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072Q5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A208023-02D

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: 08/10/92

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 08/11/92

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 09/09/92

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

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

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-36-3	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

9213517.0469

000020

EPA SAMPLE NO.

B072Q5RE

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

ab Name: TMA/ARLI Contract: WHC

ab Code: TMALA Case No.: R8023 SAS No.: NA SDG No.: NA

atrix: (soil/water) WATER Lab Sample ID: A208023-02DR

ample wt/vol: 1000 (g/mL) ML Lab File ID: _____

Moisture: _____ decanted: (Y/N) ___ Date Received: 08/10/92

xtraction: (SepF/Cont/Sonc) CONT Date Extracted: 08/11/92

oncentrated Extract Volume: 10000 (uL) Date Analyzed: 09/25/92

njection Volume: 1.00 (uL) Dilution Factor: 1.00

PC Cleanup: (Y/N) N pH: ____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-36-3	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B072Q4

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

ab Code: SKINER Case No.: N2-08-071SAS No.: SDG No.: B072Q4

atrix (soil/water): SOIL Lab Sample ID: 08137-01S

evel (low/med): LOW Date Received: 08/11/92

Solids: 86.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4450			P
7440-36-0	Antimony	3.2	U		P
7440-38-2	Arsenic	1.3	B	W	F
7440-39-3	Barium	37.8	B		P
7440-41-7	Beryllium	0.06	U		P
7440-43-9	Cadmium	0.32	U		P
7440-70-2	Calcium	4510			P
7440-47-3	Chromium	9.6			P
7440-48-4	Cobalt	5.0	B		P
7440-50-8	Copper	13.6			P
7439-89-6	Iron	9830			P
7439-92-1	Lead	3.8			F
7439-95-4	Magnesium	2900			P
7439-96-5	Manganese	166			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	7.8	B		P
7440-09-7	Potassium	767	B		P
7782-49-2	Selenium	0.83	U		F
7440-22-4	Silver	0.95	B		P
7440-23-5	Sodium	189	B		P
7440-28-0	Thallium	0.36	U		F
7440-62-2	Vanadium	19.9			P
7440-66-6	Zinc	32.8			P
	Cyanide	0.58	U		CA

olor Before: GREY Clarity Before: Texture: COARSE

olor After: GREY Clarity After: Artifacts: YES

omments:
STONES

002

FORM I - IN ILM02.1

9216517.0971

TMA/Skinner & Sherman Labs SAMPLE LOG-IN

WORKORDER 3208137 CLIENT Hanford Nor NO. SAMPLES:

PROTCL CLP TURNARND 33 Days 1

COOLER TEMP: 5 oC, or NA (Soil) (Water) (Specify Other)

CUSTODIAN B. Brady SDG/BATCH N/A

CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N208071

SHIPER & # Fed Ex 2521032581 PO/CONTRACT# N208071

TAGS: PRESENT/ABSENT/NA/SEE COC CONTACT D. Sanchez

CHAIN OF CUSTODY: PRESENT/ABSENT/NA, # N/A COMMENTS: None

SAMPLE CONTAINERS-INTACT/BROKEN COMMENTS

CLIENT COMMENT? YES/NO

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

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

SHIPMENT DATES 8-11-92

LIST ANY DATE WITH PAPERWORK/SHIPMENT PROBLEMS & SPECIFY THE PROBLEM:

N/A

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME UP
1	D072 Q4	Soil	8-11-92	N/A	D.S Tm/CU	
2						
3						
4						
5						
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7						
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23						
24						
25						
26						
27						

Samples are from site known to have Rad-Contamination: YES ✓ NO

Samples have detectable amounts of Radioactive Material: YES NO ✓

SUBCONTRACT: YES/NO, TO: DATE:

REVIEWED

complete 8/11/92 BP

* EPA/CLP required Rev 1.6 PAGE:

9213917.0472

Westinghouse Hanford Company	CHAIN OF CUSTODY	S&S

Custody Form Initiator: W.V. SETZER

Company Contact: CM CHANCE

Telephone: 376-2084

Project Designation/Sampling Locations: 100-KR-4

Collection Date: 8-5-92

Ice Chest No.: SML 92

Field Logbook No.: EFL- 1022

Bill of Lading/Airbill No.: 2509869648

Offsite Property No.: WA2-0-0577 #10

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA/NORCAL

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

Sample Identification

1) B072Q4
- 1,120ml aG:CLP;ICP/AA Metals,Hg
- 1,120ml aG:CLP;Cn
- ~~1,120ml aG:CLP;VOA~~
- ~~1,250ml aG:CLP;Semi-VOA,PCB/PEST~~
- ~~1,120ml aG:300.0~~/353.2;Anions(~~F,SO4~~,NO3)
- ~~1,950ml aG:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241~~

2)
- ~~1,120ml aG:CLP;ICP/AA Metals,Hg~~
- 1,120ml aG:CLP;Cn
- 1,120ml aG:CLP;VOA
- 1,250ml aG:CLP;Semi-VOA,PCB/PEST
- 1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
- 1,950ml aG:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

3)
- 1,120ml aG:CLP;ICP/AA Metals,Hg WVS 8-5-92
- 1,120ml aG:CLP;Cn
- 1,120ml aG:CLP;VOA
- 1,250ml aG:CLP;Semi-VOA,PCB/PEST
- 1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
- 1,950ml aG:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

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

Relinquished by:	Received by:	Date/Time:
W.V. Setzer	Kermit Blum	8/10/92 0800 *
Kermit Blum 8-10-92	[illegible]	8/11/92 9:30

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: * Received @ TMA/NORCAL 8/8/92; opened 8/10/92 - KB

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

9215512.0473

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

Collector W.V. SETZER — Date 8-7-92

Company Contact CM CHANCE — Telephone (509)376-7619

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B0TZQ4	S	8-5-92	1000	1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN ~~1-120ml aG CLP;VOA~~ ~~1-250ml aG CLP;Semi-VOA,PCB/PEST~~ ~~1-120ml aG 300.0/~~353.2;Anions(~~F,SO4~~,NO3) 1 ~~1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14~~ ~~U-235/238,Pu-239/240,Am-241~~
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241 WVS 8-7-92
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241

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

Field Information FROM 100-KR-4 Drilling

Special Handling and/or Storage Maintain at 4C

Possible Sample Hazards NA

A-6000-406 (06/91) WEF060

9213517.0474

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B072Q5

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

ab Code: SKINER Case No.: N2-08-073SAS No.: SDG No.: B072Q5

atrix (soil/water): WATER Lab Sample ID: 08139-01S

evel (low/med): LOW Date Received: 08/11/92

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	96.6	B		P
7440-36-0	Antimony	14.8	U		P
7440-38-2	Arsenic	3.2	U		F
7440-39-3	Barium	34.3	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	1.5	U		P
7440-70-2	Calcium	24500			P
7440-47-3	Chromium	2.6	U		P
7440-48-4	Cobalt	1.3	U		P
7440-50-8	Copper	9.0	B		P
7439-89-6	Iron	149			P
7439-92-1	Lead	3.2		*	F
7439-95-4	Magnesium	5360			P
7439-96-5	Manganese	4.6	B		P
7439-97-6	Mercury	0.20	U	N	CV
7440-02-0	Nickel	2.6	U		P
7440-09-7	Potassium	1080	B		P
7782-49-2	Selenium	3.9	U		F
7440-22-4	Silver	3.6	U		P
7440-23-5	Sodium	2630	B		P
7440-28-0	Thallium	1.7	U	N	F
7440-62-2	Vanadium	2.5	U		P
7440-66-6	Zinc	9.9	B		P
	Cyanide	10.0	U		CA

olor Before: COLORLESS Clarity Before: CLEAR Texture:

olor After: COLORLESS Clarity After: CLEAR Artifacts:

omments:

002

9713517.0475

TMA/Skinner & Sherman Labs SAMPLE LOG-IN

WORKORDER 5208139 CLIENT Hanford Nev No. SAMPLES:

PROTCL CLP TURNARND 33 Day 1

COOLER TEMP: 5 oC, or NA (Soil) (Water) (Specify Other)

CUSTODIAN B Prulix SDG/BATCH N/A

CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N208073

SHIPER & # Fed Ex 2521032581 PO/CONTRACT# N

TAGS: PRESENT/ABSENT/NA/SEE COC CONTACT D. SANCHEZ

CHAIN OF CUSTODY: PRESENT/ABSENT/NA, # N/A COMMENTS: none

SAMPLE CONTAINERS-INTACT/BROKEN COMMENTS

CLIENT COMMENT? YES/NO

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

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

SHIPMENT DATES 8.11.92

LIST ANY DATE WITH PAPERWORK/SHIPMENT PROBLEMS & SPECIFY THE PROBLEM:

N/A

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME UP
1	B072Q5	water	8/11/92	1.84/11.19	DS TM/CN	CN Due 8/18/92
2						
3						
4						Hg Due 8/26/92
5						
6						
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26						
27						

Samples are from site known to have Rad-Contamination: YES ✓ NO

Samples have detectable amounts of Radioactive Material: YES NO ✓

SUBCONTRACT: YES/NO, TO: DATE:

REVIEWED

Computer FT6

* EPA/CLP required Rev 1.6 PAGE: 8/11/92 BP

Westinghouse Hanford Company

CHAIN OF CUSTODY

S & S

Custody Form Initiator: W.V. SETZER

Company Contact: W.V. SETZER

Telephone: (509) 376-2413

Project Designation/Sampling Locations: 100 KR-4

Collection Date: 8-6-92

Ice Chest No.: WHC 23

Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: 250986 9648

Offsite Property No.: WH2-0-0577 #1C

Method of Shipment: AIR DELIVERY

Shipped to: TMA / NORCAL

Possible Sample Hazards/Remarks: NONE OBSERVED

Sample Identification

B072Q5 - ~~Bottle~~, CHEMICAL	PRESERVATIVE
1-P-1000mL: ICP/AA METALS, HG	HNO3
1-P-1000mL: CN	NaOH
~~BG5 40mL: VOA~~	CHILL ON ICE
1-P 500mL: ANIONS (NO_2 NO_3)	H_2SO_4
~~1-P 1000mL: Cr(VI), Cl, SO4, Alkalinity, Amm~~	HNO3
~~1-P 1000mL: TC 99~~	HCL
~~BG 500mL: SULFIDE~~	ZINC ACETATE/NaOH
~~BG 500mL: Ammonia, Chem. Oxygen demand~~	H_2SO_4
~~BG 125mL: TOC~~	H_2SO_4
~~BG5 250mL: TOX~~	H_2SO_4
~~BG5 40mL: Hydrazine~~	HCL
~~1 BG5 250mL: Tannin~~	CHILL ON ICE
~~1 P 1000mL: Anions (NO2) SO4, F~~	CHILL ON ICE
~~BG 100mL: Alkalinity, Total Dissolved Solids~~	CHILL ON ICE

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
W.V. Setzer	Kermit Blum	8-10-92 0800 *
Relinquished by: Kermit Blum 8-10-92	Received by: [illegible]	Date/Time: 8/11/92 9:30
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: *Received @ TMA/NORCAL 8-8-92; opened 8-10-92 - KB

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A-6000-407 (12/90)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

Collector W.V. SETZER Date 8-7-92

Company Contact W.V. SETZER Telephone (509) 376-2413

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Requested	PRESERVATIVE
B072Q5	W	8-7-92	0860	✓ 1-P-1000mL: ICP/AA METALS, Hg	HNO3
				✓ 1-P-1000mL: CN	NAOH
				✓ ~~1 GS-40mL: VOA~~	CHILL ON ICE
				✓ ~~1 GS 2-360mL: SEMI VOA, ACID, PEST~~	CHILL ON ICE
				✓ 1-P-1000mL: ANIONS (~~F~~, SO4, NO3) 500 WVS 8-7-92 NO2	H2SO4
				✓ ~~1-P-1000mL: GROSS ALPHA, BETA, GAMMA SPEC, SR-90, U238, Pu239/240, AM 241~~	~~HNO3~~
				✓ ~~1-P-1000mL TC-99~~	HCL
				✓ ~~1-P-500mL SULFIDE~~	ZINC/ACETATE/NAOH
				✓ ~~1-G-500mL AMMONIA, CHEMICAL OXYGEN DEMAND~~	H2SO4
				✓ ~~1-GS-125ML TOC~~	H2SO4
				✓ ~~1-GS-250mL TOX~~	H2SO4
				✓ ~~1-GS-40mL HYDRAZINE~~	HCL
				✓ ~~1-GS-250mL TRITIUM~~	CHILL ON ICE
				✓ ~~1-P-1000mL (ANIONS (IC) SO4, F, Br, Cl,~~	CHILL ON ICE
				~~1 GS-1000mL (ALKALINITY, TOTAL DISSOLVED SOLIDS~~ WVS 8-7-92 COND, PH)	CHILL ON ICE

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

Field Information

Special Handling and/or Storage

Possible Sample Hazards NONE OBSERVED

118

A-6000-406 (06/91)

SDG 7074 Contact Dinkar P. Kharkar	Client Westinghouse Hanford Contract MBH-SVV-069262

CASE NARRATIVE

1.0 GENERAL

Soil sample results from Location 100-KR-4 (TMA/Norcal Group 7074) are reported herein. TMA/Norcal Group 7074 is comprised of the one sample listed on the Chain-of-Custody documents and is identified as Sample 1.

