MEMORANDUM

DATE: November 28, 1997

TO: Fred Luck, Project Manager

FROM: Michael Webb, Chemical Data Quality Manager

SUBJECT: Contract DACA67-95-G-0001-38
Wenatchee Tree Fruit Research Center Remediation
Summary Chemical Data Quality Control Report:
Waste Sampling October 24, 1997
Cascade Analytical Report #952

Purpose:

This assessment outlines data quality issues that affect data usability and provides guidance in using these data for the intended purpose.

Analytical Methods:

- Modified Method 8141 for Carbamate Pesticides

Data Use Intended:

- Waste Samples: To establish waste designation of selected roll-off bins.

Summary of Qualified and Rejected Data

- The analytical result has been qualified with a "J" qualifier due to variability in the sample matrix. The sample was extracted and analyzed twice with results ranging from 6 to 27 ppm carbofuran. One spiked sample result was as high as 132 ppm (spike amount 10 ppm), indicating that the unspiked sample would have been in excess of 100 ppm. In my opinion the reported value (26.9 ppm) is representative of the average concentration. The average of the values reported in the replicate samples is not above 100 ppm. The variability becomes a concern if the concentration exceeds 100 ppm.
- A "C" flag was used to indicate that second-column confirmation had confirmed the results. "U" qualifiers were not used for undetected results, rather "<" was placed in front of the quantitative data field containing the value of the detection limit.

Summary of Method 8141 Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled October 24, 1997: WAO2471.
- Sample Handling, Holding Time and Chain of Custody - **Acceptable.** The sample number has been recorded by the laboratory as WAD2471 rather than WAO2471 and will be corrected in the final Field Report.
- Performance Evaluation (PE) Results - **Not evaluated for this parameter.**
- Analytical Sensitivity - **Acceptable.**

- Accuracy -

  Calibration Verification - **Acceptable.**
  Surrogates - **Acceptable.**
  Matrix Spikes - **Not Acceptable.** Accuracy could not be quantified. However, the Laboratory Control Sample indicates that the method was performing acceptably. The nonconformance in matrix spike recovery was most likely due to high sample concentrations compared to the spike and variability in the sample concentration in the replicate aliquots used for spikes. Also inspection of the chromatograms indicated that there were multiple peaks in the primary chromatogram that potentially contributed the variability. However, these interfering peaks were better resolved on the confirmation column. Therefore the variability has been assigned to the matrix rather than to interference. See "Conclusions."
  Laboratory Control Samples (LCS) - **Acceptable.**
  Laboratory Blanks - **Acceptable.**
  Field Blanks - **Not evaluated.**

- Laboratory Precision - **Not Acceptable.** The problems encountered by the laboratory with this sample appear to be related to variability in the sample and not an indication of method performance. The result for carbofuran has been qualified for use with caution due to this variability.
- Field Precision - **Not evaluated in this delivery group.**

Summary of Data Comparability, Representativeness, and Completeness

- **Field Sampling Issues** - No problems were encountered. The waste samples were taken as composites within the bins according to the codes (WA, WD, etc.) incorporated in the sample number as follows. The composites were taken from 5 locations within the bins contributing to the composite and homogenized according to the Sampling and Analysis Plan:

  The bins corresponding to Sample WAO2471 are as follows: Bins # 5,11,12
- **Data Completeness** - The data completeness for unqualified data was 50%. The data completeness for usable data was 100% for this data set.

Overall Conclusions

These data are acceptable with caution resulting from variability in replicate analyses. The QC results meet the accuracy, precision, and completeness DQOs for the project, except as noted. Since the carbofuran rates as a Category B toxin for the state-only waste designation, the contribution for carbofuran at 100 ppm is one tenth of the designation limit. The variability in the analytical result is only a significant factor if other constituents were to push the Equivalent Concentration close to the designation limit, which is not the case for this sample.

CASCADE ANALYTICAL, INC

3019 G.S. Center Road
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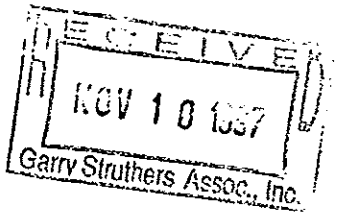
tel [509] 662-1888
In Eastern Washington: 1 [800] 545-4206
fax [509] 662-8183

November 5, 1997



Batch #: 952

Mike Webb
Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- ANALYTICAL NARRATIVE ---

Dear Mike:

The following results are from the samples submitted on October 27, 1997. Some of the results have data flags attached to them.

The sample submitted was assigned a lab number of 97-E13752. This sample was given flags C and J. The C flag denotes that the sample results confirmed on a second column were within forty percent of the reported value. Due to inconsistencies in spike recoveries the sample was flagged with a J. On the initial extraction and analysis of this sample continuing calibration failed and the spike results failed. Spike failures were both in percent recovery and relative percent difference. The sample was re-extracted and analyzed. On this second extraction and analysis a third spike sample was added to help give us an indication of the variability. Spike recoveries failed again, but the relative percent recovery passed. It was noted on the second extraction of this sample that there appeared to be white flakes of product unevenly distributed through the sample. A copy of the sample chromatogram is enclosed.

Matrix spikes were given an X6 flag indicating that the sample was re-analyzed with similar results to the initial analysis.

Before initiating this project a detection limit study was performed on a soil sample taken from our soil grinding waste. This soil was spiked with 1.25 ppm of carbaryl and 1.25 ppm of carbofuran. This sample was extracted nine times to determine our percent recovery and detection limit in the soil matrix. Please review the detection limit table for precision data.

Sincerely,

David W. Lane
Technical Director

CASCADE ANALYTICAL, INC.

3019 G.S. Center Road
Wenatchee, WA 98801

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1-800-545-4206
Fax: (509) 662-8183

December 12, 1997

Mike Webb
Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- Data Clarification ---

Dear Mike:

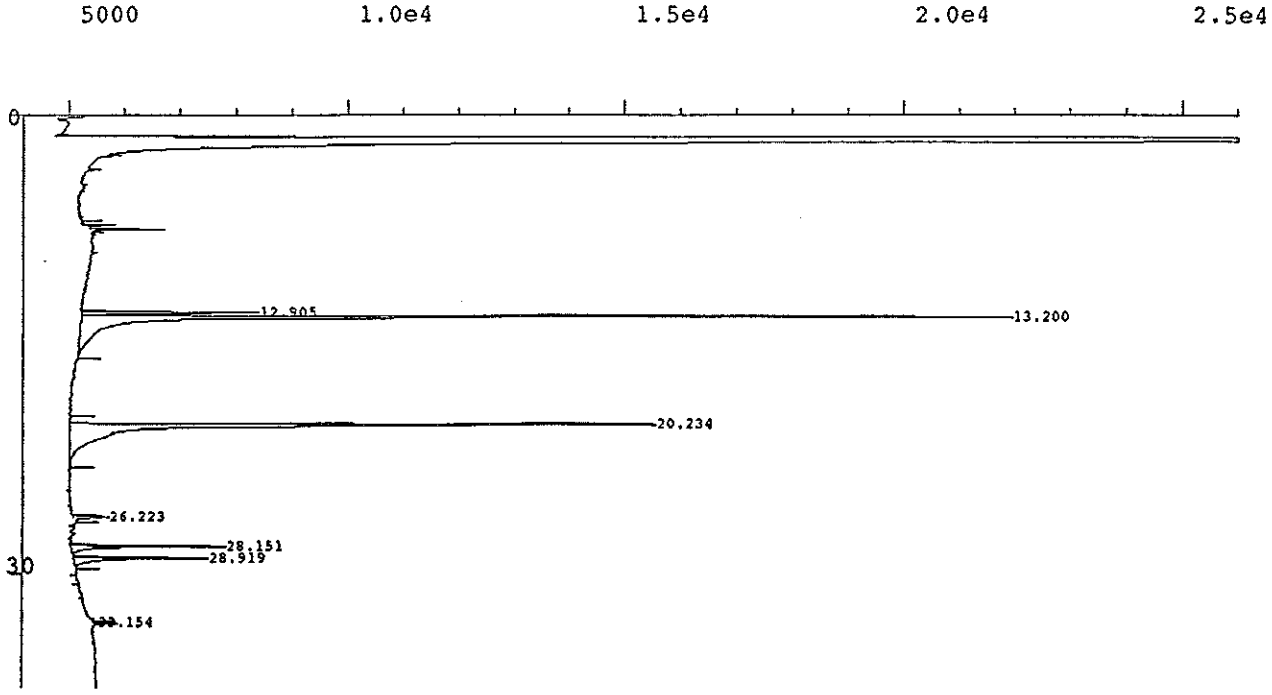
Sent with Lab number 97-E013070, was a chromatogram indicating that carbaryl is undetected. Chromatograms of this sample had several peaks. The results from the front column on this sample indicated that carbofuran was present. Rear column data showed that this was an interfering peak with a retention time difference of 1.84 minutes (See attached Chromatogram #1).

Carbofuran results for Lab number 97-E013752 were variable. The carbofuran peak on the DB-35 column is not completely resolved. This could lead to potential quantitation difficulties. Chromatograms of this sample on DB-XLB show complete resolution of carbofuran. Due to this interference carbofuran was quantitated on the DB-XLB columns (See attached Chromatogram #2, and #3).

Sincerely,

David W. Lane
Technical Director

#2



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External Standard Report

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a File Name	: C:\HPCHEM\3\DATA\103197\026F1101.D		
erator	: Katherine L. Smith	Page Number	: 1
Instrument	: GC #3 (NP	Vial Number	: 26
Sample Name	: 13752 R (10x) Extracted 10/30/97	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 11
Acquired on	: 01 Nov 97 03:08 PM	Instrument Method:	CARB-35.MTH
Report Created on:	03 Nov 97 09:35 AM	Analysis Method	: CARB-35A.MTH
Last Recalib on	: 01 NOV 97 12:03 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in C:\HPCHEM\3\DATA\103197\026F1101.D

Ret Time	Area	Type	Width	Ref#	ng/ul	Name	
13.200	160379	HB S	0.283	1	2.415	Carbofuran	X10 = 24.2
19.117 * not found *				1		Carbaryl	
28.919	19335	BB	0.112	1	0.105	Sulprofos (Surrogate)	X10 = 1.05

105%

Not all calibrated peaks were found

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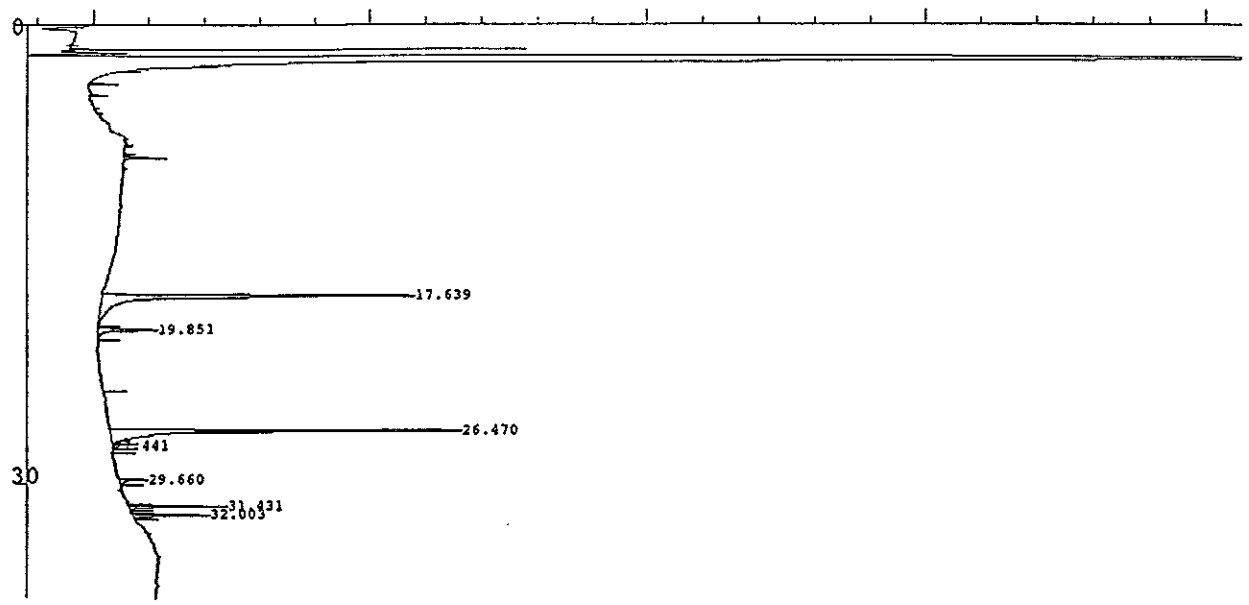
#3



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External Standard Report

==========

Data File Name	: C:\HPCHEM\3\DATA\103197\026R1101.D		
Operator	: Katherine L. Smith	Page Number	: 1
Instrument	: GC #3 (NP	Vial Number	: 26
Sample Name	: 13752 R (10x)	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 11
Acquired on	: 01 Nov 97 03:08 PM	Instrument Method	: CARB-35.MTH
Report Created on	: 03 Nov 97 12:08 PM	Analysis Method	: CARB-XLA.MTH
Last Recalib on	: 03 Nov 97 10:59 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 2 in C:\HPCHEM\3\DATA\103197\026R1101.D

Ret Time	Area	Type	Width	Ref#	ng/ul	Name
17.639	76940	BV	0.198	1	2.583	Carbofuran
23.933	* not found *			1		Carbaryl
32.003	8100	BB	0.084	1	0.109	Sulprofos (Surrogate)

×10 = 25.8

×10 = 1.09

109%

Not all calibrated peaks were found

==========

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Batch #: 952
Account #: 02999
Sampler:
Date Received: 10/27/97
Date of Report: 11/5/97
Date Sampled: 10/24/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- PESTICIDE RESIDUE REPORT ---

Lab Number 97-E013752
Sample ID WAO 2471

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				3540A	10/30/97	
Carbaryl	< 0.5	mg/Kg	0.522	8141M	10/31/97	C
Carbofuran	26.9	mg/Kg	0.522	8141M	10/31/97	C,J
% Solids	95.8	%		SM 3540B	10/30/97	

J - M.R 11/2

Surrogate Recoveries

		QC Limits
Bolstar	96.5 % Rec	60 - 140 %

RECEIVED
JAN 07 1998
Garry Struthers Assoc., Inc.

Approved By:

Cascade Analytical uses procedures established by EPA, AOAC, APHA, ASTM and AWWA. Cascade Analytical makes no warranty of any kind the client assumes all risk and liability from the use of these results. Cascade Analytical, Inc.'s liability to the client as a result of use of Cascade's test results shall be limited to a sum equal to the fees paid by the client to Cascade Analytical, Inc. for Analysis.