1.1 CHAINS-OF-CUSTODY

This report includes data from samples delivered under Chain-of-Custody documents Field Logbook No. EFL-1022.

1.2 SAMPLE VOLUME

Two 1 L plastic bottles and 250 mL glass bottles containing the sample were received for the analyses.

1.3 MISSING SAMPLES

All samples were accounted for in an undamaged condition.

1.4 HOLDING TIMES

The collection was made on 8/06/92 and the sample processing was initiated within 180 days of collection.

2.0 QUALITY CONTROL

The internal quality control consisted of one sample each of a laboratory control, a blank, and a replicate. All original analyses were performed with QC samples 7074-2 through 6.

The QC samples were prepared and labelled by the quality control officer. Copies of The QC notebook pages are included in the data package.

2.1 LABORATORY CONTROL SAMPLES

LCS recoveries for all nuclides were good and pass the 3 σ limits. The MDA for all nuclides meet the RDL requirement, except for ^{59}Fe which was above the RDL requirement of 30 pCi/L due to the short half life of ^{59}Fe.

2.2 BLANKS

MDA's for all the analyses meet the RDL requirements.

001B
11/24/92

SDG 7074	Client Westinghouse Hanford
Contact Dinkar P. Kharkar	Contract MBH-SVV-069262

CASE NARRATIVE

2.3 REPLICATES

Results were satisfactory for all replicate analyses. The MDA's for ^{59}Fe, ^{99}Tc, ^{241}Am, and uranium isotopes were underlined in the data sheets because the MDA's exceed RDL. The MDA's of the uranium isotopes and ^{59}Fe were above RDL due to low chemical recoveries. The MDA of ^{99}Tc replicate was 5.1 pCi/L instead of 5.0 pCi/L The ^{59}Fe MDA was above the quoted RDL due to the short half life of ^{59}Fe.

3.0 ANALYTICAL NOTES

3.1 Gross Alpha Analyses: The average MDA for gross alpha was 1.7 ± 0.59 pCi/L Positive gross alpha concentration was not found in the sample.

3.2 Gross Beta Analyses: The average MDA for gross beta was 1.9 ± 0.35 pCi/L. Positive gross beta concentration above RDL was not found in the sample.

3.3 Tritium Analyses: The average MDA was 230 ± 0 pCi/L. Positive ^{3}H concentration above RDL was not found in the sample.

3.5 Strontium-90 Analyses: The average yield for four analyses was (73 ± 6%). The lowest yield was 70% and the highest was 76%. The average MDA was 0.74 ± 0.16 pCi/L. Positive ^{90}Sr concentration above RDL was not found in the sample.

3.6 Technicium-99 Analyses: The average yield for four analyses was (59 ± 23%). The lowest yield was 44% and the highest was 71%. The average MDA was 4.1 ± 2.1 pCi/L. Positive concentration above RDL was not found in the sample.

3.7 Uranium-233, 234, 234, and 238 Analyses: The average yield for four analyses was (35 ± 14%). The lowest yield was 25% and the highest was 42%. The average MDA was 0.39 ± 0.58 pCi/L. Positive uranium isotope concentration was not found in the sample.

3.8 Plutonium-238, 239/240 Analyses: The average yield for four analyses was (83 ± 11%). The lowest yield was 77% and the highest was 90%. The average MDA was 0.030 ± 0.009 pCi/L. Positive plutonium concentration was not found in the sample.

3.9 Americium-241 Analyses: The average yield for four analyses was (45 ± 53%). The lowest yield was 7% and the highest was 64%. The average MDA was 0.13 ± 0.35 pCi/L. Positive americium concentration was not found in the sample.

3.10 Gamma Scan Analyses: Gamma scan analysis did not find positive concentration of gamma nuclides.

001C
11/24/92

N208069-01

TMA NORCAL
REPORTING GROUP 7074

DATA SHEET

B072Q5

SDG 7074
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208069-01
Dept sample id 7074-001
Received 08/10/92
% moisture
Client sample id B072Q5
Matrix WATER
Collected 08/06/92
Chain of custody id EFL-1022

PARAMETER	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	Alpha	-0.47	1.2	2.1	3.0	U	80A
Gross Beta	Beta	0.98	1.2	1.9	4.0	U	80B
Uranium 233/234		0.30	0.30	0.57	0.20	U	U
Uranium 235	15117-96-1	0	0.18	0.69	0.20	U	U
Uranium 238	7440-61-1	0.37	0.31	0.57	0.20	U	U
Plutonium 238	13981-16-3	-0.004	0.015	0.032	0.050	U	PU
Plutonium 239/240		-0.002	0.007	0.018	0.050	U	PU
Americium 241	14596-10-2	0.015	0.024	0.045	0.050	U	AM
Strontium 90	10098-97-2	0.42	0.26	0.75	2.0	U	Y
Technetium 99	14133-76-7	0.87	1.0	3.0	5.0	U	TC
Tritium	10028-17-8	31	140	230	400	U	H
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	U		120		U	GAM
Iron 59		U		70	30	U	GAM
Chromium 51	14392-02-0	U		330		U	GAM
Cobalt 60	10198-40-0	U		16	25	U	GAM
Zinc 65	17982-39-3	U		28		U	GAM
Ruthenium 106	13967-48-1	U		100		U	GAM
Cesium 134	17967-70-9	U		9.6		U	GAM
Cesium 137	10045-97-3	U		11	15	U	GAM
Europium 152	14683-23-9	U		22	40	U	GAM
Europium 154	15585-10-1	U		14	40	U	GAM
Radium 226	13982-67-7	20	16				GAM
Thorium 228	14274-82-9	U		18		U	GAM
Thorium 232	7440-29-1	U		45		U	GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.20
Report date 11/11/92

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: W.V. SETZER

Company Contact: W.V. SETZER — Telephone: (509) 376-2413

Project Designation/Sampling Locations: 100 KR-4 — Collection Date: 8-6-92

Ice Chest No.: WHC 23 — Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: 250986 9648 — Offsite Property No.: W92-0-0577#1

Method of Shipment: AIR DELIVERY

Shipped to: TMA / NORCAL

Possible Sample Hazards/Remarks: NONE OBSERVED

Sample Identification

B072Q5 - ~~Soil~~ KB, CHEMICAL	PRESERVATIVE
1-P-1000mL : ICP/AA METALS, HG	HNO3
1-P-1000mL: CN	NaOH
3-Gs 40mL: VOA	CHILL ON ICE
1-P 500mL: ANIONS (NO2 NO3)	H2SO4
1-P 1000mL: GROSS ALPHA, BETA, GAMMA SPEC SR90, U235/238, Pu 239/240, Am241	HNO3
1-P 1000mL: TC-99	HCL
1-G 500 mL : SULFIDE	ZINC ACETATE/NaOH
1-G 500mL : AMMONIA, CHEM. OXYGEN DEMAND	H2SO4
1-aG 125mL: TOC	H2SO4
1-aGs 250mL: TOX	H2SO4
1Gs - 40mL: HYDRAZENE	HCL
1Gs - 250mL: TRITIUM	CHILL ON ICE
1P - 1000mL: ANIONS (IC) SO4, F	CHILL ON ICE
1aG 1000mL: ALKALINITY, TOTAL DISSOLVED SOLIDS	CHILL ON ICE

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
W.V. Setzer	Kermit Blum	8-10-92 0800 *
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: *Received @ TMA/NORCAL 8-8-92; opened 8-10-92 - KB

A-6000-407 (12/90)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

Collector W.V. SETZER Date 8-7-92

Company Contact W.V. SETZER Telephone (509) 376-2413

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Requested	PRESERVATIVE
B072Q5	W	8-7-92	0850	✓1-P-1000mL: ICP/AA METALS, Hg	HNO3
				✓1-P-1000mL: CN	NAOH
				✓3-GS-40mL: VOA	CHILL ON ICE
				✓3-aG-2360mL: SEMI VOA, PCB, PEST	CHILL ON ICE
				✓1-P-~~1000~~ 500 mL: ANIONS (~~F, SO4~~ NO2, NO3) WVS 8-7-92	H2SO4
				✓2-P-~~4000~~ 500 mL: GROSS ALPHA, BETA, GAMMA SPEC, SR-90, U235/238, Pu239/240, Am 241	HNO3
				✓1-P-1000mL Tc-99	HCL
				✓1-P-500mL SULFIDE	ZINC/ACETATE/NAOH
				✓1-G-500mL AMMONIA, CHEMICAL OXYGEN DEMAND	H2SO4
				✓1-aG-125mL TOC	H2SO4
				✓1-aGS-250mL TOX	H2SO4
				✓1-GS-40mL HYDRAZINE	HCL
				✓1-GS-250mL tritium	CHILL ON ICE
				✓1-P-1000mL (ANIONS (IC) SO4, F, PO4, Cl, ~~1-aG~~ WVS 8-7-92 COND, PH)	CHILL ON ICE
				✓1-aG-1000mL (ALKALINITY, TOTAL DISSOLVED solids	CHILL ON ICE

*Type of Sample: A = Air; DL = Drum Liquids; DS = Drum Solids; L = Liquid; O = Oil; S = Soil; SE = Sediment; SL = Sludge; SO = Solid; T = Tissue; W = Water; WI = Wipe; X = Other

Field Information

Special Handling and/or Storage

Possible Sample Hazards NONE OBSERVED

1147

A-6000-406 (06/91)

FORM OF PAYMENT

Check ☐ GBL ☐ FCCOD ☐

Bill to Shipper ☐ Bill to Consignee ☐ Third Party Billing ☐

XX Shipper's Account Number: E 850281585

EMERY WORLDWIDE

A CF Company

SERVICES

UNITED STATES / CANADA: ☐ Same Day ☐ AM ☐ PM ☐ Second Day ☒ Saturday Delivery

INTERNATIONAL: Express ☐ Preferred ☐ Standard ☐ Business Documents ☐ Customs Clearance ☐ Delivery ☐

Date: 08-07-92 | Origin: PSC | Shipment Number: 2509869648

From:
WESTINGHOUSE SHIPPING DEPT (509) 376-6665
U.S. DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD
BLDG 1163
2355 STEVENS DRIVE
RICHLAND WA
Canada ☐

To:
DELORES SANCHEZ
TMA/NORCAL
2030 WRIGHT AVENUE
RICHMOND CA
Canada ☐
Hold for Pick Up ☐

Tariff Dest. | Gateway

Check to Shipper $

EMERY WORLDWIDE will accept Consignee's check with all risks being assumed by Shipper, including but not limited to non-payment, fraud and misrepresentation.

Customer's Reference Numbers: W12200 PB7AE W92-0-0577 #10
Zip: 99352

E Consignee's Account Number
Zip: 94804

Description	Pcs.	L	W	H	Total Pieces	Total Weight (In Lbs.)
2 COOLER ID: SML 92 49# WHC 23 95# SOIL & water SAMPLES	2	26	16	17	2	144

FOR INFORMATION OR RATES CALL 1-800 44 EMERY (1-800-443-6379)

Declared Value $

2509869648

Remarks: SATURDAY DELIVERY

Shipper's Signature X

Zip Ship ☐ — For shipments within the 50 United States Shipper has the option to check this box and, by checking, agrees that the Zip Ship conditions described in the area to the right, apply.

Mark if Emery Packaging is used: Urgent Letter 9X12 ☒ Urgent Pack 12X15 ☒

International Shipments: Free Domicile ☐ Commodity Code

Third Party Account Number mandatory for Third Party Billing. E Third Party Account Number

International Customs Value | International Insurance

Base Charge

Total Transportation Charges | Other Charges/Advance at Origin ☐ OC/AO- $

10AIC A

Terms and Conditions on Back

97135172 JUN 93

9213517.0484

DMO

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-92-00158
Record of Disposition No.

DATE: September 27, 1992	LABORATORY: TMA
PROJECT TITLE/NO.: 100-KR-4/92-266	NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS:

- B072Q4
- B072Q5

DESCRIPTION OF EVENT:

▸▸ Due to an equipment malfunction at the TMA Laboratory, hold times were exceeded for the above listed samples. *(Hold times expired on September 19 and 20, analysis was completed on September 25.)*

DISPOSITION OF SAMPLES:

▸▸ With concurrence from Bob Henkel (for J. W. Roberts), approval was given to run the samples out of hold time.

APPROVAL SIGNATURES:

K. N. Pool — 9/28/92
OSM Project Coordinator (Print/Sign Name) — Date

J. W. Roberts — 10/5/92
Technical Representative (Print/Sign Name) — Date

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

CLIENT: WHC 9213517.0485 DATE: 7/20/92

CLIENT CONTACT: PHONE #:

FAX #:

CLIENT PROJECT: TMA/ARLI PROJECT NO: A2-08-023

CLP 90 Pesticide/PCBs

According to the CLP SOW (D-45/Pest 7.1) "Sample data are not acceptable unless bracketed by acceptable analyses of instrument blanks, PEM, and both Individual Standard Mixes A and B."

On 9/9/92 at ~7:15pm (EM1) cycle the autosampler (jammed) malfunctioned and prevented any other injections to continue. Therefore, the next day maintenance was performed and the sequence was continued with the next injection (PIBLK06) at 08:49 on 9/10/92 (Lab: VZ) however, the 12 hr. window was exceeded. The sequence was resumed w/ the injection of PIBLK06 and PEN03. No further problems were encountered in the sequence however, Analyst: [illegible] Date: 9/23/92
WO # A2-08-023 was not re-injected on the sequence.

ACTION REQUIRED: The samples B07205, B07205MS, B07205MSD B07204, B07204MS, and B07204MSD needs to be re-injected. However, holding times expired on 9/19 + 9/20. Therefore, the samples will be re-analyzed out of holding time and both sets of data will be issued to client.

The samples will be analyzed on the sequence that started off on 9/22/92 + should be analyzed by 9/25/92.
The data package will be late.

PROJECT MANAGER: Nicole L. [illegible] DATE: 9/23/92

TMA QA/QC SUPERVISOR: DATE:

CAR.SOP
SOP-164, Rev 03

9215517.0966

Westinghouse Hanford Company

NONCONFORMANCE REPORT

1. Page ____ of ____

2. Preprinted No. 051938

QA Log No.

3. P. O., W. O., or Job Control No.	4. System/End Use	5. Item/Material	6. Dwg./Spec./Other No.	7. Rev.
N/A	RI/FS	SAMPLES	SEE DESCRIPTION	N/A

8. Program/Project/Other	9. Safety Class	10. ASME Code Items
100-KR-4 & 100A BIOTA / 92-182	N/A	☐ Yes ☒ No (If yes, notify authorized inspector)

11. Supplier Name/Address	12. Notification of Potential Occurence Required
ENVIRONMENTAL FIELD SAMPLING SERVICES	☐ Yes ☒ No

13. Code: Lot/Heat/Serial	14. Lot Size	15. Sample	16. Qty. Acc.	17. Inspection Criteria
N/A	3	3	Ø	☐ Dwg. ☐ Spec. ☐ Insp. Plan ☒ Other WHC-CM-7-7, EIL 5.1C REV0, SEC 6.1

18. Item	19. Description of Nonconformance (list serial no. where applicable)	22. Disposition, Justification, and Instructions
1	AS STATED IN WHC-CM-7-7, EIL 5.1D, REV0, SEC 6.1, THERE WILL BE ONLY ONE UNIQUE HEIS NUMBER PER SAMPLE TO ASSURE NO MULTIPLE USE OF A SAMPLE NUMBER(S). CONTRARY TO THE ABOVE, HEIS SAMPLE NUMBERS B072Q5, B07905, AND B07B07, WERE ASSIGNED TO TWO DISTINCT SAMPLES. EACH SAMPLE MUST BE ASSIGNED A UNIQUE HEIS NUMBER.	SDLA WILL ISSUE A NEW HEIS NUMBER TO ANY SAMPLE WHICH HAS BEEN GIVEN A PREVIOUSLY USED HEIS IDENTIFIER. THESE SAMPLE NUMBER CHANGES WILL BE ENTERED INTO THE SDLA DATABASE. A MEMO WILL BE TRANSMITTED TO HEIS AND THE ANALYTICAL LABORATORY DATA PACKAGE, OUTLINING CORRECTIONS. SAMPLE NUMBERS WILL BE USED "AS IS" AND REFERENCED IN THE SDLA DATABASE TO MAINTAIN TRACEABILITY.

UNCONFIRMED

20. Originator's Signature	Date	23. Design Document Change Required?
R Clayton Langford	1/13/94	☐ Yes, Doc. No. ____ ☐ No
21. Cognizant QA Manager's Signature	**Date**	**24. Corrective Action Required?**
		☐ Yes, No. ____ ☐ No

Disp. App.	25. Cognizant Engineer	Date	26. Technical Rep.	Date	Signature/Org.	Date
	R. E. Bigelow Staff	1-15-94				
	QA Engineer	Date	Signature/Org.	Date	Signature/Org.	Date
	G. S. Gerringer Staff	1-15-94				

Close

27. Accept ____ Reject ____ Follow on NCR ____

QA/C Personnel ____ Date ____

A-7310-104 (10/91)

9713517.0987

VALIDATION SUMMARY

DATA QUALIFICATION SUMMARY

UNIT: 100-KR-4

DOCUMENT CONTROL NUMBER: WHC-SD-EN-TI-134

ANALYSES: VOC, BNA, Pest/PCB, Inorganics, Wet Chemistry

RFW NO.: B072P8-TMA-257

SDG NO.: B072P8

QUALIFICATION SUMMARY:

VOLATILES

SAMPLE NUMBERS: B072P8

SEMIVOLATILES

SAMPLE NUMBERS: B072P8

PESTICIDES/PCBS

SAMPLE NUMBERS: B072P8

INORGANICS

SAMPLE NUMBERS: B072P8

WET CHEMISTRY

SAMPLE NUMBERS: B072P8

Data from this package were not validated.

Westinghouse Hanford Company

CHAIN OF CUSTODY

ARL1

Custody Form Initiator: W.W. SETZER

Company Contact: CM CHANCE

Telephone: 376-7619

Project Designation/Sampling Locations: 100-KR-4

Collection Date: 7-30-92

Ice Chest No.: WHC-20

Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: 2509869582

Offsite Property No.: W92-0-0577 #3

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA/NORCAL

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

Sample Identification

1) B072P8 ~~1,120ml aG:CLP;ICP/AA Metals,Hg~~
~~1,120ml aG:CLP;Cn~~
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/~~353.2~~;Anions(F,SO4,~~NO3~~)
* ~~1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am~~-241

2) ~~1,120ml aG:CLP;ICP/AA Metals,Hg~~
~~1,120ml aG:CLP;Cn~~
~~1,120ml aG:CLP;VOA~~
~~1,250ml aG:CLP;Semi-VOA,PCB/PEST~~
~~1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)~~
~~1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241~~

3) ~~1,120ml aG:CLP;ICP/AA Metals,Hg~~
~~1,120ml aG:CLP;Cn~~ WVS 7-30-92
~~1,120ml aG:CLP;VOA~~
~~1,250ml aG:CLP;Semi-VOA,PCB/PEST~~
~~1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)~~
~~1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241~~

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

Relinquished by:	Received by:	Date/Time:
W.W. Setzer	KB Halse	7-30-92 1137
KB Halse	W.W. Setzer	7-30-92 1232
W.W. Setzer	Kermit Blum	8-4-92 1100
Kermit Blum 8-4-92	C. Harris	8/5/92 9 am

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: * B072P8 Radiochemistry aliquot received cracked @ TMA / NORCAL - KB

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

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST	000003

Collector W.V. SETZER Date 8-3-92

Company Contact CM CHANCE Telephone (509)376-7619

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B072P8	S	7-30-92	1121	~~1-120ml G CLP;ICP/AA Metals,Hg~~ ~~1-120ml G CLP;CN~~ 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/~~353.2~~;Anions(F,SO4,~~NO3~~) ~~1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241~~
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241 WVS 8-3-92
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241

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

Field Information FROM 100-KR-4 Drilling

Special Handling and/or Storage Maintain at 4C

Possible Sample Hazards NA

A-6000-406 (06/91) WEF060

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
000005

B072P8

ab Name: TMA/ARLI Contract: WHC

ab Code: TMALA Case No.: 08010 SAS No.: NA SDG No.: NA

atrix: (soil/water) SOIL Lab Sample ID: A208010-01A

ample wt/vol: 5.0 (g/mL) G Lab File ID: 20810R15

evel: (low/med) LOW Date Received: 08/04/92

Moisture: not dec. 8 Date Analyzed: 08/10/92

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	5	BJ
67-64-1	Acetone	21	B
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

DO NOT USE THIS DATA 2-25-93 NM

NM PBS 6/22/93

000006
EPA SAMPLE NO.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B072P8

ab Name: TMA/ARLI Contract: WHC

ab Code: TMALA Case No.: 08010 SAS No.: NA SDG No.: NA

atrix: (soil/water) SOIL Lab Sample ID: A208010-01A

ample wt/vol: 5.0 (g/mL) G Lab File ID: 20810R15

evel: (low/med) LOW Date Received: 08/04/92

Moisture: not dec. 8 Date Analyzed: 08/10/92

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

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

~~Do Not use this data~~
2-25-93
NM

MJ
PBJ
6/22/93

000007

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072P8RE

ıb Name: TMA/ARLI Contract: WHC

ıb Code: TMALA Case No.: 08010 SAS No.: NA SDG No.: NA

ıtrix: (soil/water) SOIL Lab Sample ID: A208010-01A

ımple wt/vol: 5.0 (g/mL) G Lab File ID: 20818R04

:vel: (low/med) LOW Date Received: 08/04/92

Moisture: not dec. 8 Date Analyzed: 08/18/92

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

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

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

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	4	J
67-64-1	Acetone	24	B
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