B954_97.DOC

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Sampler:
Date Received: 10/27/97
Date of Report: 11/5/97
Date Sampled: 10/24/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- BLANK REPORT ---

Lab Number Sample ID
Blank

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				3540A	10/30/97	
Carbaryl	< 0.5	mg/Kg	0.500	8141M	10/31/97	
Carbofuran	< 0.5	mg/Kg	0.500	8141M	10/31/97	

Surrogate Recoveries

		QC Limits
Bolstar	87.9 % Rec	60 - 140 %

Approved By: _____

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Bellevue, WA 98005

--- DUPLICATE REPORT ---

Lab Number	Sample ID
97-E013752	WAD 2471

Test Requested	Sample Results	Duplicate Results	Units	RPD	Data Flags
% Solids	95.8	95.9	%	0.10	

Approved By: _____

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Batch #: 952
Account #: 02999
Sampler:
Date Received: 10/27/97
Date of Report: 11/5/97
Date Sampled: 10/24/97

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--- MATRIX SPIKE/MATRIX SPIKE DUPLICATE REPORT ---

Lab Number 97-E013752
Sample ID WAD 2471

Test Requested	Sample Results (mg/Kg)	Spike Amount (mg/Kg)	MS Result (mg/Kg)	MS % Rec	MSD1 Result (mg/Kg)	MSD% Rec	RPD	Data Flags
Carbaryl	< 0.522	10.4	7.89	75.57	8.31	79.6	5.19	
Carbofuran	26.9	10.4	17.6	-89.1	14.0	-124	-22.8	X6

Test Requested	Sample Results (mg/Kg)	Spike Amount (mg/Kg)	MS Result (mg/Kg)	MS % Rec	MSD2 Result (mg/Kg)	MSD% Rec	RPD	Data Flags
Carbaryl	< 0.522	10.4	7.89	75.57	8.490	81.6	7.32	
Carbofuran	26.9	10.4	17.6	-89.1	14.5	-119	-19.3	X6

Surrogate Recoveries

			QC Limits
MS	Bolstar	99.0 % Rec	60 - 140 %
MSD1	Bolstar	100.0 % Rec	
MSD2	Bolstar	92.0 % Rec	

Approved By: _____

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Batch #: 952
Account #: 02999
Sampler:
Date Received: 10/27/97
Date of Report: 11/5/97
Date Sampled: 10/24/97

Gary Struthers Assoc. Inc.
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Bellevue, WA 98005

--- BLANK SPIKE REPORT ---

Lab Number Sample ID
Blank Spike

Test Requested	Blank Results (mg/Kg)	Spike Amount (mg/Kg)	Blank Spike Result (mg/Kg)	Blank Spike % Rec	Data Flags
Carbaryl	< 0.5	10.0	8.77	87.7	
Carbofuran	< 0.5	10.0	8.80	88.0	

Surrogate Recoveries

		QC Limits
Bolstar	92.0 % Rec	60 - 140 %

Approved By: _____

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Batch #: 952
Account #: 02999
Sampler:
Date Received: 10/27/97
Date of Report: 11/5/97
Date Sampled: 10/24/97

Gary Struthers Assoc. Inc.
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Bellevue, WA 98005

--- CONTINUING CALIBRATION REPORT ---

Calibration Check	Carbaryl ppm	Percent Recovery	Carbofuran ppm	Percent Recovery	Bolstar ppm	Percent Recovery	Flag
Initial	2.5	86.9	2.5	91.2	0.5	90	
Check 1	2.5	90.4	2.5	93.8	0.5	95.2	
Check 2	2.5	93.2	2.5	98.5	0.5	93.8	

Approved By:

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fax [509] 662-8183

Batch #: 952
Account #: 02999
Sampler:
Date Received: 10/27/97
Date of Report: 11/5/97
Date Sampled: 10/24/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- RESULTS SUMMARY TABLE ---

Note: Results are not corrected for % moisture.

Sample ID	Carbaryl (mg/Kg)	Carbofuran (mg/Kg)	Bolstar Recovery	Date Analyzed
Blank	< 0.5	< 0.5	84.0	10/29/97
97-E13752	< 0.5	6.02	91.4	10/29/97
97-E13752 sp1	8.46	132	104	10/29/97
97-E13752 sp2	7.89	24.6	106	10/29/97
Blank Spike	9.44	9.35	91.5	10/29/97
Blank	< 0.5	< 0.5	87.9	10/31/97
97-E13752	< 0.5	25.8	96.5	10/31/97
97-E13752 sp1	7.56	16.9	99.0	10/31/97
97-E13752 sp2	7.96	13.4	100.0	10/31/97
97-E13752 sp3	8.13	13.9	97.0	10/31/97
Blank Spike	8.77	8.80	92.0	10/31/97

Approved By: _____

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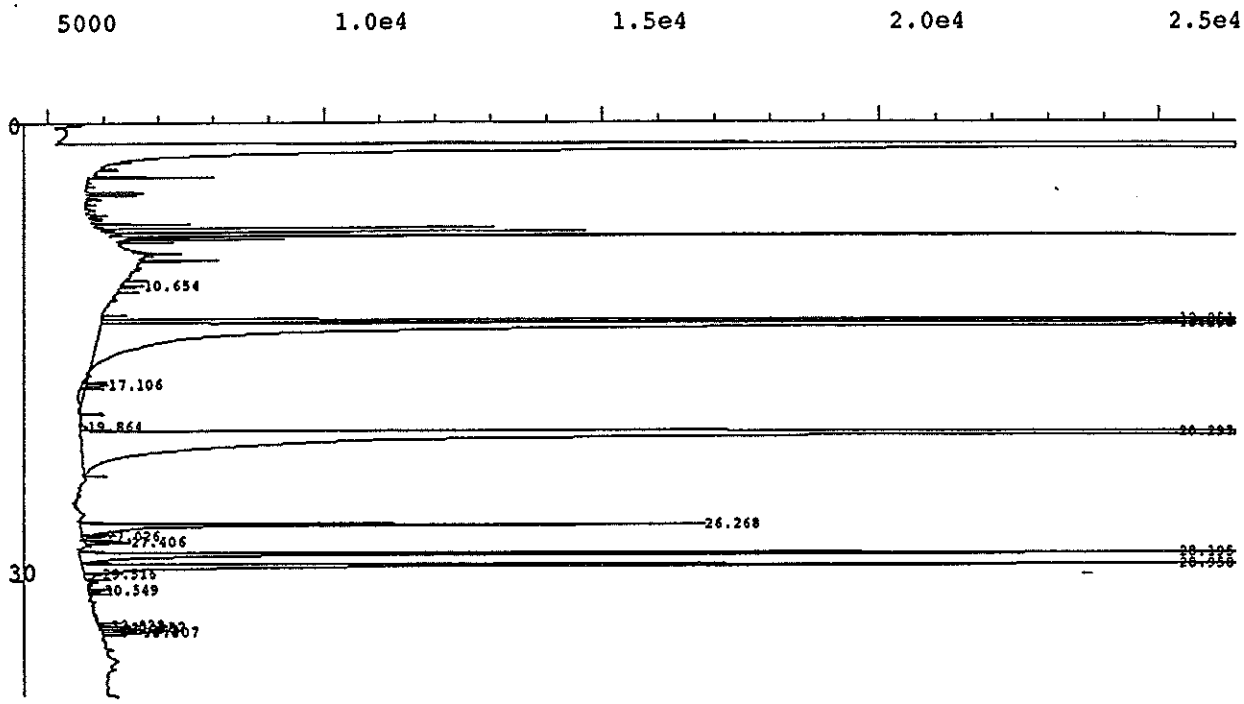
--- DETECTION LIMIT STUDY ---
FOR CARBOFURAN AND CARBARYL

Results in mg/Kg

Sample ID	Carbofuran	Carbaryl	Carbaryl - blank	Bolstar	Carbofuran Recovery	Carbaryl Recovery	Bolstar Recovery
Soil	0	0.548		0.533			106.6
Spike 1	1.502	1.692	1.144	0.632	120.16	91.52	126.4
Spike 2	1.421	1.792	1.244	0.639	113.68	99.52	127.8
Spike 3	1.417	1.798	1.25	0.584	113.36	100	116.8
Spike 4	1.382	1.841	1.293	0.601	110.56	103.44	120.2
Spike 5	1.402	1.754	1.206	0.584	112.16	96.48	116.8
Spike 6	1.360	1.858	1.31	0.575	108.8	104.8	115.0
Spike 7	1.350	1.756	1.208	0.595	108.0	96.64	119.0
Spike 8	1.366	1.613	1.065	0.587	109.28	85.5	117.4
Spike 9	1.383	1.761	1.213	0.607	110.64	97.04	121.4

Approved By: _____



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External Standard Report

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Data File Name : C:\HPCHEM\3\DATA\103197\016F0801.D
Operator : Katherine L. Smith
Instrument : GC #3 (NP
Sample Name : 13752
Run Time Bar Code:
Acquired on : 01 Nov 97 07:28 AM
Report Created on: 03 Nov 97 09:25 AM
Last Recalib on : 01 NOV 97 12:03 PM
Multiplier : 1

Page Number : 1
Vial Number : 16
Injection Number : 1
Sequence Line : 8
Instrument Method: CARB-35.MTH
Analysis Method : CARB-35A.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in C:\HPCHEM\3\DATA\103197\016F0801.D

Ret Time	Area	Type	Width	Ref#	ng/ul	Name
13.258	2285420	HBAS	0.108	1	~~29.955~~	~~Carbofuran~~ Use 10x data
19.117	* not found *			1		Carbaryl
28.958	224847	VV	0.093	1	1.006	Sulprofos (Surrogate) 101%

Not all calibrated peaks were found

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CASCADE ANALYTICAL, INC.

Cooler Receipt Form

Date Received: 10/27/97
Project Title : WTFRFC Project # _____
Project Contact : Mike Webb
Received for Lab by: Tracy Brown Tracy Brown
printed name *signature*

Condition & Comment-

Temperature upon receipt: _____T° cooler 2°C T° trip blank
* *Attach copy of Chain of Custody to this form.*
* *Circle all that apply*

1. Custody seals on outside of cooler — (Yes) No
   Condition of seals: (Intact) Signed Dated
2. Custody papers taped to cooler lid : (Inside) Outside
3. Custody papers properly completed-
   Assignment clear or as agreed upon by client and lab — (Yes) No
   Completed in ink, single line cross-outs — (Yes) No
   Signed by client — (Yes) No
4. Shippers packing slip attached to this form — (Yes) No
5. Describe packing material briefly: Ice

6. Was sufficient ice / coolant used? — (Yes) No
7. Were all bottles sealed in separate plastic bags? — (Yes) No
8. Did all bottles/containers arrive in good condition? — (Yes) No

Describe exceptions: _____

9. Were all labels complete? (ID, preservative, date etc.) — (Yes) No
10. Did all bottle labels agree with custody papers? — (Yes) No

Describe exceptions: _____

11. Were correct bottles used for the test indicated? — (Yes) No
12. VOA vials checked for absence of air bubbles and noted if found? — (N/A) Yes No
13. Sufficient amount of sample for analysis in each bottle? — (Yes) No
14. Were correct preservatives used? — (N/A) Yes No
15. Corrective action taken, if necessary: _____

a. Name of person contacted: _____
b. Date contacted: _____

GARRY STRUTHERS ASSOCIATES, INC.

3150 Richards Road, Suite 100
Bellevue, WA 98005-4446
(425) 519-0300 (phone)
(425) 519-0309 (fax)

FAX TRANSMITTAL

To: KATHY/DAVID
CASCADE ANALYTICAL

Fax: 509-662-8183

RE: REPLACEMENT COC

Date: 10/27/97

Project No.: 97004 P: 3A T:
Project Name: INTEREL

From: MIKE WEBB

Hard Copy: ☑ No ☐ Yes, via

PLEASE FIND ENCLOSED 2 PAGES INCLUDING COVER SHEET.

☐ Review & Comment ☒ For your use ☐ For your approval ☐ FYI ☐ As requested

COMMENTS:

HERE IS THE CORRECT COC FOR THE SAMPLE I SENT YOU FOR CARBAMATE ANALYSIS. PLEASE MAIL ME THE ORIGINAL COC.

THANKS, Mike Webb

cc:

Garry Struthers Associates, Inc. ...Experience and Leadership Working for you.

MG\Corp\Admin\Forms\FAXT

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. East
Tacoma, Washington 98424
(253) 922-2310 • FAX (253) 922-5047

COC # 9

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

CLIENT: GARY STRUTHERS ASSOC
PROJECT NAME: WTREC
CONTACT: MIKE WEBB
PHONE NO: 425-519-0300 X217

ANALYSIS REQUESTED:

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	Carbamates	SAMPLE TYPE / ... #
	WAD2471	10/24/97	1115	SOIL	1														✓	COMPOSITE #S 1,2
	TEMPERATURE BLANK				1			2°C												

972-13763

Batch 984

RELEASED TO FEDX W/ CUSTODY SEALS

	Signature	Printed Name	Firm	Time / Date
Relinquished By	[signature]	MICHAEL WEBB	GSA INC	1500 10/25/97
Received By				
Relinquished By				
Received By	Judy Brown	Judy Brown	CAI	8:30 10/27/97
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:

These samples will be disposed of 45 days after receipt.
Check this box to have samples returned ☐.

ARMY CORPS OF ENGINEER PROJECT
ANALYZE AS PER QAPP
72 HRS TAT

MEMORANDUM

DATE: November 7, 1997

TO: Fred Luck, Project Manager

FROM: Michael Webb, Chemical Data Quality Manager

SUBJECT: Contract DACA67-95-G-0001-38
Wenatchee Tree Fruit Research Center Remediation
Summary Chemical Data Quality Control Report:
Waste Sampling October 24, 1997
North Coast Laboratories Report #9710574

Analytical Methods:

- Chevron Method RM-8-10

Data Use Intended:

- Waste Samples: To establish waste designation of selected roll-off bins.

Summary of Qualified and Rejected Data

- "U" qualifiers were not used for undetected results, rather "ND" was placed in the quantitative data field containing the value of the detection limit.

Summary of Method RM-8-10 Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled October 24, 1997: WAO2471, WDO2472.
- Sample Handling, Holding Time and Chain of Custody - **Acceptable.**
- Performance Evaluation (PE) Results - **Not evaluated for this parameter.**
- Analytical Sensitivity - **Acceptable.**
- Accuracy -

  Calibration - **Acceptable.**
  Surrogates - **Not Applicable.**
  Matrix Spikes - **Acceptable.**
  Laboratory Control Samples (LCS) - **Acceptable**
  Laboratory Blanks - **Acceptable.**
  Field Blanks - **Not evaluated.**

- Laboratory Precision - **Acceptable.**
- Field Precision - **Acceptable.**

Summary of Data Comparability, Representativeness, and Completeness

- **Field Sampling Issues** - No problems were encountered. The waste samples were taken as composites within the bins according to the codes (WA, WD, etc.) incorporated in the sample number as follows. The composites were taken from 5 locations within the bins contributing to the composite and homogenized according to the Sampling and Analysis Plan:

  WA: Bins # 5,11,12
  WB: Bins # 13,14,18
  WC: Bins # 15,16,17,19
  WD: Bins # 20,21
  WE: Bins # 22,23
  WF: Bins # 24

- **Data Completeness** - The data completeness was 100% for this data set.

Overall Conclusions

These data are acceptable for use for the intended purposes. The QC results meet the accuracy, precision, and completeness DQOs for the project, except as noted.

NORTH COAST
LABORATORIES LTD.

November 3, 1997

Garry Struthers Associates, Inc.
3150 Richards Road, Suite 100
Bellevue, WA 98005-4446

Attn: Mike Webb

NCL Work Order#: 9710574

Dear Mr. Webb:

Enclosed is the data package for two soil samples received at North Coast Laboratories on October 27, 1997. The samples were analyzed for paraquat by Chevron RM 8-10.

Attached to this letter is a Case Narrative for the analysis. The remainder of the package consists of a Sample Inventory; Analytical, Quality Control, Calibrations; Extraction Pages, Standard Preparation Logs; Analytical Raw Data; Internal Tracking Documents; and Chain of Custody Forms.

Plea
se call if you have any questions regarding this report.

Sincerely,

Michelle Dostal

Michelle Dostal
Project Manager/
QA Officer

The following NCL personnel attest to the authenticity of the reported data:

Roxanne Golich
Lab Supervisor

Michelle Dostal
QA Officer

Jesse G. Chaney, Jr.
Laboratory Director

5680 West End Road • Arcata California 95521 • 707-822-4649 • FAX 707-822-6831

STANDARD PREPARATION LOGS: CHEVRON RM 8-10

EXTRACTION NOTEBOOK PAGE: CHEVRON RM 8-10

ANALYTICAL RAW DATA (NOTEBOOK PAGE)

INTERNAL TRACKING DOCUMENTATION

ANALYTICAL REPORT

CHAIN OF CUSTODY

I. SAMPLE INVENTORY

SAMPLE ID	NCL ID
WA02471	9710574-01A
WD02474	9710574-02A
Method Blank	9710574-03A
Lab.Control Sample	9710574-04A
WA02471 + Matrix Spike	9710574-06A
WA02471 + Matrix Spike Dupl.	9710574-07A

II. CASE NARRATIVE

LABORATORY: NORTH COAST LABORATORIES, LTD.
CLIENT: GARRY STRUTHERS ASSOCIATES, INC.

A. Sample Receipt

1. Sample Receipt Information

NCL ID	CLIENT ID	DATE/TIME SAMPLED	DATE/TIME RECEIVED	SAMPLE TEMPERATURE
9710574-01A	WA02471	10/24/97 16:15	10/27/97 09:45	1°C(Cooler Blk.)
9710574-02A	WD02474	10/24/97 17:00	10/27/97 09:45	1°C(Cooler Blk.)
9710574-03A	Method Blank	N/A	N/A	N/A
9710574-04A	Lab.Control Sample	N/A	N/A	N/A
9710574-06A	WA02471 + Matrix Spike	10/24/97 16:15	10/27/97 09:45	1°C(Cooler Blk.)
9710574-07A	WA02471 + Matrix Spk Dupl.	10/24/97 16:15	10/27/97 09:45	1°C(Cooler Blk.)

2. Documentation Exceptions:
The samples arrived with the chain of custody for carbamates. The project manager FAXed the correct chain of custody for the paraquat samples.

3. Sample Receipt Exceptions:
No exceptions were encountered.

B. Extraction for Chevron RM 8-10

1. Extraction Dates

NCL ID	DATE/TIME SAMPLED	DATE/TIME RECEIVED	DATE/TIME EXTRACTED
9710574-01A	10/24/97 16:15	10/27/97 09:45	10/28/97 16:00
9710574-02A	10/24/97 17:00	10/27/97 09:45	10/28/97 16:00
9710574-03A	N/A	NA	10/28/97 16:00
9710574-04A	N/A	NA	10/28/97 16:00
9710574-06A	10/24/97 16:15	10/27/97 09:45	10/28/97 16:00
9710574-07A	10/24/97 16:15	10/27/97 09:45	10/28/97 16:00

2. Holding Time Exceptions:
No exceptions were encountered.

3. Extraction Exceptions:
No exceptions were encountered.

C. Data Qualifiers

ND: Indicates the compound was analyzed for but not detected. The number is the reporting limit for the sample.

J: This flag indicates that the value falls between the MDL and the reporting limit and that it is an estimate only.

B: This flag indicates that the analyte was found in the blank, as well as in the sample.

E: Identifies compounds whose concentrations exceed the calibration range of the instrument for a specific analysis.

RA: Identifies all compounds analyzed at a secondary dilution.

r: See Case Narrative for exception

RE: Indicates analysis performed on a re-extracted sample.

T: Indicates analysis performed on the primary column and the preferred value if not "V" flagged on the secondary column.

V: Indicates compound result is preferred and is from the secondary column analysis.

L: Indicates compounds that are not separable using the specified method.

D. Calibration for Chevron RM 8-10

1. Type:
The initial calibration for Chevron RM 8-10 consisted of a straight line fit using three standard concentrations. A r^2 value of 0.995 or greater was established to assess the fit of the curve.

2. Calibration Exceptions:
No exceptions were encountered.

E. Analysis for Chevron RM 8-10

1. Holding Times:
All holding times were met.

2. Analytical Exceptions:
No exceptions were encountered.

F. Quality Control for Chevron RM 8-10

1. Method Blank:

2. Surrogate Recoveries:
No surrogates are associated with this method at this time.

3. Laboratory Control Samples (LCS/LCSD):
The LCS was within acceptance limits. There were two LCSs extracted and analyzed. Only one of the LCS results was reported.

4. Matrix Spike Results:
Sample 9710574-01A (WA02471) was used for the matrix spike and matrix spike duplicate. This sample had a value of 32 ug/g. The spike concentration applied to the sample was 5 ug/g. Due to the high sample concentration, the matrix spike and matrix spike duplicate were not quantifiable. A matrix spike and matrix spike duplicate were analyzed for another set of samples in this batch. The results for the batch matrix spike and matrix spike duplicate were 69.6% and 71.6%, respectively. The batch matrix spike and matrix spike duplicate recoveries were within the acceptance range of 60-140%.

G. Confirmation of Positive Results
There is no method for confirming positive paraquat results using Chevron RM 8-10. Confirmation by LC/MS is recommended.

III. ANALYTICAL RESULTS

A. Results Data Sheets for Paraquat

NCL Sample ID:9710574-01A Date/Time Analyzed: 10/30/97 0730

% Moisture: 4.85 %

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	30	32	RA

NCL Sample ID:9710574-02A Date/Time Analyzed: 10/30/97 0730

% Moisture: 6.90 %

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	ND 1.0	ND 1.1	ND

EXPENSES FOR 95-040

All expenses need to be listed using the following account numbers:

0901	Travel Expense
0902	Meals/Refreshments
0903	Telephone
0904	Other
0910	Computer Charges
0920	Printing Charges
0950	Drilling
0960	Laboratory
0970	Equipment Rental

Here is an example of how your expense report should look.

Date	Account Number	Expense Description	Project Number	Phase	Task	Type	Status	Receipt (Y/N)	Transaction Amount
11-1-95	7020I	Travel Expense 20 miles	95-030	**0901**		R	R	N	5.80

IV. INITIAL AND CONTINUING CALIBRATION

A. Initial Calibration

1. Paraquat

Initial Calibration:						
Date/Time: 10/30/97 07:30			Calibration Std#1: 1.0 PPM			
Date/Time: 10/30/97 07:30			Calibration Std#2: 5.0 PPM			
Date/Time: 10/30/97 07:30			Calibration Std#3: 7.5 PPM			
ANALYTE	r^2	RT OF MID LEVEL STD.	RT WINDOW FROM	RT WINDOW TO	TYPE OF FIT	WINDOW SIZE
Paraquat	0.9964	N/A	N/A	N/A	L	N/A

L = Linear
Q = Quadratic

B. Second Source Standard

1. Paraquat

Second Source Standard: Date/Time:10/30/97 07:30						
ANALYTE	RT OF STD.	RT WINDOW FROM	RT WINDOW TO	NOM CONC. (µg/g)	CALC.CONC (µg/g)	% REC.
Paraquat	N/A	N/A	N/A	5.0	4.58	91.6

Second Source Standard Acceptance Limits: 85 - 115% Recovery

C. Continuing Calibration

1. Paraquat

Continuing Calibration Verification Standard(CCVS): Date/Time: 10/30/97 07:30						
ANALYTE	RT OF CCVS	RT WINDOW FROM	RT WINDOW TO	NOM CONC. (µg/g)	CALC.CONC (µg/g)	% REC.
Paraquat	N/A	N/A	N/A	5.0	4.97	99.4
Paraquat	N/A	N/A	N/A	5.0	4.84	96.8

CCVS Acceptance Limits: 90 - 110% Recovery

V. QUALITY CONTROL

A. Blank Results

1. Paraquat

Method Blank: Matrix: Soil Date/Time Extracted: 10/28/97 16:00 Date/Time Analyzed: 10/30/97 07:30		
COMPOUND	CAS NO.	CONCENTRATION(µg/g)
Paraquat	1910-42-5	ND 1.0

Acceptance Criteria for Method Blank:
Each method analyte must be below its reporting limit(RL).

B. Laboratory Control Sample (LCS)

1. Paraquat

Laboratory Control Sample: Date/Time Extracted: 10/28/97 16:00 Date/Time Analyzed: 10/30/97 07:30					
ANALYTE	SPIKE ADDED (µg/g)	SAMPLE CONCENTRATION (µg/g)	LCS CONCENTRATION (µg/g)	LCS % RECOVERY	QC LIMITS REC.
Paraquat	5.0	ND 1.0	3.86	77.2	75-130

Acceptance Criteria for Laboratory Control Sample:
Percent recovery must be within specified control limits for each analyte.

C. Matrix Spike (MS) Results

1. Paraquat

Matrix Spike: Date/Time Extracted: 10/28/97 16:00 Date/Time Analyzed: 10/30/97 07:30					
ANALYTE	SPIKE ADDED (µg/g)	SAMPLE CONCENTRATION (µg/g)	MS CONCENTRATION (µg/g)	MS % RECOVERY	QC LIMITS REC.
Paraquat	5.0	32	(NQ)Not quantified	NA	60-140

Acceptance Criteria for Matrix Spike:
Percent recovery must be within specified control limits for each analyte.

D. Matrix Spike Duplicate(MSD) Result

1. Paraquat

Matrix Spike Duplicate: Date/Time Extracted: 10/28/97 16:00 Date/Time Analyzed: 10/30/97 07:30						
ANALYTE	SPIKE ADDED (µg/g)	MSD CONCENTRATION (µg/g)	MSD % RECOVERY	RPD	QC LIMITS REC.	RPD LIMITS
Paraquat	5.0	(NQ)Not quantified	NA	NA	60-140	≤30

Acceptance Criteria for Matrix Spike Duplicate:

Percent recovery and relative percent difference (RPD) must be within specified control limits for each analyte.

STANDARD PREPARATION LOGS: CHEVRON RM 8-10

GC Primary Organic Working Standard Log (Part 1)

Analyst	Date	Method/ Analyte	# Components	Stock Lot #	Amount of Stock	Conc. of Stock	Standard Weight	Int. Sample Amount
AB	10/30/97	515W 6.2	1 of 2	01080497-B	20 uL X	Var ng/uL =	Var ng÷	500 g,mL =
↓	/ /	230	2 of 2	0L072397-1	20 uL X	100 ng/uL =	2000 ng÷	500 g,mL =
MH	10/30/97	Endothal	1 of 2	0L-070397-4	90 uL X	1000 ng/uL =	90000 ng÷	100 g,mL =
↓	/ /	2,3-D	2 of 2	0L-070397-1	100 uL X	1000 ng/uL =	100,000 ng÷	100 g,mL =
↓	/ /	Endothal	1 of 2	0L-022797-1	90 uL X	1000 ng/uL =	90000 ng÷	100 g,mL =
↓	/ /	2,3-D	2 of 3	0L-070397-1	100 uL X	1000 ng/uL =	100000 ng÷	100 g,mL =
MH	10/30/97 (MH 10/31/97)	paraquat	1 of 1	0L-082197-4	20 uL X	1000 ng/uL = (MH 10/31/97)	2000 ng÷	20 g,mL =
↓	/ /	↓	1 of 1	0L-081897-01	10 uL X	1000 ng/uL =	10000 ng÷	20 g,mL =
↓	/ /	↓	1 of 1	0L-081897-01	15 uL X	1000 ng/uL =	15000 ng÷	20 g,mL =
	/ /		of		uL X	ng/uL =	ng÷	g,mL =
	/ /		of		uL X	ng/uL =	ng÷	g,mL =
	/ /		of		uL X	ng/uL =	ng÷	g,mL =
	/ /		of		uL X	ng/uL =	ng÷	g,mL =
	/ /		of		uL X	ng/uL =	ng÷	g,mL =
	/ /		of		uL X	ng/uL =	ng÷	g,mL =
	/ /		of		uL X	ng/uL =	ng÷	g,mL =
	/ /		of		uL X	ng/uL =	ng÷	g,mL =
	/ /		of		uL X	ng/uL =	ng÷	g,mL =
	/ /		of		uL X	ng/uL =	ng÷	g,mL =
	/ /		of		uL X	ng/uL =	ng÷	g,mL =
	/ /		of		uL X	ng/uL =	ng÷	g,mL =

032 MH 10/31/97

GC Primary Organic Working Standard Log (Part 2)

	Dilution	Final Ext. Vol.	Final Std. Vol.	Working Standard Conc.	Final Solvent	Solvent Lot #	NCL WO Std. ID #
Var ng/g,mL X	10 X	4 mL÷	8 mL =	10×Var ng/g,mL	Hexane		WO- 103097-2
4 ng/g,mL X	10 X	4 mL÷	8 mL =	20 ng/g,mL	↓		WO- ↓
900 ng/g,mL X	1 X	1 mL÷	1 mL =	900 ng/g,mL	MeCl2	BP031	WO- 103097-3
1000 ng/g,mL X	1 X	1 mL÷	1 mL =	1000 ng/g,mL		↓	WO- ↓
900 ng/g,mL X	1 X	1 mL÷	1 mL =	900 ng/g,mL			WO- 103097-4
1000 ng/g,mL X	1 X	1 mL÷	1 mL =	1000 ng/g,mL	↓	↓	WO- ↓
100 ng/g,mL X	1 X	25 mL÷	2.5 mL =	1000 ng/g,mL	Sat'd NH4Cl	06-052097-1	WO- 103097-5
500 ng/g,mL X	1 X	25 mL÷	2.5 mL =	5000 ng/g,mL	↓	↓	WO- 103097-6
750 ng/g,mL X	1 X	25 mL÷	2.5 mL =	7500 ng/g,mL	↓	↓	WO- 103097-7
ng/g,mL X	X	mL÷	mL =	ng/g,mL			WO-
ng/g,mL X	X	mL÷	mL =	ng/g,mL			WO-
ng/g,mL X	X	mL÷	mL =	ng/g,mL			WO-
ng/g,mL X	X	mL÷	mL =	ng/g,mL			WO-
ng/g,mL X	X	mL÷	mL =	ng/g,mL			WO-
ng/g,mL X	X	mL÷	mL =	ng/g,mL			WO-
ng/g,mL X	X	mL÷	mL =	ng/g,mL			WO-
ng/g,mL X	X	mL÷	mL =	ng/g,mL			WO-
ng/g,mL X	X	mL÷	mL =	ng/g,mL			WO-
ng/g,mL X	X	mL÷	mL =	ng/g,mL			WO-
ng/g,mL X	X	mL÷	mL =	ng/g,mL			WO-
ng/g,mL X	X	mL÷	mL =	ng/g,mL			WO-

NORTH COAST LABORATORIES L ORGANIC STOCK STANDARD LOG

Init.	Date	Method/ Analyte	#Compon.	Supplier	Lot #	Amount Standard	Conc. Standard	Wt. of Std.	Std. Final Vol.	Std. Final Conc.	Std. Lot #	Solvent/ Lot #	Exp. Date
MH	8/12/97	3-Hydroxy Carbofuran	5 of 10	NCL	OL-081297-2	0.06 mL X	1000 µg/mL =	60 µg ÷	10 mL =	6 PPM	OL 08/12/97-8	Acidified CH_3CN OL-LC-081297-1	10/97
↓	↓	Oxamyl	6 of 10	NCL	OL-081297-5	0.10 mL X	1000 µg/mL =	100 µg ÷	10 mL =	10 PPM	OL ↓	↓	↓
↓	↓	Propoxure	7 of 10	NCL	OL-013097-6	0.10 mL X	1000 µg/mL =	100 µg ÷	10 mL =	10 PPM	OL ↓	↓	↓
↓	↓	Methiocarb	8 of 10	NCL	OL-081297-7	0.10 mL X	1000 µg/mL =	100 µg ÷	10 mL =	10 PPM	OL ↓	↓	↓
↓	↓	Carbaryl	9 of 10	NCL	OL-013097-6	0.10 mL X	1000 µg/mL =	100 µg ÷	10 mL =	10 PPM	OL ↓	↓	↓
↓	↓	Carbofuran	10 of 10	NCL	OL-013097-5	0.10 mL X	1000 µg/mL =	100 µg ÷	10 mL =	10 PPM	OL ↓	↓	↓
MH	8/13/97	glyphosate	1 of 1	NCL	OL-073197-1	0.50 mL X	1000 µg/mL =	500 µg ÷	5 mL =	100 PPM	OL 08/13/97-1	HPLC H_2O EM 37062	7/98
KS	8/13/97	undecane	1 of 1	NCL	OL-061697-6	1.0 mL X	5000 (toluene lot 8877) µg/mL =	5000 µg ÷	25 mL =	200 PPM	OL 08/13/97-2	Hexane BJ B0185	6/98
DSF	8/14/97	Diesel	1 of 1	Client NC# 9708158	Sample# 9708158-09A	0.0117 g X	10^6 µg/g =	11700 µg ÷	2.34 mL =	5000 PPM	OL 08/14/97-1	Hexane B&J# B0185	8/14/98
DSF	8/14/97	C_{23}	1 of 1	NCL	OL-012297-4	1.0 mL X	5000 µg/mL =	5000 µg ÷	25 mL =	200 PPM	OL 08/14/97-2	Hexane B&J B0185	8/14/98
DSF	8/14/97	Diesel	1 of 1	McKinleyville Shell	Lot G-14-90-2	.0483 g X	10^6 µg/g =	48300 µg ÷	~~9.66~~ 9.66 (calc error 8/14/97) mL =	5000 PPM	OL 08/14/97-3	Hexane B&J# B0185	8/14/98
AB	8/15/97	Glyphosate	1 of 1	NCL	9L-051397-1	0.5 mL X	1000 µg/mL =	500 µg ÷	5 mL =	100 PPM	OL 08/15/97-1	HPLC H_2O EM 37062	7/31/98
MH	8/18/97	paraquat	1 of 1	ChemService	174-57A	0.0096 g X	9.9×10^5 µg/g =	9504 µg ÷	5.3695 mL =	1000 PPM	OL 08/18/97-1	HPLC H_2O EM 37062	8/98