2-25-93

NN

6/22/93

000008

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B072P8RE

ab Name: TMA/ARLI Contract: WHC

ab Code: TMALA Case No.: 08010 SAS No.: NA SDG No.: NA

atrix: (soil/water) SOIL Lab Sample ID: A208010-01A

ample wt/vol: 5.0 (g/mL) G Lab File ID: 20818R04

evel: (low/med) LOW Date Received: 08/04/92

Moisture: not dec. 8 Date Analyzed: 08/18/92

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

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	UNKNOWN ALCOHOL	29.47	10	J

2-25-93

NM

NM
PB
6/22/93

000009

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072P8

b Name: TMA/ARLI Contract: WHC

b Code: TMALA Case No.: 08010 SAS No.: NA SDG No.: NA

trix: (soil/water) SOIL Lab Sample ID: A208010-01D

mple wt/vol: 30.3 (g/mL) G Lab File ID: 20813S09

vel: (low/med) LOW Date Received: 08/04/92

Moisture: 6 decanted: (Y/N) N Date Extracted: 08/06/92

ncentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/13/92

jection Volume: 2.0(uL) Dilution Factor: 1.0

C Cleanup: (Y/N) Y pH: 9.3

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

CAS NO.	COMPOUND		Q
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)Ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	2,2'-oxybis(1-Chloropropane)	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-Di-n-Propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
111-91-1	bis(2-Chloroethoxy)Methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-Methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	840	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	840	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
99-09-2	3-Nitroaniline	840	U
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	840	U

M PBD 6/22/93

2-26-93 NM

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072P8

ame: TMA/ARLI Contract: WHC

ode: TMALA Case No.: 08010 SAS No.: NA SDG No.: NA

x: (soil/water) SOIL Lab Sample ID: A208010-01D

e wt/vol: 30.3 (g/mL) G Lab File ID: 20813S09

: (low/med) LOW Date Received: 08/04/92

sture: 6 decanted: (Y/N) N Date Extracted: 08/06/92

ntrated Extract Volume: 500.0 (uL) Date Analyzed: 08/13/92

tion Volume: 2.0(uL) Dilution Factor: 1.0

leanup: (Y/N) Y pH: 9.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	840	U
132-64-9	Dibenzofuran	350	U
121-14-2	2,4-Dinitrotoluene	350	U
606-20-2	2,6-Dinitrotoluene	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	840	U
534-52-1	4,6-Dinitro-2-methylphenol	840	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	840	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
86-74-8	Carbazole	350	U
84-74-2	Di-n-Butylphthalate	350	U
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	350	U
56-55-3	Benzo(a)Anthracene	350	U
117-81-7	bis(2-Ethylhexyl)Phthalate	350	U
218-01-9	Chrysene	350	U
117-84-0	Di-n-Octyl Phthalate	350	U
205-99-2	Benzo(b)Fluoranthene	350	U
207-08-9	Benzo(k)Fluoranthene	350	U
50-32-8	Benzo(a)Pyrene	350	U
193-39-5	Indeno(1,2,3-cd)Pyrene	350	U
53-70-3	Dibenz(a,h)Anthracene	350	U
191-24-2	Benzo(g,h,i)Perylene	350	U

(1) - Cannot be separated from Diphenylamine

6/22/93
2-26-93

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B072P8

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08010 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208010-01D

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 20813S09

Level: (low/med) LOW Date Received: 08/04/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 08/06/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/13/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.3

Number TICs found: 9

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	5.35	2700	BJ U
2.	UNKNOWN HYDROCARBON	5.75	70000	BJ
3.	UNKNOWN HYDROCARBON	6.72	140	BJ
4.	UNKNOWN HYDROCARBON	6.80	670	BJ
5.	UNKNOWN HYDROCARBON	7.23	180	BJ
6.	UNKNOWN KETONE	7.30	280	BJ
7.	UNKNOWN ALCOHOL	8.52	250	BJ
8.	UNKNOWN CARBOXYLIC ACID ESTE	20.28	110	J
9.	HEXANEDIOIC ACID ISOMER	24.90	21000	BJ U

2-26-93

ALYSIS DATA SHEET

EPA SAMPLE NO.

B072P8

Contract: WHC

3010 SAS No.: NA SDG No.: NA

Lab Sample ID: A208010-01D

mL) G Lab File ID:

: (Y/N) N Date Received: 08/04/92

SONC Date Extracted: 08/06/92

5000 (uL) Date Analyzed: 08/20/92

Dilution Factor: 1.00

pH: 9.3 Sulfur Cleanup: (Y/N) N

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

ND		Q
-BHC	1.8	U
BHC	1.8	U
-BHC	1.8	U
-BHC (Lindane)	1.8	U
achlor	1.8	U
in	1.8	U
achlor epoxide	1.8	U
sulfan I	1.8	U
drin	3.5	U
-DDE	3.5	U
in	3.5	U
osulfan II	3.5	U
-DDD	3.5	U
osulfan sulfate	3.5	U
-DDT	3.5	U
hoxychlor	18	U
rin ketone	3.5	U
drin aldehyde	3.5	U
pha-Chlordane	1.8	U
mma-Chlordane	1.8	U
xaphene	180	U
oclor-1016	35	U
oclor-1221	71	U
oclor-1232	35	U
oclor-1242	35	U
oclor-1248	35	U
oclor-1254	35	U
oclor-1260	35	U

SAMPLE NUMBER:

)-0108 B072P8

SDG No.: B072P8

Sample ID: 08063-01S

Received: 08/05/92

t): MG/KG

	M
	P
	P
	F
	P
	P
	P
	P
	P
	P
	P
	P
	F
	P
	P
	CV
	P
	P
	F
	P
	P
	F
	P
	CA

exture: MEDIUM

rtifacts: YES

MM 6/22/93

2-26-93 MM

MM 6/22/93

FORM I PEST 3/90

IFM02.0 002

TMA Inc. REPORT Work Order # A2-08-010

ed: 08/04/92 Results by Sample

ID B072P8 FRACTION 01G TEST CODE VCCLPS NAME Anions in Solids - VM232

Date & Time Collected 07/30/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Fluoride	300.0	3	mg/Kg	1.
Sulfate	300.0	33	mg/Kg	10.

FORM I

MJ
PBD
6/22/93

Page 2 Skinner&Sherman REPORT Work Order # S2-08-065

Received: 08/05/92 Results by Sample

SAMPLE ID B072P8 SAMPLE # 01 FRACTIONS: A

Date & Time Collected 07/30/92 11:21:00 Category SOIL

NO3NO2 <2.40 U
mg N/kg

SAMPLE ID B072P8 DUPL SAMPLE # 01 FRACTIONS: B

Date & Time Collected 07/30/92 11:21:00 Category SOIL

NO3NO2 <2.42
mg N/kg

SAMPLE ID B072P8 SPIKE SAMPLE # 01 FRACTIONS: C

Date & Time Collected 07/30/92 11:21:00 Category SOIL

NO3NO2 19.8
mg N/kg

SAMPLE ID LCSS SAMPLE # 02 FRACTIONS: A

Date & Time Collected not specified Category SOIL

NO3NO2 1.91
mg N/L

MJ
PBD
6/22/93

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc. retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc. will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.
300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

9713517.0501

TMA NORCAL

REPORTING GROUP 7071

DATA SHEET

N208023-01

B072P8

SDG	7071	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208023-01	Client sample id	B072P8
Dept sample id	7071-001	Matrix	SOIL
Received	08/04/92	Collected	07/30/92
% moisture		Chain of custody id	EFL-1022

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Gross Alpha	Alpha	4.4	3.8	4.5	10	UR	80A
Gross Beta	Beta	15	4.3	5.5	15		80B
Uranium 233/234		0.45	0.18	0.13	0.30		U
Uranium 235	15117-96-1	0.042	0.042	0.16	0.30	UR	U
Uranium 238	7440-61-1	0.47	0.18	0.13	0.30		U
Plutonium 238	13981-16-3	-0.007	0.018	0.037	0.050	U	PU
Plutonium 239/240		-0.002	0.004	0.017	0.050	U	PU
Americium 241	14596-10-2	-0.002	0.013	0.024	0.050	U	AM
Strontium 90	10098-97-2	0.14	0.25	0.70	1.0	U	Y
Carbon 14	14762-75-5	23	14	30	50	U	C
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	12	1.7				GAM
Iron 59		U		0.61	0.050	U	GAM
Chromium 51	14392-02-0	U		2.6		U	GAM
Cobalt 60	10198-40-0	U		0.078	0.050	UJ	GAM
Zinc 65	17982-39-3	U		0.26		U	GAM
Ruthenium 106	13967-48-1	U		0.70		U	GAM
Cesium 134	17967-70-9	U		0.11		U	GAM
Cesium 137	10045-97-3	U		0.090	0.050	U	GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Radium 226	13982-67-7	0.35	0.15		0.10		GAM
Thorium 228	14274-82-9	0.66	0.14			J	GAM
Thorium 232	7440-29-1	0.46	0.35				GAM

RB 2/3/93

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/06/92

RBD 6/22/93

9213517.0502

N208023-02

TMA NORCAL
REPORTING GROUP 7071

DATA SHEET

B072Q2

SDG 7071
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208023-02
Dept sample id 7071-002
Received 08/06/92
% moisture
Client sample id B072Q2
Matrix SOIL
Collected 08/03/92
Chain of custody id EFL-1022

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALIFIERS	TEST
Gross Alpha	Alpha	6.3	4.2	4.7	10	J R	80A
Gross Beta	Beta	12	4.5	6.4	15	J	80B
Uranium 233/234		0.40	0.30	0.35	0.30	R	U
Uranium 235	15117-96-1	0.089	0.090	0.34	0.30	U R	U
Uranium 238	7440-61-1	0.33	0.23	0.28	0.30	R	U
Plutonium 238	13981-16-3	0	0.022	0.040	0.050	U	PU
Plutonium 239/240		-0.004	0.022	0.044	0.050	U	PU
Americium 241	14596-10-2	-0.001	0.011	0.020	0.050	U	AM
Strontium 90	10098-97-2	0	1.1	1.2	1.0	U	Y
Carbon 14	14762-75-5	6.6	15	33	50	U	C
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	9.0	1.5				GAM
Iron 59		U		0.51	0.050	U	GAM
Chromium 51	14392-02-0	U		1.9		U	GAM
Cobalt 60	10198-40-0	U		0.12	0.050	U	GAM
Zinc 65	17982-39-3	U		0.26		U	GAM
Ruthenium 106	13967-48-1	U		0.57		U	GAM
Cesium 134	17967-70-9	U		0.094		U	GAM
Cesium 137	10045-97-3	U		0.092	0.050	U	GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.095	0.10	U	GAM
Radium 226	13982-67-7	0.32	0.13		0.10		GAM
Thorium 228	14274-82-9	0.28	0.12			J	GAM
Thorium 232	7440-29-1	0.32	0.24				GAM

RB 2/3/93

Lab id TMAN
Protocol WHC-NEIS
Version Ver 1.0
Form DVD-DS
Version 2.20
Report date 11/06/92

RB 6/22/93

9213517.0505

N208023-03

TMA NORCAL
REPORTING GROUP 7071

DATA SHEET

B072Q4

SDG	7071	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208023-03	Client sample id	B072Q4
Dept sample id	7071-003	Matrix	SOIL
Received	08/10/92	Collected	08/05/92
% moisture		Chain of custody id	EFL-1022

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALIFIERS	TEST
Gross Alpha	Alpha	5.7	5.0	6.4	10	~~U~~ R	80A
Gross Beta	Beta	11	3.9	5.1	15	J	80B
Uranium 233/234		0.21	0.14	0.19	0.30	J	U
Uranium 235	15117-96-1	0	0.043	0.16	0.30	~~U~~ R	U
Uranium 238	7440-61-1	0.46	0.18	0.13	0.30		U
Plutonium 238	13981-16-3	0.025	0.020	0.029	0.050	U	PU
Plutonium 239/240		0	0.011	0.023	0.050	U	PU
Americium 241	14596-10-2	0.012	0.012	0.017	0.050	U	AM
Strontium 90	10098-97-2	-1.1	3.7	0.92	1.0	U	Y
Carbon 14	14762-75-5	2.9	12	28	50	U	C
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	12	0.93				GAM
Iron 59		U		0.26	0.050	U	GAM
Chromium 51	14392-02-0	U		1.1		U	GAM
Cobalt 60	10198-40-0	U		0.041	0.050	U J	GAM
Zinc 65	17982-39-3	U		0.10		U	GAM
Ruthenium 106	13967-48-1	U		0.31		U	GAM
Cesium 134	17967-70-9	U		0.045		U	GAM
Cesium 137	10045-97-3	U		0.035	0.050	U	GAM
Europium 152	14683-23-9	U		0.081	0.10	U	GAM
Europium 154	15585-10-1	U		0.053	0.10	U	GAM
Radium 226	13982-67-7	0.34	0.074		0.10		GAM
Thorium 228	14274-82-9	0.56	0.049			J	GAM
Thorium 232	7440-29-1	0.43	0.15				GAM

RB 2/3/93

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/06/92

6/22/93

9716517.0504

DATA QUALIFICATION SUMMARY

UNIT: 100-KR-4

DOCUMENT CONTROL NUMBER: WHC-SD-EN-TI-134

ANALYSES: VOC, BNA, Pest/PCB, Inorganics, Wet Chemistry

RFW NO.: B072Q2-TMA-258

SDG NO.: B072Q1

QUALIFICATION SUMMARY:

VOLATILES

SAMPLE NUMBERS: B072Q1, B072Q2

No qualifiers added to data.