~~4.5~~ ~~(1770)~~ (corr) MH 8/18/97

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NORTH COAST LABORATORIES — ORGANIC STOCK STANDARD LOG

0035

Init.	Date	Method/ Analyte	#Compon.	Supplier	Lot #	Amount Standard	Conc. Standard	Wt. of Std.	Std. Final Vol.	Std. Final Conc.	Std. Lot #	Solvent/ Lot #	Exp. Date
DH	8/21/97	Silvex	6 of 8	NCL	OL-072597-2	0.100 g/mL	5,000 µg/mL	500 µg	10 mL	50 PPM	OL 08/21/97-2	Methanol BJ BP633	12-97
	/ /	2,4DB	7 of 8	NCL	OL-080997-4	0.100 g/mL	10,000 µg/mL	1000 µg	mL	100 PPM	OL / /		
	/ /	Dinoseb	8 of 8	NCL	OL-071597-5	0.050 g/mL	10,000 µg/mL	500 µg	mL	50 PPM	OL / /	Methanol	
DH	8/21/97	mcpp/mcpa	1 of 1	NCL	OL-080697-4	1.00 g/mL	50,000 µg/mL	50,000 µg	5 mL	10,000 PPM	OL 8/21/97-3	DrJBP633	8/98
MH	8/21/97	paraquat	1 of 1	NCL	OL-081897-01	1.0 g/mL	1000 µg/mL	1000 µg	10 mL	100 PPM	OL 8/21/97-4	HPLC H2O BJT B1198	8/98
AB	8/21/97	BDMC	1 of 1	NCL	OL022497.1	0.100 g	1000 µg/mL	100 µg	10 mL	10 PPM	OL 08/21/97-5	CH3CN BHJ B0977	2/98
MH	8/22/97	Diquat	1 of 1	NCL	OL-072197-1	1.0 g/mL	1000 µg/mL	1000 µg	10 mL	100 PPM	OL 08/22/97-1	HPLC H2O BJT B1198	7/98
SKD	8/26/97	PARAQUAT	1 of 1	NCL	OL-081897-1	0.1 g/mL	1000 µg/mL	100 µg	10 mL	10 PPM	OL 08/26/97-1	HPLC H2O BJT B1198	8/98
	/ /	PARAQUAT	1 of 1	NCL	OL-081897-2	0.1 g/mL	1000 µg/mL	100 µg	10 mL	10 PPM	OL 08/26/97-2		9/97
DSF	8/26/97	2-Nitrotoluene	1 of 1	NCL	OL-071897-1	1.5 g/mL	1000 µg/mL	1500 µg	10 mL	150 PPM	OL 08/26/97-3	MeOH BJ BP633	8/98
SKD	8/27/97	SIMAZINE	1 of 1	CHEM SERVICE	176-79C	0.0105 g/mL	9.9×10^5 µg/mL	10395 µg	103.95 mL	100 PPM	OL 08/27/97-1	MeOH BJS BP633	8/98
AB	8/29/97	531 mix 2 Cat	1 of 1	ULTRA	L.0804	1 g/mL	100 µg/mL	100 µg	10 mL	10 PPM	OL 08/29/97-1	MeOH B+J BP633	7/98
DSF	8/29/97	C11	1 of 1	NCL	OL-061697-6	1 g/mL	5000 µg/mL	5000 µg	25 mL	200 PPM	OL 08/29/97-2	Hexane BHJ B0185	8/98

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NORTH COAST LABORATORIES I — ORGANIC STOCK STANDARD LOG

Init.	Date	Method/ Analyte	#Compon.	Supplier	Lot #	Amount Standard	Conc. Standard	Wt. of Std.	Std. Final Vol.	Std. Final Conc.	Std. Lot #	Solvent/ Lot #	Exp. Date
MH	9/2/97	8080mix	1 of 1	Supelco	LA-660004	0.50 mL	2000 µg/mL	100 µg	10 mL	16 PPM	OL09/02/97-01	MeOH Lot: BP6233	9/98
HAS	9/3/97	Glyphosate Lot1	1 of 1	NCL	OL073197.1	0.05 mL	1000 µg/mL	50 µg	5 mL	10 PPM	OL09/03/97-1	HPLC H2O EM37149	7/98
↓	↓	Glyphosate Lot2	1 of 1	↓	OL080797.2	0.05 mL	1000 µg/mL	50 µg	5 mL	10 PPM	OL09/03/97-2	↓	8/98
DH	9/4/97	Triclopyr	1 of 1	Axact	CH40712	0.0100 mL	9.95x10^5 µg/mL	9950 µg	9.95 mL	1000 PPM	OL09/04/97-1	MeOH BP6233	7/98
KS	9/4/97	2,6-DCP	1 of 1	Aldrich	03709ZH	0.0100 mL	9.9x10^5 µg/mL	9900 µg	9.9 mL	1000 PPM	OL09/04/97-2	MeOH BP6233	9/98
SKD	9/8/97	METALAXL	1 of 1	AxAct	30823	.0162 g/mL	9.82x10^5 µg/mL	16016.4 µg	10.0164 mL	1000 PPM	OL09/08/97-1	CH3CN B&J BP2224	9/98
↓	↓	METALAXL	1 of 1	NCL	OL.090897.1	1.0 mL	10^3 µg/mL	10^3 µg	10 mL	100 PPM	OL09/08/97-2	CH3CN B&J BP2224	9/98
KS	9/8/97	fenoxaprop	1 of 1	NCL	OL-012297-1	1.0 mL	5000 µg/mL	5000 µg	25 mL	200 PPM	OL09/08/97-3	Hexane Baker (29301)	1/98
MH	9/8/97	paraquat Lot2	1 of 1	Axact	# 40607	0.01229 mL	9.9x10^5 µg/mL	12078 µg	6.824 mL #	1000 PPM	OL09/08/97-4	HPLC H2O EM37062	9/98
DSF	9/8/97	Diesel	1 of 1	McKinleyville Shell	6-14-90-2	0.0400 mL	10^6 µg/mL	40000 µg	8 mL	5000 PPM	OL09/08/97-5	HEXANE Baker # L29301	9/98
SKD	9/9/97	IPRODIONE	1 of 1	AxACT	30527	.0098 g/mL	9.98x10^5 µg/mL	9780.4 µg	9.780 mL	1000 PPM	OL09/09/97-1	CH3CN B&J BP2224	12/97
↓	↓	IPRODIONE	1 of 1	NCL	OL.090997.1	1.0 mL	10^3 µg/mL	10^3 µg	10 mL	100 PPM	OL09/09/97-2	↓	↓
SKD	9/9/97	IPRODIONE	1 of 1	CHEM SERVICE	167-78	.0098 g/mL	9.8x10^5 µg/mL	9604 µg	9.604 mL	1000 PPM	OL09/09/97-3	CH3CN B&J BP2224	9/98

Correction factor for paraquat std: 1.770 amt of solvent = (0.01229)(9.9x10^5 µg/g) / (1000 ppm)(1.770) = 6.824 mL

J:\WPROC\MISC\FORMS\ORGSSLOG

EXTRACTION NOTEBOOK PAGE: CHEVRON RM 8-10

DATE: 10/28/97 1600
EXTRACTION METHOD: paraquat soil
SOP#: ME 02403

NORTH COAST LABORATORIES LTD

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SAMPLE EXTRACTION INFORMATION

QC BATCH # 971028-01

SR VOL N/A	IN VOL N/A	SPK VOL 100 µl	SPK SMPL# 9710574-0
SR CONC ↓	IN CONC ↕	SPK CONC 1000 ppm	VOL/WT SMPL 20g
SR ID ↓	IN ID ↕	SPK ID paraquat	SPK FINAL
SR LOT# ↓	IN LOT# ↕	SPK LOT# ~~OL-080897-4~~ OL-090897-4 (corr. MH 10/31/97)	CONC 5ppm

SAMPLE	CLIENT	SAMPLE VOL/WT	FINAL EXT. VOL	SAMPLE DILUTION
1. method blank			25 ml	N/A
2. LCS		20g	↓	↓
3. LCSD		↓	↓	↓
4. MS		↓	↓	↓
5. MSD		↓	↓	↓
6. 9710574-01A	Garstr	↓	↓	↓
7. ↓ -02A		↓	↓	↓
8. 9710383-01A		↓	↓	↓
9. -02A		↓	↓	↓
10. ↓ -03A		↓	↓	↓
11. MS } 9710383-01A		↓	↓	↓
12. MSD }		↓	↓	↓
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

REVIEWED BY: [signature]
DATE: 10/31/97

EXTRACTED DATE/INIT. 10/28/97 MH
CONCENTRATED DATE/INIT. N/A

J:\WPROC\MISC\FORMS\EXTBOOK

PERCENT MOISTURE

Sample Number	Date	Container Wt.(g)	Container + Wet Sample	Net wt. of Wet Sample	Init.	Date	Container + Dry Sample	Net Wt of Dry Sample	Init.	Percent Moisture	Sample Type
9710388-01A	10/16	30.73	50.[illegible]	[illegible]	MH	10/17	49.72	18.99	MH	5.0%	Soil
-02A	↓	30.78	50.78	20.00	↓	↓	49.78	19.00	↓	5.0%	↓
-03A	↓	30.42	50.42	20.00	↓	↓	48.97	18.55	↓	7.2%	↓
9710467-01A	10/24	30.48	50.48	20.00	MH	10/25	48.70	18.22	MH	8.9%	MH
-02A	↓	30.47	50.47	20.00	↓	↓	48.08	17.61	MH	12%	↓
9710470-01A	10/27	30.93	50.93	20.00	MH	10/28	32.93	2.000	MH	90%	
-02A		30.49	50.49			10/28	31.71	1.220		94%	
-03A		30.42	50.42			10/28	48.40	17.98		10%	
-04A		30.48	50.48			10/28	48.43	17.95		10%	
-05A		30.96	50.96			10/28	48.84	17.88		11%	
-08A		30.48	50.48			10/28	46.40	15.92		20%	
WD0247-4		30.12	50.12			10/28	48.74	18.62		6.9%	
WD0247-1	↓	31.42	51.42	↓	↓	10/28	50.45	19.03	↓	4.8%	
9710574-02A										6.9%	
9710574-01A										4.8%	

ANALYTICAL RAW DATA (NOTEBOOK PAGE)

Calib. Std & LCS Lot # 1000 ppm = OC-081897-01 100ppm: OC-082197-4 ~~1000~~ Page 2 of 22

2nd Lot Standard Lot # 1000ppm: ~~OC-080997-4~~ OC-090897-4 Date 10/30/97

CS/MS Solution Conc. & Volume 100 µl / 1000ppm Analyst MMH

Sample Volume 20g Test Paraquat · Soil

LCS/MS Final Conc. 5ppm Units mg/kg

Work Order #	Absorbance			Dil	Conc.	Reported Value	Comments
	Run	Color Blank or Re-run	Absorbance - Color Blank				
method blank	0.000						See back for ~~% moisture~~ dry weight concentrations
1.0 ppm	0.148				0.91	91.0%	WO-103097-5
5.0 ppm	0.584				5.23	105%	WO-103097-6
5.0 ppm (2nd)	0.519				4.58	91.6%	WO-103097-7
7.5 ppm	~~0.880~~	0.800			7.36	98.1%	11/31/97 MMH 8.09%
LCS	0.416				3.56	71.2%	RPD = ~~8.4%~~
LCSD	0.446				3.46	77.2%	
MS 9710574-01A	off				NQ	NQ	sample ~~ver~~ has high concentration of paraquat.
MSD	off				NQ	NQ	
MS 9710383-01A	0.406				3.48	69.6%	RPD 2.83%
MSD	0.418				3.58	71.6%	
9710574-01A	0.622			1:5	6.00	30.0	BLUE
-02A	0.084				0.28	ND	
9710383-01A	0.063				0.07	ND	
-02A	0.033				-.22	ND	
CCV-5.0ppm	0.558				4.97	99.4%	
-03A	0.595			1:10	5.33	53.3	BLUE
CCV 5.0ppm	0.545				4.84	96.8%	
$R^2 = 0.9964$							

Analyst Signature [signature] 10/30/97

Verified by [signature] Date 10/31/97

J:\WPROC\WTLSOP\COLOR2.FRM

REVIEWED BY: MDoak

DATE: 10/31/97

INTERNAL TRACKING DOCUMENTATION

North Coast Laboratories
SAMPLE CONTROL STORAGE LOG

971025-1 24

SAMPLE ID	#	STORED		IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
9710573-01A	1	2-Red	DATE	10-27-97	10/28/97										
			TIME	1715	1400										
			INIT	JT	BMH										
			BOTTLE	All											
			TRANSFERRED TO:	E	L1	A1			BOX #				L2	A2	
9710573-02A	1	2-Red	DATE		10/28/97	10/28/97	10/28/97	10/28/97							
			TIME		0900	1000	1100	1300							
			INIT		BMH	BMH	LL	LL							
			BOTTLE	All											
			TRANSFERRED TO:	E	L1	A1			BOX #				L2	A2	
9710573-02B	1	2-Red	DATE		10/28/97										
			TIME		1000										
			INIT		BMH										
			BOTTLE	All											
			TRANSFERRED TO:	E	L1	A1			BOX #	42			L2	A2	
9710574-01A	1	2-Red/CLP	DATE	*	10/27/97	10/27/97	10/28/97	10/28/97	Note: took samples from Receiv.						
			TIME		1400	10/27/97	1400		put back in @ 1500 on 10/27/97						
			INIT		MH		MH		to get proper labels						
			BOTTLE	All											
			TRANSFERRED TO:	E	L1	A1			BOX #	42			L2	A2	
9710574-02A	1	2-Red/CLP	DATE	*			10/28/97								
			TIME				1400								
			INIT				MH								
			BOTTLE	All											
			TRANSFERRED TO:	E	L1	A1			BOX #	42			L2	A2	
9710575-01A	1	2-Red	DATE		10/29/97										
			TIME		1000										
			INIT		BMH										
			BOTTLE	All											
			TRANSFERRED TO:	E	L1	A1			BOX #	42			L2	A2	
9710576-01A	1	R/2-Red	DATE												
			TIME												
			INIT												
			BOTTLE	All											
			TRANSFERRED TO:	E	L1	A1			BOX #				L2	A2	

Stored Locations with a #-Color are stored in FARE001.

= # of Labels

"Bottle" line is left blank when there is only 1 sample bottle (1 label), or when there is a composite sample ("COMP X->1" written in the stored location).

E=Empty L1=Limbo A1=Archive L2=Relimbo A2=Rearchive "I" (in TIME row)=Immediately upon receipt J:\WPROC\QA\SCSL3.FI

ANALYTICAL REPORT

NORTH COAST LABORATORIES LTD.

Date: 11/04/97

REPORT

REPORT TO
Garry Struthers Associates
3150 Richards Rd., Ste 100
Bellevue, WA 98005-4446

WORK ORDER 97-10-574

INVOICE # 60062089

Attn: Mike Webb

WORK ID: WTREC

REPORT CERTIFIED BY

Laboratory Supervisor(s)

QA Officer

Jesse G. Chaney, Jr.
Laboratory Director

SAMPLE IDENTIFICATION

Fraction	Sample Description
01	WA02471
02	WD02474
03	Method Blank
04	Lab. Control Sample
06	Matrix Spike
07	Matrix Spike Duplicate

Comments:

The matrix spike/spike duplicate were not quantifiable due to the large amount of paraquat present in the sample that was spiked on.

Previously reported on 10/30/97.
First reported on 10/30/97.