SEMIVOLATILES

SAMPLE NUMBERS: B072Q2

No qualifiers added to data.

PESTICIDES/PCBS

SAMPLE NUMBERS: B072Q2

INITIAL CALIBRATIONS

Due to initial calibration RSDs above the QC limits, the following were qualified as estimates and flagged "J":

- Alpha-BHC, delta-BHC, aldrin, 4,4'-DDD, endosulfan I, and gamma-chlordane in sample number B072Q2 in SDG No. B072Q1.

INORGANICS

SAMPLE NUMBERS: B072Q2

BLANKS

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for arsenic:

- Sample number B072Q2 in SDG No. B072Q1.

9713517.0505

MATRIX SPIKE RECOVERY

The matrix spike recoveries fell outside the QC limits for antimony. All associated results were qualified as estimates and flagged "J" for the following sample:

- Sample number B072Q2 in SDG No. B072Q1.

The matrix spike recoveries fell outside the QC limits for arsenic. All associated results were qualified as estimates and flagged "J" for the following sample:

- Sample number B072Q2 in SDG No. B072Q1.

The matrix spike recoveries fell outside the QC limits for selenium. All associated results were qualified as estimates and flagged "J" for the following sample:

- Sample number B072Q2 in SDG No. B072Q1.

LABORATORY DUPLICATE SAMPLES

The laboratory duplicate results fell outside the QC limits for selenium. All associated results were qualified as estimates and flagged "J" for the following sample:

- Sample number B072Q2 in SDG No. B072Q1.

WET CHEMISTRY

SAMPLE NUMBERS: B072Q2

PRECISION

Duplicate analysis results fell outside the QC requirements for fluoride in SDG No. B072Q1. All associated results were qualified as estimates and flagged "J".

000002

Westinghouse Hanford Company

CHAIN OF CUSTODY

ARL I

Custody Form Initiator: W.V. Setzer

Company Contact: CM CHANCE

Telephone: 376-7619

Project Designation/Sampling Locations: 100-KR-4

Collection Date: 8-3-92

Ice Chest No.: WHC 21

Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: 2509869736

Offsite Property No.: W92-0-0577 HS

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA/NORCAL

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

Sample Identification

1) B072Q2 ~~1,120ml aG:CLP;ICP/AA Metals,Hg~~
~~1,120ml aG:CLP;Cn~~
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/~~353.2~~;Anions(F,SO4,~~NO3~~)
~~1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241~~

2) 1,120ml aG:CLP;ICP/AA Metals,Hg
1,120ml aG:CLP;Cn
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

3) 1,120ml aG:CLP;ICP/AA Metals,Hg
1,120ml aG:CLP;Cn
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

WVS 8-3-92

4) B072Q1 1,120mL aG CLP-VOA

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

Relinquished by:	Received by:	Date/Time:
W.V. Setzer	Kermit Blum	8-6-92 1130
Kermit Blum 8-6-92	C. Harris	8/7/92 9:00

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9/15/92 1:50

000003

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector W.V. SETZER Date Sampled 8-3-92 Time 1135 hours

Company Contact ~~CM CHANCE~~ W.V. SETZER WVS 8-5-92 Telephone (509) 376-2084

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B072Q2 ✓	~~1-120ml aG~~	~~Soil~~	~~CLP:ICP/AA Metals,Hg~~
✓	~~1-120ml aG~~	~~Soil~~	~~CLP:Cn~~
✓	1-120ml aG	Soil	CLP:VOA
✓	1-250ml aG	Soil	CLP:Semi-VOA,PCB/PEST
✓	1-120ml aG	Soil	300.0/~~353.2~~;Anions(F,SO4,~~NO3~~)
✓	~~1-950ml aG~~	~~Soil~~	~~Gross alpha/beta,Gamma Spec,Sr-90,C-14,~~
			~~U-235/238,Pu-239/240,Am-241~~
	1-120ml aG	Soil	CLP:ICP/AA Metals,Hg
	1-120ml aG	Soil	CLP:Cn
	1-120ml aG WVS 8-5-92	Soil	CLP:VOA
	1-250ml aG	Soil	CLP:Semi-VOA,PCB/PEST
	1-120ml aG	Soil	300.0/353.2;Anions(F,SO4,NO3)
	1-950ml aG	Soil	Gross alpha/beta,Gamma Spec,Sr-90,C-14
			U-235/238,Pu-239/240,Am-241
B072Q1 ✓	1-120mL aG	soil	CLP:VOA

Field Information** NA

Special Handling and/or Storage Maintain at 4C

Possible Sample Hazards NONE OBSERVED

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 8-6-92

Analysis Required

9713517.0508

000005

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072Q1

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08018 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208018-02A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 20812R11

Level: (low/med) LOW Date Received: 08/06/92

% Moisture: not dec. 0 Date Analyzed: 08/12/92

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

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

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

2,22A MM

6/22/

9713517.0509
1E

000006
EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B072Q1

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08018 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208018-02A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 20812R11

Level: (low/med) LOW Date Received: 08/06/92

% Moisture: not dec. 0 Date Analyzed: 08/12/92

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

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALCOHOL	3.53	6	J

2-22-93
MM

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072Q2

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08018 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208018-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 20812R10

Level: (low/med) LOW Date Received: 08/06/92

% Moisture: not dec. 2 Date Analyzed: 08/12/92

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

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

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

2.22

9213517.0511

000008

EPA SAMPLE NO.

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B072Q2

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08018 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208018-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 20812R10

Level: (low/med) LOW Date Received: 08/06/92

% Moisture: not dec. 2 Date Analyzed: 08/12/92

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

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

2-22-93

9713517.0512

000009
EPA SAMPLE NO.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B072Q2

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08018 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208018-01B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 20817S03

Level: (low/med) LOW Date Received: 08/06/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 08/10/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/17/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	810	UJ
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	810	U

2.22.9
MM
6/22/9

9213517.0513

000010

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072Q2

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08018 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208018-01B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 20817S03

Level: (low/med) LOW Date Received: 08/06/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 08/10/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/17/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
218-01-9	Chrysene	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

2224

9713517.0514

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

000011

EPA SAMPLE NO.

B072Q2

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08018 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208018-01B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 20817S03

Level: (low/med) LOW Date Received: 08/06/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 08/10/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/17/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

Number TICs found: 11

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN KETONE	5.13	200	J
2.	UNKNOWN HYDROCARBON	5.30	2100	~~BJ~~ U
3.	UNKNOWN HYDROCARBON	5.72	54000	~~BJ~~
4.	UNKNOWN HYDROCARBON	6.70	240	~~BJ~~
5.	UNKNOWN HYDROCARBON	6.80	670	~~BJ~~
6.	UNKNOWN HYDROCARBON	7.25	740	~~BJ~~
7.	UNKNOWN ALCOHOL	8.47	1100	~~BJ~~
8.	PROPANOIC ACID ISOMER	17.20	100	J
9.	UNKNOWN CARBOXYLIC ACID ESTE	20.30	470	J
10.	HEXANEDIOIC ACID ISOMER	24.85	170	J
11.	UNKNOWN HYDROCARBON	27.73	67	J

2.22

MM

9713517.0515
1D

000012
EPA SAMPLE NO.

PESTICIDE ORGANICS ANALYSIS DATA SHEET

B072Q2

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08018 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208018-01B

Sample wt/vol: 30.6 (g/mL) G Lab File ID:

% Moisture: 2 decanted: (Y/N) N Date Received: 08/06/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 08/10/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/09/92

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

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

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	1.7	UJ
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	UJ
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	UJ
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	UJ
60-57-1	Dieldrin	3.3	U
72-55-9	4,4'-DDE	3.3	U
72-20-8	Endrin	3.3	U
33213-65-9	Endosulfan II	3.3	U
72-54-8	4,4'-DDD	3.3	UJ
1031-07-8	Endosulfan sulfate	3.3	U
50-29-3	4,4'-DDT	3.3	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.3	U
7421-36-3	Endrin aldehyde	3.3	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	UJ
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	67	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U

% RSD for Cal factor 2-23-9 MM

6/22/92

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B07202

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

Lab Code: SKINER Case No.: N2-08-043SAS No. SDG No.: B07202

Matrix (soil/water): SOIL Lab Sample ID: 08112-01S

Level (low/med): LOW Date Received: 08/07/92

% Solids: 98.2

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5270			P
7440-36-0	Antimony	3.1	U	~~R~~ J	P
7440-38-2	Arsenic	1.6	B	~~R~~ UJ	F
7440-39-3	Barium	49.2			P
7440-41-7	Beryllium	0.13	U		P
7440-43-9	Cadmium	0.28	U		P
7440-70-2	Calcium	2690			P
7440-47-3	Chromium	17.3			P
7440-48-4	Cobalt	5.0	B		P
7440-50-8	Copper	16.5			P
7439-89-6	Iron	10100			P
7439-92-1	Lead	4.1			F
7439-95-4	Magnesium	3130			P
7439-96-5	Manganese	202			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	11.5			P
7440-09-7	Potassium	954			P
7782-49-2	Selenium	3.0		~~SN~~ R	F
7440-22-4	Silver	0.91	U		P
7440-23-5	Sodium	262	B		P
7440-28-0	Thallium	0.33	U	~~R~~ J	F
7440-62-2	Vanadium	22.5			P
7440-66-6	Zinc	28.0			P
	Cyanide	0.51	U		CA

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES

RBJ 6/22/93

9713517.0517

TRA Inc. REPORT Work Order # A2-88-018

Received: 08/06/92 Results by Sample

SAMPLE ID B07292 FRACTION 01E TEST CODE VCCLPS NAME Anions in Solids - VM232

Date & Time Collected 08/03/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Fluoride	300.0	3 J	mg/Kg	1.
Sulfate	300.0	37 ✓	mg/Kg	10.

FORM I

2-25-9 35C

PBD
6/22/93

9713517.0518

Received: 08/07/92 Results by Sample

SAMPLE ID B07202 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 08/03/92 11:35:00 Category SOIL

NO3NO2 2.47 U
mg N/kg

method 353.2

SAMPLE ID B07202 DUPL SAMPLE # 01 FRACTIONS: B
Date & Time Collected 08/03/92 11:35:00 Category SOIL

NO3NO2 <2.42
mg N/kg

SAMPLE ID B07202 SPIKE SAMPLE # 01 FRACTIONS: C
Date & Time Collected 08/03/92 11:35:00 Category SOIL

NO3NO2 19.0
mg N/kg

SAMPLE ID LCSS SAMPLE # 02 FRACTIONS: A
Date & Time Collected not specified Category SOIL

NO3NO2 1.97
mg N/L

2-25-935C

PBD
6/22/93

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.
This report is tendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc. retains ownership of this report until associated submitted invoice is ... Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. ... will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the in... amount. The results listed refer only to tested samples and applicable parameters. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc ... exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are he... ninety days following issuance of report. Samples will be stored at client's expense, if authorized in writing.
300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4LAB TEST FAX (617) 890-3883

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: Westinghouse Data Validation	REVIEWER: MW	DATE: 2-22-93
LABORATORY: JMA	CASE: 08018	SDG: B07201
SAMPLES/MATRIX: Soil ; B07201, B07202		

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 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			✓

Data Package Item	Present?: Yes	No	N/A
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 non-detects), otherwise reject all non-detects (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 BFB tune report present for each applicable 12h 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 transciption 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 non-detects). 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 ≤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 ≤~~20.5~~ 25.0% (3/90 SOW)?	Yes	No	N/A
Are all applicable RSD values ≤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 non-detects 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 non-detects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12h 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 ≤25% (2/88 or 3/90 SOW)?	Yes	No	N/A
Are all %D values ≤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 non-detects 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 non-detects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12h 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 < 10X the highest blank concentration for the common laboratory contaminants, as non-detects (U) or at the SQL if the result is < CRQL. Qualify all remaining sample results <5X the blank concentration in similar fashion.

4.2 FIELD BLANKS

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

ACTION: Qualify all detected sample results less than or equal to five times the amount in any valid field blank as non-detects (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

Are any surrogate recoveries less than 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 non-detects) for surrogates out of specification but greater than 10%. Qualify all associated positive sample results as estimated (J) and all non-detect 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

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

Are there any calculation errors? Yes No N/A

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 greater than five 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 not the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are greater than five times the 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 non-detects). 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 ≥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 specrum 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 five times the CRQL 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 non-detects (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 non-detects (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 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: Westinghouse Data Validation	REVIEWER: MW	DATE: 2-22-93
LABORATORY: JMA	CASE: 08018	SDG: B07201
SAMPLES/MATRIX: Soil ; B07201, B07202		

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 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	—	—	✓

Data Package Item	Present?: Yes	No	N/A
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 non-detects), otherwise reject all non-detects (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 BFB tune report present for each applicable 12h 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 transciption 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 non-detects). 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 ≤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 ≤~~20.5~~ 25.0% (3/90 SOW)?	Yes	No	N/A
Are all applicable RSD values ≤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 non-detects 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 non-detects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12h 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 ≤25% (2/88 or 3/90 SOW)?	Yes	No	N/A
Are all %D values ≤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 non-detects 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 non-detects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12h 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 < 10X the highest blank concentration for the common laboratory contaminants, as non-detects (U) or at the SQL if the result is < CRQL. Qualify all remaining sample results <5X the blank concentration in similar fashion.

4.2 FIELD BLANKS

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

ACTION: Qualify all detected sample results less than or equal to five times the amount in any valid field blank as non-detects (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

Are any surrogate recoveries less than 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 non-detects) for surrogates out of specification but greater than 10%. Qualify all associated positive sample results as estimated (J) and all non-detect 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

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

Are there any calculation errors? Yes No N/A

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 greater than five 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 not the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are greater than five times the 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 non-detects). 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 ≥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 specrum 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 five times the CRQL 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 non-detects (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 non-detects (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 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

SEMI-VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-2

PROJECT: Westinghouse Data Validation	REVIEWER: MM	DATE: 2-22-93
LABORATORY: JMA	CASE: 08018	SDG: B072Q1
SAMPLES/MATRIX: Soils ; B072Q2		

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 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	✓		
Quantitation and calculation data for all TIC	✓		
MS/MSD report forms	✓		

Data Package Item	Present?: Yes	No	N/A
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

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 non-detects), otherwise reject all non-detects (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 DFTPP tune report present for each applicable 12h 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 transciption 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 and UJ for non-detects). If all tuning criteria are not met, 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 ≤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 ~~≤20.5%~~ 25.0% (3/90 SOW)?	Yes	No	N/A
Are all applicable RSD values ≤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 four TCL compounds or surrogates, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all non-detects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for non-detects).

3.3 CONTINUING CALIBRATION

Is a continuing calibration report present for all 12h 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 ≤25% (2/88 or 3/90 SOW)? Yes No N/A

Are all %D values ≤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 four TCL compounds or surrogates, if any RRF value is out of specification qualify all associated detected results as estimated and all non-detects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for non-detects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every extraction batch? Yes No N/A

Are compounds reported in the laboratory blanks? TICs only Yes No N/A

ACTION: Qualify all sample results < 10X the highest blank concentration for the common laboratory contaminants, as non-detects (U) or at the SQL if the result is < CRQL. Qualify all remaining sample results < 5X the blank concentration in similar fashion.

4.2 FIELD BLANKS

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

ACTION: Qualify all detected sample results less than or equal to five times the amount in any valid field blank as non-detects (U) and note the results of the field blanks in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY/SYSTEM MONITORING COMPOUND RECOVERY

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

Are any surrogate recoveries less than 10%? Yes No N/A

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

ACTION: Qualify all associated data as estimated (J for detects and UJ for non-detects) if at least two semivolatile surrogates are out of specification. If any surrogate is below 10% recovery qualify associated detected results as estimated (J) and associated non-detect results as unusable (R). If method blank surrogates are out of specification and associated sample surrogates are acceptable no qualification is required, 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

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

Are there any calculation errors? Yes No N/A

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 greater than five 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 results for the performance audit samples 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 DUPLICATES

Are all 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 not the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are greater than five times the 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 and UJ for non-detects. 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

No Detects, except TICs

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 ≥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 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).

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standards 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 five times the CRQL values?	Yes	No	N/A

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

8.3 TENTATIVELY IDENTIFIED COMPOUNDS

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 non-detects (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 non-detects (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 and complete the data validation narrative as specified in Section 10 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: Westinghouse Data Validation	REVIEWER: MM	DATE: 2-23-93
LABORATORY: IMA	CASE: 08018	SDG: B07201
SAMPLES/MATRIX: Soil ; B07202		

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 re-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	✓		
Sample Data			
Sample reports	✓		
Chromatograms	✓		
GC integration reports	✓		
Worksheets		✓	
UV traces from GPC	✓		
GC/MS confirmation spectra			✓
Standards Data			
Pesticides Evaluation Standards Summary	✓		
Pesticides/PCB Standards Summary	✓		
Pesticides/PCB identification	✓		
Pesticides standard chromatograms	✓		
Raw QC Data			
Blank analysis report forms and chromatograms	✓		
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 non-detects), otherwise reject all non-detects (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 <20%? Yes No N/A

ACTION: If the DDT percent breakdown exceeds 20%, qualify all detected results for DDT as estimated (J) and all non-detects 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 <20%? Yes No N/A

ACTION: If the endrin breakdown exceeds 20%, qualify all detected results for endrin as estimated (J) and all non-detects 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 ocurring 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 ≤10%? Yes No N/A

Have all standards been analyzed within 72 hours 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 72h sequence? Yes No N/A

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

Has the confirmation standard mix been analyzed after every 5 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 ≤15% for quantitation standards and ≤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 72h 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 ≤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 non-compliant 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 non-compliant 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 non-detect results (R).

Are RPDs between the calculated and true amounts in the PEMs, INDA and INDB mixes ≤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 ≤20.0% (≤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 non-detects (U) that are <5X 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 <5X the highest valid field blank concentrations as non-detects (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 non-detects 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 UJ for non-detects) for surrogates out of specification. If the surrogate was not detected (0% recovery) in the sample qualify associated non-detects 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 greater than five 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 greater than five times the 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

No Detects

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 ppm? Yes No N/A

ACTION: If positive results do not meet the retention time criteria qualify all detected results as non-detects 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 non-detected (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 five times the CRQL 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 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: Westinghouse	REVIEWER: SC	DATE: 2-25-93
LABORATORY: TMA	CASE:	SDG: B07201
SAMPLES/MATRIX: soil B07201		

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	✓	Ø		
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		✓		

Data Package Item	Present?: Yes	No	N/A
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 non-detects).

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 CN 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 CN 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 <5X the amount in any laboratory blank as non-detected (U). If analyte concentrations in the blank are greater than the CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations less than 10x 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 <5X the amount in any valid field blank as non-detected (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 non-detects as estimated (UJ). If spike recovery is <30%, reject all non-detects (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 $\geq$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 non-detects). If the analytical spike recovery is less than 40 percent qualify detects as estimated (J). If the analytical spike recovery is greater than or equal to 10% but less than 40 percent, qualify all non-detects as estimated (UJ) and if the analytical spike recovery is less than 10 percent, reject all non-detects (R). If the sample absorbance is less than 50% of the analytical spike absorbance and the analytical spike recovery is less than 85% or greater than 115%, qualify all results as estimated (J for detects and UJ for non-detects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correllation coefficient was less than 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 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: Westinghouse	REVIEWER: SC	DATE: 2-25-93
LABORATORY: TMA	CASE:	SDG: B07201
SAMPLES/MATRIX: Soil		
B07202		

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 submittal of the omitted data.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative	✓	✓		
Cover Page		✓		
Traffic Reports/Chain-of-Custody	✓	✓		
Sample Analysis Data Report Forms	✓			
Standards Data				
QC Summary				
Blanks Summary Report Forms		✓		
Spike Sample Recovery Report Forms	✓			
Duplicate Sample Analysis Report Forms		✓		
Laboratory Control Sample Report Forms		✓		
Raw Data				
Ion Chromatograph Chromatograms	✓		✓	
TOC and TOX Instrument Printouts			✓	
Laboratory Bench Sheets		✓		
Additional Data				
Laboratory Sample Preparation Logs	✓			
Instrument Run Logs	✓			
Internal Laboratory Chain-of-Custory	✓			
Percent Solids Analysis Records		✓		
Reduction Formulae			✓	
Chemist Notebook Pages		✓		

2. HOLDING TIMES

Were all samples analyzed within holding times? (Yes) No N/A

Action: If any holding times were exceeded qualify all affected results as estimated (J for detects and UJ for non-detects).

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

ACTION: Qualify all associated sample results for any analyte <5X the amount in any laboratory blank as non-detected (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 <5X the amount in any valid field blank as non-detected (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 greater than the CRQL, qualify the data as estimated (J). If the spike recovery is less than 30% and the sample results are less then the IDL qualify the data as unusable (R).

8. 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 affected results 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 %R 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.

9. 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 samples in the validation narrative.

10. DUPLICATE SAMPLE ANALYSIS

Are RPD values within the acceptance limits? Yes No N/A

Action: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD falls outside the acceptance limits.

11. FIELD DUPLICATE SAMPLES

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

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

12. FIELD SPLIT SAMPLES

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

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

13. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly? Yes No N/A

Are instrument detection limits below the CRDL? 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).

14. 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 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

9713517.0563

DATA QUALIFICATION SUMMARY

UNIT: 100-KR-4

DOCUMENT CONTROL NUMBER: WHC-SD-EN-TI-134

ANALYSES: VOC, BNA, Pest/PCB, Inorganics, Wet Chemistry

RFW NO.: B072Q4-TMA-264

SDG NO.: B072Q4

QUALIFICATION SUMMARY:

VOLATILES

SAMPLE NUMBERS: B072Q4, B072Q5

SEMIVOLATILES

SAMPLE NUMBERS: B072Q4, B072Q5

PESTICIDES/PCBS

SAMPLE NUMBERS: B072Q4, B072Q5

INORGANICS

SAMPLE NUMBERS: B072Q4, B072Q5

WET CHEMISTRY

SAMPLE NUMBERS: B072Q4, B072Q5

Data from this package were not validated.