Notes and Definitions:

Limit = Reporting Limit
ND = None Detected
NQ = Not Quantifiable
NR = Not Requested

Date: 11/04/97
Work Order: 97-10-574
Invoice #: 60062089

REPORT

SAMPLE ID: WA02471 FRAC.: 01A COLLECTED: 10/24/97 RECEIVED: 10/27/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	32	5.5	ug/g	5.0	10/28/97	10/30/97	CHEV.RM8-10
Percent Moisture	4.8	0.10	%				SM2540 G

SAMPLE ID: WD02474 FRAC.: 02A COLLECTED: 10/24/97 RECEIVED: 10/27/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	ND	1.1	ug/g	1.0	10/28/97	10/30/97	CHEV.RM8-10
Percent Moisture	6.9	0.10	%				SM2540 G

SAMPLE ID: Method Blank FRAC.: 03A COLLECTED: N/A RECEIVED: 10/27/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	ND	1.0	ug/g	1.0	10/28/97	10/30/97	CHEV.RM8-10

SAMPLE ID: Lab. Control Sample FRAC.: 04A COLLECTED: N/A RECEIVED: 10/27/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	77.2	N/A	% Rec	1.0	10/28/97	10/30/97	CHEV.RM8-10

SAMPLE ID: Matrix Spike FRAC.: 06A COLLECTED: N/A RECEIVED: 10/27/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	NQ	N/A	% Rec	1.0	10/28/97	10/30/97	CHEV.RM8-10

SAMPLE ID: Matrix Spike Duplicate FRAC.: 07A COLLECTED: N/A RECEIVED: 10/27/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	NQ	N/A	% Rec	1.0	10/28/97	10/30/97	CHEV.RM8-10

NCL WO# 9710574

CHAIN OF CUSTODY

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GARRY STRUTHERS ASSOCIATES, INC.

3150 Richards Road, Suite 100
Bellevue, WA 98005-4446
(425) 519-0300 (phone)
(425) 519-0309 (fax)

FAX TRANSMITTAL

To: MICHELLE DOSTAL
NORTH COAST LABS LTD.

Fax: 707-822-6831

RE: REPLACEMENT COC

Date: 10/27/97

Project No.: 970038 P: 33 T:
Project Name: WTFREC

From: MIKE WEBB

Hard Copy: ☐ No ☐ Yes, via

PLEASE FIND ENCLOSED 2 PAGES INCLUDING COVER SHEET.

☐ Review & Comment ☑ For your use ☐ For your approval ☐ FYI ☐ As requested

COMMENTS:
HERE IS THE CORRECT COC FOR THE TWO SAMPLES I SENT FOR PARQUAT ANALYSIS. PLEASE MAIL ME THE ORIGINAL COC YOU RECEIVED

Thanks Mike

cc:

Garry Struthers Associates, Inc. ...Experience and Leadership Working for you.

MS/OmniAdmin/Forms/FAXT

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy. East
Tacoma, Washington 98424
(253) 922-2310 • FAX (253) 922-5047

9710574
RUSH

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

COC #8

CLIENT: GARRY STRUTHERS ASSOC
PROJECT NAME: WTREC
CONTACT: MIKE WEBB
PHONE NO: 425-519-0300 X217

ANALYSIS REQUESTED:

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	PARAQUAT				SAMPLE TYPE/ BIN #		
	WA02471	10/24/97	1615	SOIL	1														✓				COMPOSITE #5,1,1		
	WD02474	"	1720	SOIL	1														✓				COMPOSITE #24,2,1		
	TEMPERATURE BLANK				1																				

RELINQUISHED TO FED X W/ CUSTODY SEALS

	Signature	Printed Name	Firm	Time / Date
Relinquished By	[signature]	MICHAEL WEBB	GSA Inc	1500 10/25/97
Received By	Laura Miller	LAURA MILLER	NCL	0945 10/27/97
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:

These samples will be disposed of 45 days after receipt.
Check this box to have samples returned ☐.

ARMY CORPS OF ENGINEERS PROJECT
ANALYZE AS PER QAAP
LAB CONTACT: MICHELLE DOSTAL
72 HR. TAT

[illegible handwritten line] # [illegible]

LAB NO. 9710574

PAGE 1 OF 1

COOLER RECEIPT FORM

PROJECT: WTREC W.O.# 9710574

COOLER RECEIVED ON 10/27/97 AND OPENED ON 10/27/97 BY LAURA MILLER

Laura Miller
(SIGNATURE)

Temperature upon receipt: cooler _____ °C
temp. blank 1 °C.

1. Were custody seals on outside of cooler and intact? (YES) NO
   a. If YES, how many and where: 1 on lid
   b. Were signature and date correct? (YES) NO
2. Were custody papers taped to lid inside cooler? (YES) NO
3. Were custody papers properly filled out (ink, signed, etc)? YES (NO)
   Incorrect analysis requested
4. Did you sign custody papers in the appropriate place? (YES) NO
5. Did you attach shipper's packing slip to this form? (YES) NO
6. What kind of packing material was used? Just Ice
7. Was sufficient ice used (if appropriate)? (YES) NO
8. Were all bottles sealed in separate plastic bags? (YES) NO
9. Did all bottles arrive in good condition (unbroken)? (YES) NO
10. Were all bottle labels complete (no., date, signed, pres, etc)? (YES) NO
11. Did all bottle labels and tags agree with custody papers? YES NO
12. Were correct bottles used for the test indicated? (YES) NO
13. If present, were VOA vials checked for absence of air bubbles and noted if found? NA YES NO
14. Was sufficient amount of sample sent in each bottle? (YES) NO
15. Were correct preservatives used? NA YES NO
16. Corrective action taken, if necessary: New C.O.C w/correct analysis was faxed to NCL.
    a. Name of person contacted: Mike Webb
    b. Date: 10/27/97

MEMORANDUM

DATE: November 28, 1997

TO: Fred Luck, Project Manager

FROM: Michael Webb, Chemical Data Quality Manager

SUBJECT: Contract DACA67-95-G-0001-38
Wenatchee Tree Fruit Research Center Remediation
Summary Chemical Data Quality Control Report:
Final Confirmation Sampling November 4, 1997
Sound Analytical Reports #68599 and 68600

Analytical Methods:

- Method 8081 for Organochlorine Pesticides
- Method 8141 for Organophosphorus Pesticides, Modified for GC/MS

Data Use Intended:

- Final Confirmation Samples: To establish that the remediation lowered the concentrations of the target analytes to levels below the clean-up standard.

Summary of Qualified and Rejected Data:

- No soil data were rejected due to quality control problems.
- The result originally reported for DDT for sample FC10A1N04712 (the Performance Evaluation sample for organochlorine pesticides) showed unexplainable high recovery. Such a condition would indicate a possible high bias in DDT results. However, results from an initial undiluted run and from a re-analysis gave acceptable performance for DDT. Therefore no qualification of the DDT data set was warranted.

  The DDT result currently reported is from the initial undiluted run. Since this result is 10 % above the highest standard the value is reported with an "E" qualifier. There is no evidence of curvature in the calibration, so this extrapolation has been accepted.
- The value of the toxaphene in sample FC4B1N0477 was changed to 1100 mg/kg after discovery of a transcription error (the report contains a revised page, "20R").
- Some results were below the quantitation limit and were flagged with "J" qualifiers. "C" flags were used to indicate that second-column confirmation had confirmed the results (4,4'-DDD and 2,4'-DDT cannot be confirmed when both are present). "U" qualifiers were not used for undetected results, rather "ND" was placed in the quantitative value data field.

Summary of Method 8081 Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled November 4, 1997: FC9B2N0471, FC8A4N0472, FC7A2N0473, FC7A2N0474 (field duplicate), FC6C2N0475, FC5C4N0476, FC4B1N0477, FC4B3N0478, FC3A5N0479, FC2A2N04710, FC1A1N04711, FC10A1N04712 (PE Sample), SW1AWN04715, SW1BWN04716, SW5ANN04717, SW7ANN04718, SW8ANN04719, FCEBN04714 (equipment blank).

- Sample Handling, Holding Time and Chain of Custody - **Acceptable.**
- Performance Evaluation (PE) Results - **Acceptable.**

Analyte	**# FC10A1N04712 (% Recovery)**
Date of Analysis	11/8/97
4,4'-DDD	120
4,4'-DDE	106
4,4'-DDT	88
Dieldrin	113
Endrin	89
Endrin aldehyde*	ND

* breakdown products

The result originally reported for DDT for sample FC10A1N04712 (the Performance Evaluation sample for organochlorine pesticides) showed unexplainable high recovery. Results from an initial undiluted run and from a re-analysis gave acceptable performance for DDT. The result currently reported above is from the initial undiluted run that is 10 % above the highest standard. There is no evidence of curvature in the calibration, so this extrapolation has been accepted.

The manufacturer of the PE sample claimed that the nonconformance for only one of the analytes in the mixture is not likely associated with the sample matrix. No further corrective action was taken for the unexplained high recovery.

- Analytical Sensitivity - **Acceptable.** Some samples were diluted prior to analysis due to high analyte concentration, thereby elevating the reporting limits to above the action levels. No site decisions were affected because these sample locations were subsequently excavated and resampled
- Accuracy -

  Calibration (Initial and Continuing) - **Acceptable.**
  DDT and Endrin Breakdown Standards - **Acceptable.** The laboratory reported a nonconformance for some analytical runs, but this QC parameter was within the project specifications.
  Surrogates - **Acceptable.** Surrogates in some of the samples and in the performance evaluation samples were not reportable because dilutions resulting from high concentrations of target analytes (samples FC9B2N0471, FC4B3N0478, FC10A1N04712, and SW7ANN04718). One of two surrogates for FC6C2N0475 and FC3A5N0479 were below project targets but within the laboratory statistical window of acceptance as required by SW-846. No corrective action was warranted.
  Matrix Spikes - **Acceptable.** High analyte concentrations caused nonconformances for 4,4'-DDE. No corrective action was necessary. The laboratory control sample results were acceptable.
  Laboratory Control Samples (LCS) - **Acceptable for all analytes except aldrin.** No corrective action was taken because this analyte did not show up in any samples.
  Laboratory Blanks - **Acceptable.**
  Field Blanks - **Acceptable.**

- Laboratory Precision - **Acceptable.**

- Field Precision - **Acceptable.** The major analytes present showed acceptable precision. The endosulfans at low concentration showed variability. No further action was taken because the levels were far below the regulatory limit.

Summary of Method 8141 (Modified) Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled November 4, 1997: FC9B2N0471, FC8A4N0472, FC7A2N0473, FC7A2N0474 (field duplicate), FC6C2N0475, FC5C4N0476, FC4B1N0477, FC3A5N0479, FC2A2N04710, FC1A1N04711, FC10B1N04713 (PE Sample), FCEBN04714 (equipment blank).
- Sample Handling, Holding Time and Chain of Custody - **Acceptable.**
- Performance Evaluation (PE) Results - **Acceptable.** No official acceptance limits have been provided for this analysis, but the percent recoveries were within those acceptable for method 8081.

Analyte	**# FC10B1N04713 (% Recovery)**
Date of Analysis	11/8/97
Dimethoate	52
Disulfoton	82
Parathion	64
Azinophos, methyl	88

- Analytical Sensitivity - **Acceptable.**
- Accuracy -

  Calibration, Tune, and Internal Standard Response- **Acceptable.** These parameters were verified with the laboratory, however, data summaries for internal standard response were not included in the data package provided by the laboratory.
  Surrogates - **Acceptable.**
  Matrix Spikes - **Acceptable.**
  Laboratory Control Samples (LCS) - **Acceptable.**
  Laboratory Blanks - **Acceptable.**
  Field Blanks - **Acceptable.**
- Laboratory Precision - **Acceptable**.
- Field Precision - **Not acceptable for one of two duplicates in this delivery group.** The focused removal duplicates were a factor of four different. Some of the most contaminated material was granular. It is possible that some of this particulate material that cannot be equally distributed between duplicates affected the duplicate results. No further action was taken.

Summary of Data Comparability, Representativeness, and Completeness

- **Field Sampling Issues** - No problems were encountered.
- **Data Completeness** - The data completeness was 100% for this phase of work.

Overall Conclusions

These data are acceptable for the intended use. The QC results meet the accuracy, precision, and completeness DQOs for the project except as noted.

Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy East • Tacoma, WA 98424
(253) 922-2310 • FAX (253) 922-5047
e-mail: SoundL@aol.com

TRANSMITTAL MEMORANDUM

DATE: November 21, 1997

TO: Mike Webb
Garry Struthers Associates, Inc.
3150 Richards Road, Ste. 100
Bellevue, WA 98005-4446

PROJECT: Wentachee Test Plot Soils, USACOE

REPORT NUMBER: 68600

Enclosed are the test results for thirteen samples received at Sound Analytical Services on November 5, 1997.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chain-of-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Lila A Transue

Lila Transue
Project Manager

Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy East • Tacoma, WA 98424
(253) 922-2310 • FAX (253) 922-5047
e-mail: SoundL@aol.com

ANALYTICAL NARRATIVE

Client: Garry Struthers Associates, Inc.

Date: November 21, 1997

Project: WTFREC

Lab No.: 68600

Delivered By: Client

Condition of samples upon receipt: Samples were received in good condition. Chain of custody was in order.

Sample Identification:

Lab. No.	Client ID	Date Sampled	Matrix	Description
68600-1	FC9B2N0471	11-04-97	Soil	Dry, brown, fine sand
68600-2	FC8A4N0472	11-04-97	Soil	Dry, brown, fine sand
68600-3	FC7A2N0473	11-04-97	Soil	Dry, brown, fine sand
68600-4	FC7A2N0474	11-04-97	Soil	Dry, brown, fine sand
68600-5	FC6C2N9475	11-04-97	Soil	Dry, brown, fine sand
68600-6	FC5C4N0476	11-04-97	Soil	Dry, brown, fine sand
68600-7	FC4B1N0477	11-04-97	Soil	Dry, brown, fine sand
68600-8	FC4B3N0478	11-04-97	Soil	Dry, brown, fine sand
68600-9	FC3A5N0479	11-04-97	Soil	Dry, brown, fine sand
68600-10	FC2A2N04710	11-04-97	Soil	Dry, brown, fine sand
68600-11	FC1A1N04711	11-04-97	Soil	Dry, brown, fine sand
68600-12	FC10A1N04712	11-04-97	Soil	Dry, dark brown, sand
68600-13	FC10B1N04713	11-04-97	Soil	Dry, dark brown, sand

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL NARRATIVE

Client: Garry Struthers Associates, Inc. Date: November 21, 1997

Project: WTFREC Lab No.: 68660

SAMPLE EXTRACTION AND ANALYSIS

ORGANOPHOSPHORUS PESTICIDES

Samples 68600-1 through 68600-7, 68600-9 through 68600-11 and 68600-13 were analyzed for organophosphorus pesticides in accordance with EPA SW-846 Method 8141. The samples were extracted in accordance with EPA SW-846 Method 3540 on 11-07-97 and analyzed on 11-07-97, 11-08-97 and 11-09-97.

The reported value for parathion in sample 68600-13 is based on a secondary dilution.

All quality control parameters were within acceptance limits.

ORGANOCHLORINE PESTICIDES

Samples 68600-1 through 68600-12 were analyzed for organochlorine pesticides in accordance with EPA SW-846 Method 8081. The samples were extracted in accordance with EPA SW-846 Method 3540 on 11-07-97 and analyzed on 11-07-97, 11-08-97 and 11-09-97. The secondary dilutions for samples 68600-1, 68600-8 and 68600-12 were repeated on 1-11-97 to confirm the reported 4,4'-DDT results.

The preliminary value for 4,4'-DDT for sample was reported from the secondary dilution of the sample. Upon a request to verify the value, the original run was reexamined and it was determined that the solution value was less than ten percent above the calibrated range and that it was appropriate to quantitate the compound from the original run, which lowered the reported value considerably. Upon request from the submitter, the original solutions for samples 68600-1, 68600-8 and 68600-12 were rediluted and reanalyzed on 11-11-97. The reanalyses confirmed the reported values for 4,4'-DDT in samples 68600-1 and 68600-8, and confirmed the lower 4,4'-DDT value for sample 68600-12. The laboratory has not been able to determine the reason for the high value from the first secondary dilution analysis for sample 68600-12. The value reported for 4,4'-DDT in sample 68600-12 is from the original run, and the reported values for 4,4'-DDD and 4,4'-DDE are from the reanalysis of the secondary dilution.

Samples 68600-1, 68600-8 and 68600-12 required dilution prior to analysis. Surrogate recoveries could not be determined for these samples.

Samples 68600-1, 68600-2, 68600-5 through 68600-8, and 68600-10 through 68600-12 required secondary dilution analyses due to the high concentrations of various target analytes.

All detected compounds were confirmed as present using a second dissimilar column. All relative percent difference values between the two analytical columns were less than or equal to 40%, except for 4,4'-DDD, which coelutes with 2,4'-DDT on the confirmation column, as most samples that contained 4,4'-DDD contained significant concentrations of 2,4'-DDT.

The percent recovery of the surrogate TCMX in samples 68600-5 and 68600-9 were outside the project control limits. The percent recoveries were within the laboratory's quality control limits, which were established by charting the actual recoveries of the surrogates in samples analyzed by the laboratory.