9215517.0564

TMA NORCAL
REPORTING GROUP 7074

DATA SHEET

N208069-01

B072Q5

SDG	7074	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208069-01	Client sample id	B072Q5
Dept sample id	7074-001	Matrix	WATER
Received	08/10/92	Collected	08/06/92
% moisture		Chain of custody id	EFL-1022

PARAMETER	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	Alpha	-0.47	1.2	2.1	3.0	UR	80A
Gross Beta	Beta	0.98	1.2	1.9	4.0	U	80B
Uranium 233/234		0.30	0.30	0.57	0.20	UR	U
Uranium 235	15117-96-1	0	0.18	0.69	0.20	UR	U
Uranium 238	7440-61-1	0.37	0.31	0.57	0.20	UR	U
Plutonium 238	13981-16-3	-0.004	0.015	0.032	0.050	U	PU
Plutonium 239/240		-0.002	0.007	0.018	0.050	U	PU
Americium 241	14596-10-2	0.015	0.024	0.045	0.050	U	AM
Strontium 90	10098-97-2	0.42	0.26	0.75	2.0	U	Y
Technetium 99	14133-76-7	0.87	1.0	3.0	5.0	U	TC
Tritium	10028-17-8	31	140	230	400	U	H
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	U		120		U	GAM
Iron 59		U		70	30	U	GAM
Chromium 51	14392-02-0	U		330		U	GAM
Cobalt 60	10198-40-0	U		16	25	U	GAM
Zinc 65	17982-39-3	U		28		U	GAM
Ruthenium 106	13967-48-1	U		100		U	GAM
Cesium 134	17967-70-9	U		9.6		U	GAM
Cesium 137	10045-97-3	U		11	15	U	GAM
Europium 152	14683-23-9	U		22	40	U	GAM
Europium 154	15585-10-1	U		14	40	U	GAM
Radium 226	13982-67-7	20	16			J	GAM
Thorium 228	14274-82-9	U		18		U	GAM
Thorium 232	7440-29-1	U		45		U	GAM

RB 2/2/93

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.20
Report date	11/11/92

RBJ 6/22/93

9213517.0565

000002

Westinghouse Hanford Company	CHAIN OF CUSTODY	ARL1

Custody Form Initiator: W.W. SETZER

Company Contact: CM CHANCE

Telephone: 376-2084

Project Designation/Sampling Locations: 100-KR-4

Collection Date: 8-5-92

Ice Chest No.: SML 92

Field Logbook No.: EFL- 1022

Bill of Lading/Airbill No.: 250986 9648

Offsite Property No.: ~~U92-0577~~ #10

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA/NORCAL

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

Sample Identification

1) B072Q4 ~~1,120ml aG:CLP;ICP/AA Metals,Hg~~
~~1,120ml aG:CLP;Cn~~
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/~~353.2~~;Anions(F,SO4,~~NO3~~)
~~1,950ml aG:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241~~

2) ~~1,120ml aG:CLP;ICP/AA Metals,Hg~~
1,120ml aG:CLP;Cn
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
1,950ml aG:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

3) 1,120ml aG:CLP;ICP/AA Metals,Hg WWS 8-5-92
1,120ml aG:CLP;Cn
1,120ml aG:CLP;VOA
1,250ml aG:CLP;Semi-VOA,PCB/PEST
1,120ml aG:300.0/353.2;Anions(F,SO4,NO3)
1,950ml aG:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: W.W. Setzer	Received by: Kermit Blum	Date/Time: 8/10/92 0800 *
Relinquished by: Kermit Blum 8-10-92	Received by: C. Harris	Date/Time: 8/11/92 9[illegible]
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: * Received @ TMA/NORCAL 8/8/92; opened 8/10/92 - KB

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

9215517.0556

000003

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

Collector W.V. SETZER — Date 8-7-92

Company Contact CM CHANCE — Telephone (509)376-7619

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B0TZQ4	S	8-5-92	1000	~~1-120ml G CLP;ICP/AA Metals,Hg~~ ~~1-120ml G CLP;CN~~ 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/~~353.2~~;Anions(F,SO4,~~NO3~~) ~~1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241~~
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241 WVS 8-7-92
				1-120ml G CLP;ICP/AA Metals,Hg 1-120ml G CLP;CN 1-120ml aG CLP;VOA 1-250ml aG CLP;Semi-VOA,PCB/PEST 1-120ml aG 300.0/353.2;Anions(F,SO4,NO3) 1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241

*Type of Sample: A = Air; DL = Drum Liquids; DS = Drum Solids; L = Liquid; O = Oil; S = Soil; SE = Sediment; SL = Sludge; SO = Solid; T = Tissue; W = Water; WI = Wipe; X = Other

Field Information FROM 100-KR-4 Drilling

Special Handling and/or Storage Maintain at 4C

Possible Sample Hazards NA

A-6000-406 (06/91) WEF060

9213517.0567

000004

Westinghouse Hanford Company

CHAIN OF CUSTODY

ARL1

Custody Form Initiator: W.V. SETZER

Company Contact: W.V. SETZER — Telephone: (509) 376-2413

Project Designation/Sampling Locations: 100 KR-4 — Collection Date: 8-6-92

Ice Chest No.: WHC 23 — Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: 250986 9648 — Offsite Property No.: WA2-0-0577#10

Method of Shipment: AIR DELIVERY

Shipped to: TMA/NORCAL

Possible Sample Hazards/Remarks: NONE OBSERVED

Sample Identification

B072Q5 - SOIL, CHEMICAL	PRESERVATIVE
~~1-P 1000ML : 100/METALS, HG~~	HNO3
~~1-P 1000ML: CN~~	NaOH
3-G 40ML: VOA	CHILL ON ICE
~~1-P 500ML: ANIONS (NO2, NO3) CHLORIDE, FLUR, SULFATE~~	H_2SO_4
~~1-P 1000ML: SR90, U235/238, PU 239/240, AM241~~	HNO3
~~1-P 1000ML: TC 99~~	HCL
1-G 500 ML : SULFIDE	ZINC ACETATE/NaOH
1-G 500ML : AMMONIA CHEM. OXYGEN DEMAND	H_2SO_4
~~PG 125ML: TOC~~	H_2SO_4
~~PG 250ML: TOX~~	H_2SO_4
~~PG - 40ML: NITROGEN~~	HCL
~~PG - 250ML: TOTPHOS~~	CHILL ON ICE
1P - 1000ML : ANIONS (NO3) SO4, F	CHILL ON ICE
1aG 1000ML: ALKALINITY, TOTAL DISSOLVED SOLIDS	CHILL ON ICE

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
W.V. Setzer	Kermit Blum	8-10-92 0800 **
Kermit Blum 8-10-92	C Harris	8/11/92 9:00

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: *Received @ TMA/NORCAL 8-8-92; opened 8-10-92 - KB

6000-107 (12/91)

9215517.0566

000005

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

Collector W.V. SETZER Date 8-7-92

Company Contact W.V. SETZER Telephone (509) 376-2413

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Requested	PRESERVATIVE
B072Q5	W	8-7-92	0860	✓ ~~1-P-1000mL: ICP/AA METALS, Hg~~	HNO_3
				✓ ~~1-P 1000mL. CN~~	NaOH
				✓ 3-G5-40mL: VOA	CHILL ON ICE
				✓ 3-aG-2360mL: SEMI VOA, ACB, PEST	CHILL ON ICE
				✓ ~~1-P-500mL. ANIONS (F, SO4, NO3)~~ 500 WVS 8-7-92, NO2	H_2SO_4
				✓ ~~2-P 1000mL. GROSS ALPHA, BETA, GAMMA SPEC, SR-90, U-235/238, Pu 239/240, Am 241~~	HNO_3
				✓ ~~1-P 1000mL TC-99~~	HCL
				✓ 1-B-500mL SULFIDE	ZINC/ACETATE/NaOH
				✓ 1-G-500mL AMMONIA, CHEMICAL OXYGEN DEMAND	H_2SO_4
				✓ ~~1-aG-125mL TOC~~	H_2SO_4
				✓ ~~1-aG-250mL TOX~~	H_2SO_4
				✓ ~~1-G5-40mL HYDRAZINE~~	HCL
				✓ ~~1-G5 250mL TRITIUM~~	CHILL ON ICE
				✓ 1-P-1000mL (ANIONS (IC) SO4, F, PO4, Cl,	CHILL ON ICE
				~~1-aG~~ WVS 8-7-92 COND, PH)	
				✓ 1-aG-1000mL (ALKALINITY, TOTAL DISSOLVED solids	CHILL ON ICE

*Type of Sample: A = Air; DL = Drum Liquids; DS = Drum Solids; L = Liquid; O = Oil; S = Soil; SE = Sediment; SL = Sludge; SO = Solid; T = Tissue; W = Water; WI = Wipe; X = Other

Field Information

Special Handling and/or Storage

Possible Sample Hazards NONE OBSERVED

A-6000-406 (06/91)

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
B072Q4

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208023-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 20812R14

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: not dec. 13 Date Analyzed: 08/12/92

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

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

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

2-23.c

NV PBM 6/22

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

000008
EPA SAMPLE NO.

B072Q4

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208023-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 20812R14

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: not dec. 13 Date Analyzed: 08/12/92

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

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

2-23-93
MM

NM
PBD
6/22/

000009
EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

B072Q5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A208023-02A

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 20812B03

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: not dec. ____ Date Analyzed: 08/12/92

GC Column: WIDE ID: 0.250 (mm) Dilution Factor: 1.0

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

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

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

NM PB 6/22

000010

EPA SAMPLE NO.

B072Q5

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A208023-02A

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 20812B03

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: not dec. ____ Date Analyzed: 08/12/92

GC Column: WIDE ID: 0.250 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

2-23-93

MM

MM ✓
FBD
6/2

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

000011
EPA SAMPLE NO.

B072Q4

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208023-01D

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 20901S03

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: 13 decanted: (Y/N) N Date Extracted: 08/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/01/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	370	U
111-44-4	bis(2-Chloroethyl)Ether	370	U
95-57-8	2-Chlorophenol	370	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
95-50-1	1,2-Dichlorobenzene	370	U
95-48-7	2-Methylphenol	370	U
108-60-1	2,2'-oxybis(1-Chloropropane)	370	U
106-44-5	4-Methylphenol	370	U
621-64-7	N-Nitroso-Di-n-Propylamine	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
88-75-5	2-Nitrophenol	370	U
105-67-9	2,4-Dimethylphenol	370	U
111-91-1	bis(2-Chloroethoxy)Methane	370	U
120-83-2	2,4-Dichlorophenol	370	U
120-82-1	1,2,4-Trichlorobenzene	370	U
91-20-3	Naphthalene	370	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
59-50-7	4-Chloro-3-Methylphenol	370	U
91-57-6	2-Methylnaphthalene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
88-06-2	2,4,6-Trichlorophenol	370	U
95-95-4	2,4,5-Trichlorophenol	900	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	900	U
131-11-3	Dimethylphthalate	370	U
208-96-8	Acenaphthylene	370	U
99-09-2	3-Nitroaniline	900	U
83-32-9	Acenaphthene	370	U
51-28-5	2,4-Dinitrophenol	900	U

2-24-9 NM

NM PB 6/22

1C

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B072Q4

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208023-01D

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 20901S03

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: 13 decanted: (Y/N) N Date Extracted: 08/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/01/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	900	U
132-64-9	Dibenzofuran	370	U
121-14-2	2,4-Dinitrotoluene	370	U
606-20-2	2,6-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-phenylether	370	U
86-73-7	Fluorene	370	U
100-01-6	4-Nitroaniline	900	U
534-52-1	4,6-Dinitro-2-methylphenol	900	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
87-86-5	Pentachlorophenol	900	U
85-01-8	Phenanthrene	370	U
120-12-7	Anthracene	370	U
86-74-8	Carbazole	370	U
84-74-2	Di-n-Butylphthalate	370	U
206-44-0	Fluoranthene	370	U
129-00-0	Pyrene	370	U
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(a)Anthracene	370	U
117-81-7	bis(2-Ethylhexyl)Phthalate	370	U
218-01-9	Chrysene	370	U
117-84-0	Di-n-Octyl Phthalate	370	U
205-99-2	Benzo(b)Fluoranthene	370	U
207-08-9	Benzo(k)Fluoranthene	370	U
50-32-8	Benzo(a)Pyrene	370	U
193-39-5	Indeno(1,2,3-cd)Pyrene	370	U
53-70-3	Dibenz(a,h)Anthracene	370	U
191-24-2	Benzo(g,h,i)Perylene	370	U