The percent recovery of 4,4'-DDE in the matrix spike and matrix spike duplicate analysis of sample 68600-10 was outside the quality control limits due to the high level of 4,4'-DDE in the original sample.

ANALYTICAL NARRATIVE

Client: Garry Struthers Associates, Inc. Date: November 21, 1997

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ORGANOCHLORINE PESTICIDES, CONT.
DDT/Endrin evaluation standard breakdowns (files 11079734, 11079748, 11119705 and 11119722) were slightly above project specified limits.

The final CCV run with the confirming secondary dilutions on 11-11-97 had percent differences greater than 15% for 4,4'-DDT and endosulfan sulfate, due to high levels of these compounds in the preceding samples. Because these reanalyses were to verify earlier detected values, the samples were not reanalyzed.

All other quality control parameters were within acceptance limits.

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC9B2N0471
Lab ID:	68600-01
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	93.65
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	69		65	135

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	ND		140	85	
Dimethoate	ND		93	52	
Diazinon	ND		75	74	
Disulfoton	ND		67	44	
Parathion,methyl	ND		84	75	
Malathion	ND		89	63	
Parathion		380	120	120	
Azinphos,methyl	ND		91	62	
Ethion	ND		87	44	
Paraoxon,methyl	ND		87	44	
Paraoxon,ethyl	ND		87	44	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC8A4N0472
Lab ID:	68600-02
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	92.23
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	67		65	135

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	ND		130	84	
Dimethoate	ND		93	52	
Diazinon	ND		74	73	
Disulfoton	ND		67	44	
Parathion,methyl	ND		83	74	
Malathion	ND		88	63	
Parathion	ND		120	120	
Azinphos,methyl	ND		90	62	
Ethion	ND		87	43	
Paraoxon,methyl	ND		87	43	
Paraoxon,ethyl	ND		87	43	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC7A2N0473
Lab ID:	68600-03
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	95.46
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	102		65	135

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	ND	130	81	
Dimethoate	ND	90	50	
Diazinon	ND	72	71	
Disulfoton	ND	65	43	
Parathion,methyl	ND	80	72	
Malathion	ND	85	61	
Parathion	ND	120	110	
Azinphos,methyl	ND	87	60	
Ethion	ND	84	42	
Paraoxon,methyl	ND	84	42	
Paraoxon,ethyl	ND	84	42	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC7A2N0474
Lab ID:	68600-04
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	95.44
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	90		65	135

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	ND		120	78	
Dimethoate	ND		86	48	
Diazinon	ND		69	68	
Disulfoton	ND		62	41	
Parathion,methyl	ND		77	69	
Malathion	ND		82	58	
Parathion	ND		110	110	
Azinphos,methyl	ND		84	57	
Ethion	ND		81	40	
Paraoxon,methyl	ND		81	40	
Paraoxon,ethyl	ND		81	40	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC6C2N0475
Lab ID:	68600-05
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	90.1
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	67		65	135

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	ND		130	83	
Dimethoate	ND		92	51	
Diazinon	ND		73	73	
Disulfoton		150	66	44	
Parathion,methyl	ND		82	74	
Malathion	ND		87	62	
Parathion	ND		120	120	
Azinphos,methyl	ND		89	61	
Ethion	ND		86	43	
Paraoxon,methyl	ND		86	43	
Paraoxon,ethyl	ND		86	43	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC5C4N0476
Lab ID:	68600-06
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	89.81
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Triphenyl Phosphate	67		65	135

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	ND	140	86	
Dimethoate	ND	95	53	
Diazinon	ND	76	75	
Disulfoton	ND	69	45	
Parathion,methyl	ND	85	76	
Malathion	ND	91	64	
Parathion	ND	120	120	
Azinphos,methyl	ND	93	63	
Ethion	ND	89	45	
Paraoxon,methyl	ND	89	45	
Paraoxon,ethyl	ND	89	45	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC4B1N0477
Lab ID:	68600-07
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	92.37
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	78		65	135

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	ND	130	82	
Dimethoate	ND	91	51	
Diazinon	ND	72	71	
Disulfoton	ND	65	43	
Parathion,methyl	ND	81	73	
Malathion	ND	86	61	
Parathion	ND	120	110	
Azinphos,methyl	ND	88	60	
Ethion	ND	85	42	
Paraoxon,methyl	ND	85	42	
Paraoxon,ethyl	ND	85	42	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC3A5N0479
Lab ID:	68600-09
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	88.55
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	116		65	135

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	ND	140	89	
Dimethoate	ND	98	55	
Diazinon	ND	78	77	
Disulfoton	ND	71	46	
Parathion,methyl	ND	88	78	
Malathion	ND	93	66	
Parathion	ND	130	120	
Azinphos,methyl	ND	95	65	
Ethion	ND	92	46	
Paraoxon,methyl	ND	92	46	
Paraoxon,ethyl	ND	92	46	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC2A2N04710
Lab ID:	68600-10
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	97.22
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	89		65	135

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	ND	130	79	
Dimethoate	ND	88	49	
Diazinon	ND	70	69	
Disulfoton	ND	63	42	
Parathion,methyl	ND	79	70	
Malathion	ND	83	59	
Parathion	ND	110	110	
Azinphos,methyl	ND	85	58	
Ethion	ND	82	41	
Paraoxon,methyl	ND	82	41	
Paraoxon,ethyl	ND	82	41	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC1A1N04711
Lab ID:	68600-11
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	94.14
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	82		65	135

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	ND	130	81	
Dimethoate	ND	89	50	
Diazinon	ND	71	70	
Disulfoton	ND	64	42	
Parathion,methyl	ND	80	71	
Malathion	ND	84	60	
Parathion	ND	110	110	
Azinphos,methyl	ND	87	59	
Ethion	ND	83	42	
Paraoxon,methyl	ND	83	42	
Paraoxon,ethyl	ND	83	42	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC10B1N04713
Lab ID:	68600-13
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	97.48
Dilution Factor	200

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	82		65	135

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	ND		2500	1600	
Dimethoate		8300	1700	970	
Diazinon	ND		1400	1400	
Disulfoton		2600	1200	820	
Parathion,methyl	ND		1500	1400	
Malathion	ND		1600	1200	
Parathion		300000	22000	22000	D
Azinphos,methyl		2800	1700	1100	
Ethion	ND		1600	810	
Paraoxon,methyl	ND		1600	810	
Paraoxon,ethyl	ND		1600	810	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC9B2N0471
Lab ID:	68600-01
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	93.65
Dilution Factor	20

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	107		65	130
Decachlorobiphenyl	-	X8	65	130

Sample results are on a dry weight basis.

Analyte		**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	ND		8.7	1.3	
alpha-BHC	ND		350	1.3	
beta-BHC	ND		350	2.5	
delta-BHC	ND		350	1.4	
gamma-BHC (Lindane)	ND		350	3	
Chlordane (technical)	ND		170	43	
4,4'-DDD		170	350	3	J C
4,4'-DDE		4700	350	6.3	D C
4,4'-DDT		8800	350	22	D C
2,4'-DDD		300	350	26	J C
2,4'-DDE	ND		350	26	
2,4'-DDT		1200	350	26	C
Dieldrin		200	17	1.2	C
Endosulfan I	ND		35	5.7	
Endosulfan II	ND		35	2.9	
Endosulfan sulfate	ND		35	4.2	
Endrin		170	17	2.1	C
Endrin aldehyde	ND		350	16	
Heptachlor	ND		350	1.8	
Heptachlor epoxide	ND		350	2.9	
Methoxychlor	ND		350	39	
Toxaphene	ND		350	760	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC8A4N0472
Lab ID:	68600-02
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	92.23
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	74		65	130
Decachlorobiphenyl	100		65	130

Sample results are on a dry weight basis.

Analyte		**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	ND		0.43	0.065	
alpha-BHC	ND		17	0.067	
beta-BHC	ND		17	0.12	
delta-BHC	ND		17	0.068	
gamma-BHC (Lindane)	ND		17	0.15	
Chlordane (technical)	ND		8.7	2.1	
4,4'-DDD		5.6	17	0.15	J C
4,4'-DDE		540	17	0.31	D C
4,4'-DDT		300	17	1.1	D C
2,4'-DDD		12	17	1.3	J C
2,4'-DDE		16	17	1.3	J C
2,4'-DDT		110	17	1.3	C
Dieldrin		24	0.87	0.062	C
Endosulfan I		65	1.7	0.28	C
Endosulfan II		56	1.7	0.14	C
Endosulfan sulfate		21	1.7	0.21	C
Endrin		20	0.87	0.11	C
Endrin aldehyde	ND		17	0.78	
Heptachlor	ND		17	0.089	
Heptachlor epoxide	ND		17	0.15	
Methoxychlor	ND		17	1.9	
Toxaphene	ND		17	38	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC7A2N0473
Lab ID:	68600-03
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	95.46
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	68		65	130
Decachlorobiphenyl	96		65	130

Sample results are on a dry weight basis.

Analyte		**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	ND		0.42	0.063	
alpha-BHC	ND		17	0.065	
beta-BHC	ND		17	0.12	
delta-BHC	ND		17	0.066	
gamma-BHC (Lindane)	ND		17	0.15	
Chlordane (technical)	ND		8.4	2.1	
4,4'-DDD		2.7	17	0.14	J C
4,4'-DDE		110	17	0.3	C
4,4'-DDT		67	17	1.1	C
2,4'-DDD		2.4	17	1.3	J C
2,4'-DDE		2	17	1.3	J C
2,4'-DDT		21	17	1.3	C
Dieldrin	ND		0.84	0.06	
Endosulfan I		6.3	1.7	0.27	C
Endosulfan II		4.3	1.7	0.14	C
Endosulfan sulfate		2.6	1.7	0.2	C
Endrin	ND		0.84	0.1	
Endrin aldehyde	ND		17	0.75	
Heptachlor	ND		17	0.086	
Heptachlor epoxide	ND		17	0.14	
Methoxychlor	ND		17	1.9	
Toxaphene	ND		17	37	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC7A2N0474
Lab ID:	68600-04
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	95.44
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	High
TCMX	85		65	130
Decachlorobiphenyl	96		65	130

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Aldrin	ND		0.4	0.06	
alpha-BHC	ND		16	0.062	
beta-BHC	ND		16	0.11	
delta-BHC	ND		16	0.063	
gamma-BHC (Lindane)	ND		16	0.14	
Chlordane (technical)	ND		8.1	2	
4,4'-DDD		2.3	16	0.14	J C
4,4'-DDE		99	16	0.29	C
4,4'-DDT		61	16	1	C
2,4'-DDD		4	16	1.2	J C
2,4'-DDE		2.4	16	1.2	J C
2,4'-DDT		22	16	1.2	C
Dieldrin	ND		0.81	0.058	
Endosulfan I		7	1.6	0.26	C
Endosulfan II		8	1.6	0.13	C
Endosulfan sulfate		10	1.6	0.2	C
Endrin	ND		0.81	0.098	
Endrin aldehyde	ND		16	0.72	
Heptachlor	ND		16	0.082	
Heptachlor epoxide	ND		16	0.13	
Methoxychlor	ND		16	1.8	
Toxaphene	ND		16	35	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC6C2N0475
Lab ID:	68600-05
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	90.1
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	60	N	65	130
Decachlorobiphenyl	66		65	130

Sample results are on a dry weight basis.

Analyte		**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	ND		0.43	0.064	
alpha-BHC	ND		17	0.066	
beta-BHC	ND		17	0.12	
delta-BHC	ND		17	0.067	
gamma-BHC (Lindane)		4.3	17	0.15	J C
Chlordane (technical)	ND		8.6	2.1	
4,4'-DDD		31	17	0.15	C
4,4'-DDE		79	17	0.31	C
4,4'-DDT		520	17	1.1	D C
2,4'-DDD		2.2	17	1.3	J C
2,4'-DDE		22	17	1.3	C
2,4'-DDT		46	17	1.3	C
Dieldrin	ND		0.86	0.061	
Endosulfan I		350	1.7	0.28	D C
Endosulfan II		160	1.7	0.14	D C
Endosulfan sulfate		9.3	1.7	0.21	C
Endrin	ND		0.86	0.1	
Endrin aldehyde	ND		17	0.77	
Heptachlor	ND		17	0.088	
Heptachlor epoxide	ND		17	0.14	
Methoxychlor	ND		17	1.9	
Toxaphene	ND		17	38	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC5C4N0476
Lab ID:	68600-06
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	89.81
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	68		65	130
Decachlorobiphenyl	75		65	130

Sample results are on a dry weight basis.

Analyte		**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	ND		0.45	0.067	
alpha-BHC	ND		18	0.068	
beta-BHC	ND		18	0.13	
delta-BHC	ND		18	0.07	
gamma-BHC (Lindane)	ND		18	0.15	
Chlordane (technical)	ND		8.9	2.2	
4,4'-DDD		21	18	0.15	C
4,4'-DDE		480	18	0.32	D C
4,4'-DDT		1000	18	1.1	D C
2,4'-DDD		9.4	18	1.3	J C
2,4'-DDE		29	18	1.3	C
2,4'-DDT		270	18	1.3	D C
Dieldrin		19	0.89	0.064	C
Endosulfan I		4.8	1.8	0.29	C
Endosulfan II		7.3	1.8	0.15	C
Endosulfan sulfate		5.1	1.8	0.22	C
Endrin		7.9	0.89	0.11	C
Endrin aldehyde	ND		18	0.8	
Heptachlor	ND		18	0.091	
Heptachlor epoxide	ND		18	0.15	
Methoxychlor	ND		18	2	
Toxaphene	ND		18	39	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC4B1N0477
Lab ID:	68600-07
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	92.37
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	High
TCMX	70		65	130
Decachlorobiphenyl	93		65	130

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Aldrin	ND		0.42	0.063	
alpha-BHC	ND		17	0.065	
beta-BHC	ND		17	0.12	
delta-BHC	ND		17	0.066	
gamma-BHC (Lindane)	ND		17	0.15	
Chlordane (technical)	ND		8.5	2.1	
4,4'-DDD		22	17	0.14	C
4,4'-DDE		380	17	0.31	D C
4,4'-DDT		430	17	1.1	D C
2,4'-DDD		41	17	1.3	C
2,4'-DDE		27	17	1.3	C
2,4'-DDT		120	17	1.3	C
Dieldrin		33	0.85	0.06	C
Endosulfan I		5	1.7	0.27	C
Endosulfan II		7.4	1.7	0.14	C
Endosulfan sulfate		20	1.7	0.21	C
Endrin		13	0.85	0.1	C
Endrin aldehyde		25	17	0.76	C
Heptachlor	ND		17	0.086	
Heptachlor epoxide	ND		17	0.14	
Methoxychlor	ND		17	1.9	
Toxaphene		1100	17	37	C

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SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC4B3N0478
Lab ID:	68600-08
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	94.65
Dilution Factor	50

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	High
TCMX	-	X8	65	130
Decachlorobiphenyl	-	X8	65	130

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Aldrin	ND		21	3.2	
alpha-BHC	ND		860	3.3	
beta-BHC	ND		860	6.1	
delta-BHC	ND		860	3.3	
gamma-BHC (Lindane)	ND		860	7.4	
Chlordane (technical)	ND		430	110	
4,4'-DDD		220	860	7.3	J C
4,4'-DDE		1900	860	15	C
4,4'-DDT		17000	860	54	D C
2,4'-DDD	ND		860	64	
2,4'-DDE		770	860	64	J C
2,4'-DDT		230	860	64	J C
Dieldrin	ND		43	3	
Endosulfan I	ND		86	14	
Endosulfan II	ND		86	7.1	
Endosulfan sulfate	ND		86	10	
Endrin	ND		43	5.2	
Endrin aldehyde	ND		860	38	
Heptachlor	ND		860	4.4	
Heptachlor epoxide	ND		860	7.1	
Methoxychlor	ND		860	95	
Toxaphene	ND		860	1900	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC3A5N0479
Lab ID:	68600-09
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	88.55
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	56	N	65	130
Decachlorobiphenyl	78		65	130

Sample results are on a dry weight basis.

Analyte		**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	ND		0.46	0.068	
alpha-BHC	ND		18	0.07	
beta-BHC	ND		18	0.13	
delta-BHC	ND		18	0.072	
gamma-BHC (Lindane)	ND		18	0.16	
Chlordane (technical)	ND		9.2	2.3	
4,4'-DDD		2	18	0.16	J C
4,4'-DDE		25	18	0.33	C
4,4'-DDT		92	18	1.2	C
2,4'-DDD	ND		18	1.4	
2,4'-DDE	ND		18	1.4	
2,4'-DDT		26	18	1.4	C
Dieldrin		15	0.92	0.065	C
Endosulfan I	ND		1.8	0.3	
Endosulfan II	ND		1.8	0.15	
Endosulfan sulfate	ND		1.8	0.22	
Endrin		24	0.92	0.11	C
Endrin aldehyde	ND		18	0.82	
Heptachlor	ND		18	0.093	
Heptachlor epoxide	ND		18	0.15	
Methoxychlor	ND		18	2	
Toxaphene	ND		18	40	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC2A2N04710
Lab ID:	68600-10
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	97.22
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	71		65	130
Decachlorobiphenyl	93		65	130

Sample results are on a dry weight basis.

Analyte	**Result (ug/kg)**		**PQL**	**MDL**	**Flags**
Aldrin	ND		0.41	0.061	
alpha-BHC	ND		16	0.063	
beta-BHC	ND		16	0.12	
delta-BHC	ND		16	0.064	
gamma-BHC (Lindane)	ND		16	0.14	
Chlordane (technical)	ND		8.2	2	
4,4'-DDD		4.2	16	0.14	J C
4,4'-DDE		440	16	0.3	D C
4,4'-DDT		190	16	1	D C
2,4'-DDD		3.3	16	1.2	J C
2,4'-DDE		9.8	16	1.2	J C
2,4'-DDT		79	16	1.2	C
Dieldrin		22	0.82	0.059	C
Endosulfan I	ND		1.6	0.27	
Endosulfan II	ND		1.6	0.14	
Endosulfan sulfate	ND		1.6	0.2	
Endrin		1.9	0.82	0.1	C
Endrin aldehyde	ND		16	0.73	
Heptachlor	ND		16	0.084	
Heptachlor epoxide	ND		16	0.14	
Methoxychlor	ND		16	1.8	
Toxaphene	ND		16	36	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC1A1N04711
Lab ID:	68600-11
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	94.14
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	87		65	130
Decachlorobiphenyl	100		65	130

Sample results are on a dry weight basis.

Analyte		**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	ND		0.42	0.062	
alpha-BHC	ND		17	0.064	
beta-BHC	ND		17	0.12	
delta-BHC	ND		17	0.065	
gamma-BHC (Lindane)	ND		17	0.14	
Chlordane (technical)	ND		8.3	2	
4,4'-DDD		7.6	17	0.14	J C
4,4'-DDE		1100	17	0.3	D C
4,4'-DDT		420	17	1	D C
2,4'-DDD		10	17	1.2	J C
2,4'-DDE		18	17	1.2	C
2,4'-DDT		180	17	1.2	D C
Dieldrin		29	0.83	0.059	C
Endosulfan I	ND		1.7	0.27	
Endosulfan II	ND		1.7	0.14	
Endosulfan sulfate	ND		1.7	0.2	
Endrin		5.1	0.83	0.1	C
Endrin aldehyde	ND		17	0.74	
Heptachlor	ND		17	0.085	
Heptachlor epoxide	ND		17	0.14	
Methoxychlor	ND		17	1.8	
Toxaphene	ND		17	36	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC10A1N04712
Lab ID:	68600-12
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	97.41
Dilution Factor	20

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	High
TCMX	-	X8	65	130
Decachlorobiphenyl	-	X8	65	130

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Aldrin	ND		8.4	1.3	
alpha-BHC	ND		340	1.3	
beta-BHC	ND		340	2.4	
delta-BHC	ND		340	1.3	
gamma-BHC (Lindane)	ND		340	2.9	
Chlordane (technical)	ND		170	41	
4,4'-DDD		5000	340	2.9	D C
4,4'-DDE		3100	340	6.1	D C
4,4'-DDT		2600	340	21	E C
2,4'-DDD	ND		340	25	
2,4'-DDE	ND		340	25	
2,4'-DDT	ND		340	25	
Dieldrin		71	17	1.2	C
Endosulfan I	ND		34	5.5	
Endosulfan II	ND		34	2.8	
Endosulfan sulfate	ND		34	4.1	
Endrin		360	17	2	C
Endrin aldehyde	ND		340	15	
Heptachlor	ND		340	1.7	
Heptachlor epoxide	ND		340	2.8	
Methoxychlor	ND		340	37	
Toxaphene	ND		340	740	

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SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - OP211
Date Received:	-
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	101		65	135

Sample results are on an as received basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	ND		130	81	
Dimethoate	ND		89	50	
Diazinon	ND		71	70	
Disulfoton	ND		64	42	
Parathion,methyl	ND		80	71	
Malathion	ND		85	60	
Parathion	ND		120	110	
Azinphos,methyl	ND		87	59	
Ethion	ND		83	42	
Paraoxon,methyl	ND		83	42	
Paraoxon,ethyl	ND		83	42	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	OP211
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
QC Batch ID:	OP211

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Parameter Name	Blank Result (ug/kg)	Spike Amount (ug/kg)	BS Result (ug/kg)	BS % Rec.	Flag
Dichlorvos	0	420	530	127	
Dimethoate	0	420	500	120	
Diazinon	0	420	450	108	
Disulfoton	0	420	530	126	
Parathion,methyl	0	420	520	125	
Malathion	0	420	520	125	
Parathion	0	420	530	126	
Azinphos,methyl	0	420	350	84	
Ethion	0	420	540	129	
Paraoxon,methyl	0	420	500	120	
Paraoxon,ethyl	0	420	460	109	

SOUND ANALYTICAL SERVICES, INC.

Client Name	0
Client ID:	
Lab ID:	SOP211
Date Received:	-
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	122		65	135

Sample results are on an as received basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	530	130	81	
Dimethoate	500	89	50	
Diazinon	450	71	70	
Disulfoton	530	64	42	
Parathion,methyl	520	80	71	
Malathion	520	84	60	
Parathion	530	110	110	
Azinphos,methyl	350	87	59	
Ethion	540	83	42	
Paraoxon,methyl	500	83	42	
Paraoxon,ethyl	460	83	42	

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	FC7A2N0473
Lab ID:	68600-03
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
QC Batch ID:	OP211

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Compound Name	Sample Result (ug/kg)	Spike Amount (ug/kg)	MS Result (ug/kg)	MS % Rec.	MSD Result (ug/kg)	MSD % Rec.	RPD	Flag
Dichlorvos	0	425	452	106	449	107	0.94	
Dimethoate	0	425	458	108	465	111	2.7	
Diazinon	0	425	367	86.2	385	91.6	6.1	
Disulfoton	0	425	479	113	496	118	4.3	
Parathion,methyl	0	425	434	102	460	109	6.6	
Malathion	0	425	418	98.2	462	110	11	
Parathion	0	425	474	111	471	112	0.9	
Azinphos,methyl	0	425	359	84.4	361	86	1.9	
Ethion	0	425	447	105	439	104	0.96	
Paraoxon,methyl	0	425	418	98.2	435	104	5.7	
Paraoxon,ethyl	0	425	384	90.2	423	101	11	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC7A2N0473 - ms
Lab ID:	68600S03
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	95.46
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	101		65	135

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	450	130	82	
Dimethoate	460	91	51	
Diazinon	370	73	72	
Disulfoton	480	66	43	
Parathion,methyl	430	81	73	
Malathion	420	86	61	
Parathion	470	120	110	
Azinphos,methyl	360	88	60	
Ethion	450	85	43	
Paraoxon,methyl	420	85	43	
Paraoxon,ethyl	380	85	43	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC7A2N0473 - msd
Lab ID:	68600D03
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	95.46
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	98		65	135

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	450	130	81	
Dimethoate	460	90	50	
Diazinon	380	72	71	
Disulfoton	500	65	43	
Parathion,methyl	460	80	72	
Malathion	460	85	61	
Parathion	470	120	110	
Azinphos,methyl	360	87	60	
Ethion	440	84	42	
Paraoxon,methyl	440	84	42	
Paraoxon,ethyl	420	84	42	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - PE829
Date Received:	-
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	High
TCMX	93		65	130
Decachlorobiphenyl	114		65	130

Sample results are on an as received basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Aldrin	ND	0.42	0.062	
alpha-BHC	ND	17	0.064	
beta-BHC	ND	17	0.12	
delta-BHC	ND	17	0.065	
gamma-BHC (Lindane)	ND	17	0.14	
Chlordane (technical)	ND	8.3	2	
4,4'-DDD	ND	17	0.14	
4,4'-DDE	ND	17	0.3	
4,4'-DDT	ND	17	1	
2,4'-DDD	ND	17	1.2	
2,4'-DDE	ND	17	1.2	
2,4'-DDT	ND	17	1.2	
Dieldrin	ND	0.83	0.059	
Endosulfan I	ND	1.7	0.27	
Endosulfan II	ND	1.7	0.14	
Endosulfan sulfate	ND	1.7	0.2	
Endrin	ND	0.83	0.1	
Endrin aldehyde	ND	17	0.74	
Heptachlor	ND	17	0.085	
Heptachlor epoxide	ND	17	0.14	
Methoxychlor	ND	17	1.9	
Toxaphene	ND	17	36	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	PE829
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
QC Batch ID:	PE829

Organochlorine Pesticides by USEPA Method 8081

Parameter Name	Blank Result (ug/kg)	Spike Amount (ug/kg)	BS Result (ug/kg)	BS % Rec.	Flag
Aldrin	0	21	15	73	
gamma-BHC (Lindane)	0	21	16	75	
4,4'-DDD	0	42	35	83	
4,4'-DDE	0	42	36	88	
4,4'-DDT	0	42	33	80	
2,4'-DDD	0	42	36	87	
2,4'-DDE	0	42	35	85	
2,4'-DDT	0	42	36	86	
Dieldrin	0	42	37	88	
Endrin	0	42	36	87	
Heptachlor	0	21	16	75	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	
Lab ID:	SPE829
Date Received:	-
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
TCMX	70		65	130
Decachlorobiphenyl	89		65	130

Sample results are on an as received basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Aldrin	15	0.42	0.062	C
gamma-BHC (Lindane)	16	17	0.14	J C
4,4'-DDD	35	17	0.14	C
4,4'-DDE	36	17	0.3	C
4,4'-DDT	33	17	1	C
2,4'-DDD	36	17	1.2	C
2,4'-DDE	35	17	1.2	C
2,4'-DDT	36	17	1.2	C
Dieldrin	37	0.83	0.059	C
Endrin	36	0.83	0.1	C
Heptachlor	16	17	0.085	J C

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	FC2A2N04710
Lab ID:	68600-10
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
QC Batch ID:	PE829

Organochlorine Pesticides by USEPA Method 8081

Compound Name	Sample Result (ug/kg)	Spike Amount (ug/kg)	MS Result (ug/kg)	MS % Rec.	MSD Result (ug/kg)	MSD % Rec.	RPD	Flag
Aldrin	0	21.2	18.3	86.7	18.3	87.7	1.1	
gamma-BHC (Lindane)	0	21.2	17.3	81.8	17.8	85.4	4.3	
4,4'-DDD	4.2	42.3	44.3	94.7	43.5	94	0.74	
4,4'-DDE	440	42.3	360	0	359	0	0	X7a
4,4'-DDT	190	42.3	251	135	238	104	26	
2,4'-DDD	3.3	42.3	48.5	107	48	107	0	
2,4'-DDE	9.8	42.3	47.5	89.2	48.6	92.9	4.1	
2,4'-DDT	79	42.3	124	106	122	104	1.9	
Dieldrin	22	42.3	75.6	127	78.6	136	6.8	
Endrin	1.9	42.3	49.9	113	47.7	110	2.7	
Heptachlor	0	21.2	18.7	88.5	18.7	89.4	1	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC2A2N04710 - ms
Lab ID:	68600S10
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	97.22
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	81		65	130
Decachlorobiphenyl	99		65	130

Sample results are on a dry weight basis.

Analyte	**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	18	0.42	0.063	C
gamma-BHC (Lindane)	17	17	0.15	C
4,4'-DDD	44	17	0.14	C
4,4'-DDE	360	17	0.3	E C
4,4'-DDT	250	17	1.1	E C
2,4'-DDD	49	17	1.3	C
2,4'-DDE	47	17	1.3	C
2,4'-DDT	120	17	1.3	C
Dieldrin	76	0.85	0.06	C
Endrin	50	0.85	0.1	C
Heptachlor	19	17	0.086	C

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC2A2N04710 - msd
Lab ID:	68600D10
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	97.22
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	82		65	130
Decachlorobiphenyl	105		65	130

Sample results are on a dry weight basis.

Analyte	**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	18	0.42	0.062	C
gamma-BHC (Lindane)	18	17	0.14	C
4,4'-DDD	43	17	0.14	C
4,4'-DDE	360	17	0.3	E C
4,4'-DDT	240	17	1.1	E C
2,4'-DDD	48	17	1.3	C
2,4'-DDE	49	17	1.3	C
2,4'-DDT	120	17	1.3	C
Dieldrin	79	0.84	0.06	C
Endrin	48	0.84	0.1	C
Heptachlor	19	17	0.085	C

DATA QUALIFIER DEFINITIONS

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE: (253) 922-2310 - FAX: (253) 922-5047

DATA QUALIFIERS AND ABBREVIATIONS

B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).

B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).

C: Additional confirmation performed.

D: The reported result for this analyte is calculated based on a secondary dilution factor.

E: The concentration of this analyte exceeded the instrument calibration range.

J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

MCL: Maximum Contaminant Level

MDL: Method Detection Limit

N: See analytical narrative.

ND: Not Detected

PQL: Practical Quantitation Limit

X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____ .

X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.

X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.

X4: RPD for duplicates outside advisory QC limits. Sample was re-analyzed with similar results.

X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.

X5: Matrix spike was diluted out during analysis.

X6: Recovery of matrix spike was outside advisory QC limits. Sample was re-analyzed with similar results.

X7: Recovery of matrix spike outside advisory QC limits. Matrix interference is indicated by blank spike recovery data.

X7a: Recovery and/or RPD values for MS/MSD outside advisory QC limits due to high contaminant levels.

X8: Surrogate was diluted out during analysis.

X9: Surrogate recovery outside advisory QC limits due to matrix composition.

CHAIN OF CUSTODY

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. Eas
Tacoma, Washington 98424
(253) 922-2310 • FAX (253) 922-5047

3/3
68600 (soils)
68601 (water)
9411

COC#10

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

CLIENT: Gary Struthers Assoc.
PROJECT NAME: WTFREC
CONTACT: Mike Webb
PHONE NO: 425-519-0300 x 217

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	OP Pesticides	OC Pesticides
1	FC9B2N@471	11/4/97	1340	SOIL	1														✓	✓
2	FC8A4N@472		1330		1														✓	✓
3	FC7A2N@473		1400		1														✓	✓
4	FC7A2N@474		1410		1														✓	✓
5	FC6B2N@475		1420		1														✓	✓
6	FC5C4N@476		1430		1														✓	✓
7	FC4B1N@477		1440		1														✓	✓
8	FC4B3N@478		1455		1															✓
9	FC3A5N@479		1500		1														✓	✓
10	FC2A2N@4710		1515		1														✓	✓
11	FC1A1N@4711		1520		1														✓	✓
12	FC10A1N@4712		1545		1														✓	✓
13	FC10B1N@4713		1542	↓	1														✓	
68601	FCEBN@4714	↓	1550	WATER	2														✓	✓
	TEMP. BLANK																			

	Signature	Printed Name	Firm	Time / Date
Relinquished By	Michael Webb	Michael Webb	GSA Inc	1155 am 11/5/97
Received By	S Giang	S Giang	SAS	1155 am 11/5/97
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:
SAMPLED BY MIKE WEBB
These samples will be disposed of 45 days after receipt.
Check this box to have samples returned ☐.
LAB CONTACT KATIE POONIE
USACE PROJECT — ANALYZE AS PER QAPP
72 HR TAT — BATCH FCEBN@4714 WITH WATER SAMPLES TO BE DELIVERED LATER.
HAND DELIVERED BY MIKE WEBB
DO NOT SPIKE FCEBN@4714 FOR QC.