(1) - Cannot be separated from Diphenylamine

2-24-9 NM

NM FBD 6/22

000013
EPA SAMPLE NO.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B072Q4

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208023-01D

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 20901S03

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: 13 decanted: (Y/N) N Date Extracted: 08/12/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/01/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

Number TICs found: 10

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	5.15	2300	BJ
2.	UNKNOWN HYDROCARBON	5.62	53000	BJ
3.	UNKNOWN COMPOUND	6.05	110	J
4.	UNKNOWN HYDROCARBON	6.63	190	BJ
5.	UNKNOWN HYDROCARBON	6.73	520	BJ
6.	UNKNOWN KETONE	7.05	110	J
7.	UNKNOWN COMPOUND	7.15	490	BJ
8.	UNKNOWN ALCOHOL	8.40	1400	BJ
9.	UNKNOWN HYDROCARBON	18.35	150	J
10.	UNKNOWN CARBOXYLIC ACID ESTE	20.22	450	BJ

2-24-
MY

NV
PBD
6/22/92

000014

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072Q5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A208023-02D

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 20814S08

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: ____ decanted: (Y/N) ___ Date Extracted: 08/10/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 08/14/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	25	U

2-24-9 MM

PBD 6/22

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072Q5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A208023-02D

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 20814S08

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 08/10/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 08/14/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
218-01-9	Chrysene	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

2-24-93 NM

NM PBD 6/22/

(1) - Cannot be separated from Diphenylamine

000016

EPA SAMPLE NO.

B072Q5

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A208023-02D

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 20814S08

Level: (low/med) LOW Date Received: 08/10/92

% Moisture: ____ decanted: (Y/N) ___ Date Extracted: 08/10/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 08/14/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	5.73	3	J

2-24-93

NN

PBD
6/22/

000017

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072Q4

ab Name: TMA/ARLI Contract: WHC

ab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

atrix: (soil/water) SOIL Lab Sample ID: A208023-01D

ample wt/vol: 30.8 (g/mL) G Lab File ID:

Moisture: 13 decanted: (Y/N) N Date Received: 08/10/92

xtraction: (SepF/Cont/Sonc) SONC Date Extracted: 08/12/92

oncentrated Extract Volume: 5000 (uL) Date Analyzed: 09/09/92

njection Volume: 1.00 (uL) Dilution Factor: 1.00

PC Cleanup: (Y/N) Y pH: 9.4 Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.7	U
72-55-9	4,4'-DDE	3.7	U
72-20-8	Endrin	3.7	U
33213-65-9	Endosulfan II	3.7	U
72-54-8	4,4'-DDD	3.7	U
1031-07-8	Endosulfan sulfate	3.7	U
50-29-3	4,4'-DDT	3.7	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.7	U
7421-36-3	Endrin aldehyde	3.7	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	75	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	37	U
11096-82-5	Aroclor-1260	37	U

~~Do Not Use this data~~ 2-25-93 MM

MM PBD 6/22

FORM I PEST 3/90

000018

1D

EPA SAMPLE NO.

PESTICIDE ORGANICS ANALYSIS DATA SHEET

B072Q4RE

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: R8023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A208023-01DR

Sample wt/vol: 30.8 (g/mL) G Lab File ID: _____

% Moisture: 13 decanted: (Y/N) N Date Received: 08/10/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 08/12/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/25/92

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.7	U
72-55-9	4,4'-DDE	3.7	U
72-20-8	Endrin	3.7	U
33213-65-9	Endosulfan II	3.7	U
72-54-8	4,4'-DDD	3.7	U
1031-07-8	Endosulfan sulfate	3.7	U
50-29-3	4,4'-DDT	3.7	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.7	U
7421-36-3	Endrin aldehyde	3.7	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	75	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	37	U
11096-82-5	Aroclor-1260	37	U

2-25-9 MM

MM PBD 6/22

000019

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072Q5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A208023-02D

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: 08/10/92

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 08/11/92

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 09/09/92

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

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

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-36-3	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

NM PBJ 6/22 PE

~~Do Not Use This Data~~ 2-25-93

FORM I PEST 3/90

000020

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B072Q5RE

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: R8023 SAS No.: NA SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: A208023-02DR

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: 08/10/92

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 08/11/92

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 09/25/92

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q.
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-36-3	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

2-25-93

NM

NM

PBS

6/22/93

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B072Q4

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

Lab Code: SKINER Case No.: N2-08-071SAS No.: SDG No.: B072Q4

Matrix (soil/water): SOIL Lab Sample ID: 08137-01S

Level (low/med): LOW Date Received: 08/11/92

% Solids: 86.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4450			P
7440-36-0	Antimony	3.2	U		P
7440-38-2	Arsenic	1.3	B	W	F
7440-39-3	Barium	37.8	B		P
7440-41-7	Beryllium	0.06	U		P
7440-43-9	Cadmium	0.32	U		P
7440-70-2	Calcium	4510			P
7440-47-3	Chromium	9.6			P
7440-48-4	Cobalt	5.0	B		P
7440-50-8	Copper	13.6			P
7439-89-6	Iron	9830			P
7439-92-1	Lead	3.8			F
7439-95-4	Magnesium	2900			P
7439-96-5	Manganese	166			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	7.8	B		P
7440-09-7	Potassium	767	B		P
7782-49-2	Selenium	0.83	U		F
7440-22-4	Silver	0.95	B		P
7440-23-5	Sodium	189	B		P
7440-28-0	Thallium	0.36	U		F
7440-62-2	Vanadium	19.9			P
7440-66-6	Zinc	32.8			P
	Cyanide	0.58	U		CA

MM PB 9/22/93

Color Before: GREY Clarity Before: Texture: COARSE

Color After: GREY Clarity After: Artifacts: YES

Comments:
STONES

002

FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B072Q5

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

Lab Code: SKINER Case No.: N2-08-073SAS No.: SDG No.: B072Q5

Matrix (soil/water): WATER Lab Sample ID: 08139-01S

Level (low/med): LOW Date Received: 08/11/92

% 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	96.6	B		P
7440-36-0	Antimony	14.8	U		P
7440-38-2	Arsenic	3.2	U		F
7440-39-3	Barium	34.3	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	1.5	U		P
7440-70-2	Calcium	24500			P
7440-47-3	Chromium	2.6	U		P
7440-48-4	Cobalt	1.3	U		P
7440-50-8	Copper	9.0	B		P
7439-89-6	Iron	149			P
7439-92-1	Lead	3.2		*	F
7439-95-4	Magnesium	5360			P
7439-96-5	Manganese	4.6	B		P
7439-97-6	Mercury	0.20	U	N	CV
7440-02-0	Nickel	2.6	U		P
7440-09-7	Potassium	1080	B		P
7782-49-2	Selenium	3.9	U		F
7440-22-4	Silver	3.6	U		P
7440-23-5	Sodium	2630	B		P
7440-28-0	Thallium	1.7	U	N	F
7440-62-2	Vanadium	2.5	U		P
7440-66-6	Zinc	9.9	B		P
	Cyanide	10.0	U		CA

MM
RBJ
6/22/93

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

002

TMA Inc. REPORT Work Order # A2-08-023

Received: 08/10/92 Results by Sample

SAMPLE ID B07204 FRACTION 01G TEST CODE WCCLPS NAME Anions in Solids - WM232

Date & Time Collected 08/05/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Fluoride	300.0	3	mg/Kg	1.
Sulfate	300.0	35	mg/Kg	10.

FORM I

MM
PBD
6/22 PB

TMA Inc. REPORT Work Order # A2-08-023

Received: 08/10/92 Results by Sample

SAMPLE ID B07205 FRACTION 02G TEST CODE WCCLPL NAME Anions & Wet Chem. - WH043

Date & Time Collected 08/07/92 Category

ANIONS AND WET CHEMISTRY - LIQUIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	1.3	mg/L	0.2
Elect. Conductivity	120.1	138	umho/cm	6
Fluoride	300.0	0.2	mg/L	0.1
Phosphate	300.0	<0.4	mg/L	0.4
pH	150.1	8.1	pH	0.1
Sulfate	300.0	12	mg/L	1

FORM I

NM
PBJ
6/22/93

TMA Inc. REPORT Work Order # A2-08-023

Received: 08/10/92 Results by Sample

SAMPLE ID B07205 FRACTION 02J TEST CODE VCCLPL NAME Anions & Wet Chem. - WH043

Date & Time Collected 08/07/92 Category

ANIONS AND WET CHEMISTRY - LIQUIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Alkalinity	310.1	76	mg/L	2
Tot. Dissolved Solids	160.1	96	mg/L	5

FORM I

NW
PBJ
6/22/93

TMA Inc. REPORT Work Order # A2-08-023

Received: 08/10/92 Results by Sample

SAMPLE ID B07205 FRACTION 02L TEST CODE VCCLPL NAME Anions & Wet Chem. - VH043

Date & Time Collected 08/07/92 Category

ANIONS AND WET CHEMISTRY - LIQUIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Sulfide	376.1	~~1~~ U	mg/L	1

FORM I

MM
PBD
6/22/93

TMA Inc. REPORT Work Order # A2-08-023

Received: 08/10/92

Results by Sample

SAMPLE ID B07205 FRACTION 020 TEST CODE WCCLPL NAME Anions & Wet Chem. - WH043

Date & Time Collected 08/07/92 Category

ANIONS AND WET CHEMISTRY - LIQUIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Ammonia Nitrogen	350.3	<0.05 U	mg/L	0.05
COD	410.0	<30 U	mg/L	30

FORM I

M
PB
6/22/93

Received: 08/11/92 Results by Sample

SAMPLE ID B07205 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 08/06/92 Category WATER

NO3NO2 <0.25 U
mg N/L

SAMPLE ID B07205 DUPL SAMPLE # 01 FRACTIONS: B
Date & Time Collected 08/06/92 Category WATER

NO3NO2 <0.25
mg N/L

SAMPLE ID B07205 SPIKE SAMPLE # 01 FRACTIONS: C
Date & Time Collected 08/06/92 Category WATER

NO3NO2 1.92
mg N/L

SAMPLE ID LCSW SAMPLE # 02 FRACTIONS: A
Date & Time Collected not specified Category WATER

NO3NO2 2.07
mg N/L

M
PBD
6/22/93

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.
This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc. retains ownership of this report until associated invoices is satisfie
Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Clie
will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoic
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exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held fo
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300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

Received: 08/11/92 Results by Sample

SAMPLE ID B07204 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 08/05/92 Category SOIL

NO3NO2 <2.48 U
mg N/kg

SAMPLE ID B07204 DUPL SAMPLE # 01 FRACTIONS: B
Date & Time Collected 08/05/92 Category SOIL

NO3NO2 <2.41
mg N/kg

SAMPLE ID B07204 SPIKE SAMPLE # 01 FRACTIONS: C
Date & Time Collected 08/05/92 Category SOIL

NO3NO2 19.1
mg N/kg

SAMPLE ID LCSS SAMPLE # 02 FRACTIONS: A
Date & Time Collected not specified Category SOIL

NO3NO2 1.97
mg N/L

PBD
6/22/93

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.

This report is rendered upon all of the following conditions. Skinner & Sherman Laboratories, Inc. retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc. will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

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