1 of 1

SAS LAB NO. 68600 / 68601

PAGE 1 OF 2

COOLER RECEIPT FORM

PROJECT: Wenatchee Test Plot. Soils, USACE W.O.# —

COOLER RECEIVED ON 11-5-97 AND OPENED ON 11-5-97 BY Siang

Siang
(SIGNATURE)

Temperature upon receipt: cooler 6 °C
temp. blank _____ °C

1. Were custody seals on outside of cooler and intact? YES (NO)
   a. If YES, how many and where: hand delivered
   b. Were signature and date correct? YES (NO)
2. Were custody papers taped to lid inside cooler? YES (NO)
3. Were custody papers properly filled out (ink, signed, etc)? (YES) NO
4. Did you sign custody papers in the appropriate place? (YES) NO
5. Did you attach shipper's packing slip to this form? YES (NO)
6. What kind of packing material was used? bubble wrap
7. Was sufficient ice used (if appropriate)? (YES) NO
8. Were all bottles sealed in separate plastic bags? (YES) NO
9. Did all bottles arrive in good condition (unbroken)? (YES) NO
10. Were all bottle labels complete (no., date, signed, pres, etc)? (YES) NO
11. Did all bottle labels and tags agree with custody papers? (YES) NO
12. Were correct bottles used for the test indicated? (YES) NO
13. If present, were VOA vials checked for absence of air bubbles and noted if found? N/A YES NO
14. Adequate volume of VOA vials received per sample? N/A YES NO
15. Was sufficient amount of sample sent in each bottle? (YES) NO
16. Were correct preservatives used? N/A YES NO
17. Corrective action taken, if necessary:
    a. Name of person contacted: _____
    b. Date: _____

60577
68600

SAS LAB NO. 68601

PAGE 2 OF 3

COOLER RECEIPT FORM

PROJECT: Wenatchee Test Plot Soils, USACE W.O.#

COOLER RECEIVED ON 11-5-97 AND OPENED ON 11-5-97 BY S Siang

(SIGNATURE) S Siang

Temperature upon receipt: cooler 4 °C
temp. blank 3 °C

1.	Were custody seals on outside of cooler and intact?	YES (NO)
	a. If YES, how many and where: hand delivered	
	b. Were signature and date correct?	YES (NO)
2.	Were custody papers taped to lid inside cooler?	YES (NO)
3.	Were custody papers properly filled out (ink, signed, etc)?	(YES) NO
4.	Did you sign custody papers in the appropriate place?	(YES) NO
5.	Did you attach shipper's packing slip to this form?	YES (NO)
6.	What kind of packing material was used? bubblewrap	
7.	Was sufficient ice used (if appropriate)?	(YES) NO
8.	Were all bottles sealed in separate plastic bags?	(YES) NO
9.	Did all bottles arrive in good condition (unbroken)?	(YES) NO
10.	Were all bottle labels complete (no., date, signed, pres, etc)?	(YES) NO
11.	Did all bottle labels and tags agree with custody papers?	(YES) NO
12.	Were correct bottles used for the test indicated?	(YES) NO
13.	If present, were VOA vials checked for absence of air bubbles and noted if found? N/A	YES NO
14.	Adequate volume of VOA vials received per sample? N/A	YES NO
15.	Was sufficient amount of sample sent in each bottle?	(YES) NO
16.	Were correct preservatives used? N/A	YES NO
17.	Corrective action taken, if necessary:	
	a. Name of person contacted:	
	b. Date:	

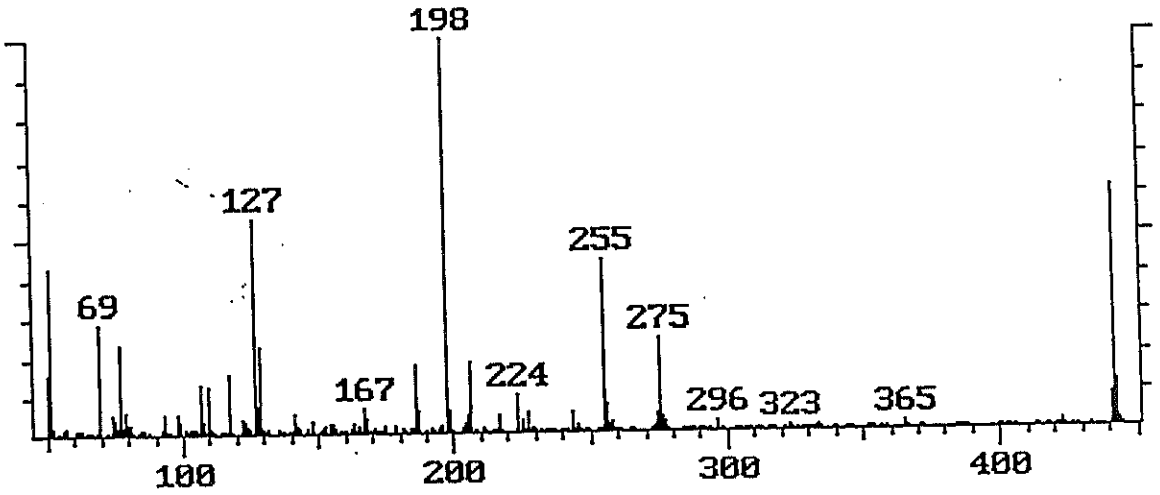
ORGANOPHOSPHORUS PESTICIDE DATA PACKAGE

INITIAL CALIBRATION DATA

Method 8270 DFTPP Report

Data File: P25863
Cali File: DFTPP

Acqu Date: 10/22/97
Acqu Time: 17:30



Mass	Acceptance Criterion	Value	Pass/Fail
51	30-60% of Mass 198	42.73	Pass
68	<= 2% of Mass 69	1.75	Pass
69	Exists Only	28.27	Pass
70	<= 2% of Mass 69	0.00	Pass
127	40-60% of Mass 198	55.13	Pass
197	<= 1% of Mass 198	0.00	Pass
198	Base Peak	100.00	Pass
199	5 - 9% of Mass 198	5.59	Pass
275	10-30% of Mass 198	24.09	Pass
365	>= 1% of Mass 198	1.78	Pass
441	Exists/<= Mass 443	13.25	Pass
442	40-100% of Mass 198	61.38	Pass
443	17-23% of Mass 442	18.73	Pass

Initial Calibration Report

INSTRUMENT : ITS40
LABORATORY : Sound Analytical Services
OPERATOR : Brent Hepner

10/22/97

HIT ANY KEY TO CONTINUE

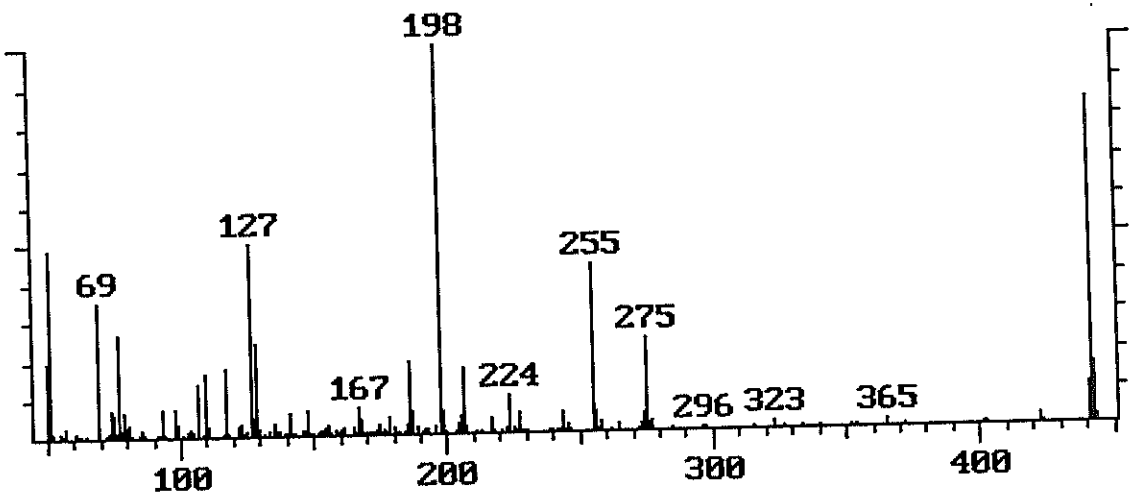
						AVE	RSD
Triphenyl Phosphate	0.244	0.242	0.244	0.267	0.194	0.238	11.3%
Dichlorvos	0.404	0.420	0.422	0.484	0.415	0.429	7.4%
Phorate	0.215	0.208	0.184	0.205	0.181	0.199	7.6%
Dimethoate	0.256	0.297	0.298	0.340	0.292	0.297	10.1%
Diazinon	0.321	0.321	0.338	0.421	0.364	0.353	11.8%
Disulfoton	0.441	0.460	0.374	0.371	0.316	0.393	14.8%
Paraoxon,methyl	0.178	0.211	0.220	0.269	0.221	0.220	14.8%
Phosphamidon	0.424	0.446	0.439	0.460	0.424	0.438	3.5%
Parathion,methyl	0.219	0.260	0.243	0.310	0.279	0.262	13.2%
Paraoxon,ethyl	0.194	0.186	0.170	0.195	0.180	0.185	5.7%
Malathion	0.368	0.414	0.431	0.467	0.411	0.418	8.6%
Chlorpyrifos	0.198	0.206	0.202	0.246	0.230	0.216	9.6%
Parathion	0.114	0.118	0.123	0.162	0.130	0.129	14.7%
Ethion	0.951	1.133	1.091	1.375	1.154	1.141	13.4%
Phosmet	1.638	1.717	1.643	1.816	1.530	1.669	6.3%
Azinphos,methyl	1.128	1.225	1.126	1.126	0.883	1.098	11.6%

CONTINUING CALIBRATION DATA

Method 8270 DFTPP Report

Data File: P26159CF
Cali File: DFTPP

Acqu Date: 11/07/97
Acqu Time: 18:23



Mass	Acceptance Criterion	Value	Pass/Fail
51	30-60% of Mass 198	48.80	Pass
68	<= 2% of Mass 69	0.00	Pass
69	Exists Only	34.75	Pass
70	<= 2% of Mass 69	0.00	Pass
127	40-60% of Mass 198	50.25	Pass
197	<= 1% of Mass 198	0.00	Pass
198	Base Peak	100.00	Pass
199	5 - 9% of Mass 198	5.75	Pass
275	10-30% of Mass 198	23.89	Pass
365	>= 1% of Mass 198	1.39	Pass
441	Exists/<= Mass 443	12.29	Pass
442	40-100% of Mass 198	83.75	Pass
443	17-23% of Mass 442	18.55	Pass

Calibration Check Report

DATAFILE : P26160 ANALYSIS DATE : 11/07/97 19:15
SAMPLE : 1.0 NG/UL 8141 SPECIAL MIX. CCAL STD NO 0104-64-1
LABORATORY : Sound Analytical Services
OPERATOR : Brent Hepner
INSTRUMENT : ITS40
ANALYSIS : GC-MS Analysis

HIT ANY KEY TO CONTINUE

	AVE RF	CONT. RF	RPD	
Triphenyl Phosphate	0.238	0.238	0.061	%
Dichlorvos	0.429	0.482	12.359	%
Dimethoate	0.297	0.279	5.881	%
Diazinon	0.353	0.348	1.535	%
Disulfoton	0.393	0.381	3.012	%
Paraoxon,methyl	0.220	0.218	0.984	%
Parathion,methyl	0.262	0.253	3.673	%
Paraoxon,ethyl	0.185	0.195	5.144	%
Malathion	0.418	0.357	14.743	%
Parathion	0.129	0.118	9.011	%
Ethion	1.141	1.144	0.311	%
Azinphos,methyl	1.098	1.163	5.946	%

Calibration Check Report

DATAFILE : P26178ER ANALYSIS DATE : 11/08/97 04:03
SAMPLE : 1.0 NG/UL 8141 END OF RUN CALIB. VERIFICATION 0CS
LABORATORY : Sound Analytical Services
OPERATOR : Brent Hepner
INSTRUMENT : ITS40
ANALYSIS : GC-MS Analysis

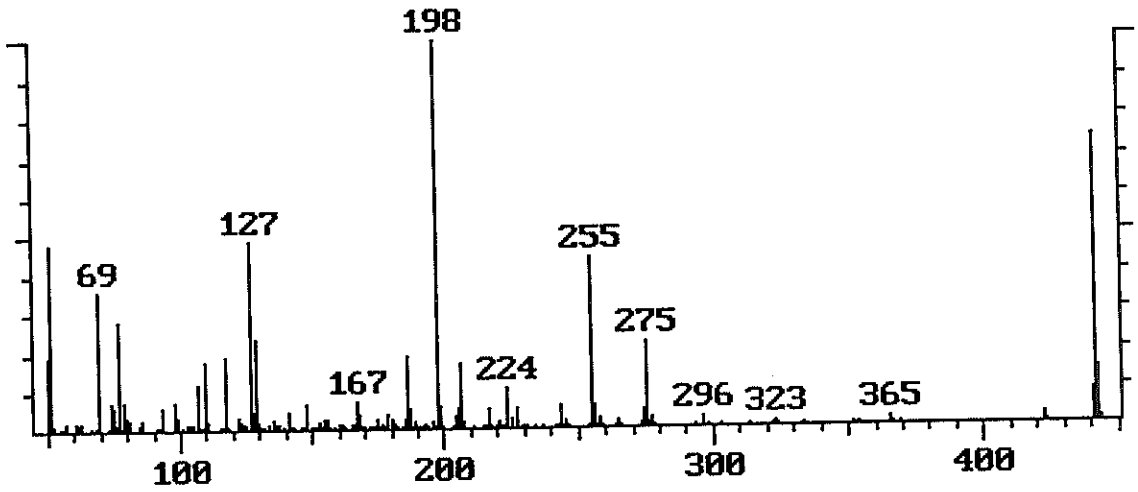
HIT ANY KEY TO CONTINUE

	AVE RF	CONT. RF	RPD	
Triphenyl Phosphate	0.238	0.254	6.551	%
Dichlorvos	0.429	0.433	0.887	%
Dimethoate	0.297	0.262	11.715	%
Diazinon	0.353	0.324	8.185	%
Disulfoton	0.393	0.428	9.115	%
Paraoxon,methyl	0.220	0.214	2.818	%
Parathion,methyl	0.262	0.241	8.070	%
Paraoxon,ethyl	0.185	0.151	18.632	%
Malathion	0.418	0.371	11.245	%
Parathion	0.129	0.107	17.606	%
Ethion	1.141	1.185	3.910	%
Azinphos,methyl	1.098	1.082	1.488	%

Method 8270 DFTPP Report

Data File: P26179
Cali File: DFTPP

Acqu Date: 11/09/97
Acqu Time: 13:11



Mass	Acceptance Criterion	Value	Pass/Fail
51	30-60% of Mass 198	48.22	Pass
68	<= 2% of Mass 69	1.10	Pass
69	Exists Only	35.43	Pass
70	<= 2% of Mass 69	0.00	Pass
127	40-60% of Mass 198	48.52	Pass
197	<= 1% of Mass 198	0.16	Pass
198	Base Peak	100.00	Pass
199	5 - 9% of Mass 198	5.76	Pass
275	10-30% of Mass 198	21.84	Pass
365	>= 1% of Mass 198	1.33	Pass
441	Exists/<= Mass 443	10.94	Pass
442	40-100% of Mass 198	74.25	Pass
443	17-23% of Mass 442	19.01	Pass

Calibration Check Report

DATAFILE : P26180 ANALYSIS DATE : 11/09/97 13:30
SAMPLE : 1.0 NG/UL 8141 SPECIAL MIX CCAL STD NO 0104-64-1
LABORATORY : Sound Analytical Services
OPERATOR : Brent Hepner
INSTRUMENT : ITS40
ANALYSIS : GC-MS Analysis

HIT ANY KEY TO CONTINUE

	AVE RF	CONT. RF	RPD	
Triphenyl Phosphate	0.238	0.215	9.631	%
Dichlorvos	0.429	0.412	4.086	%
Dimethoate	0.297	0.265	10.834	%
Diazinon	0.353	0.331	6.336	%
Disulfoton	0.393	0.441	12.306	%
Paraoxon,methyl	0.220	0.207	5.740	%
Parathion,methyl	0.262	0.234	10.684	%
Paraoxon,ethyl	0.185	0.159	14.333	%
Malathion	0.418	0.356	14.961	%
Parathion	0.129	0.112	13.522	%
Ethion	1.141	1.008	11.597	%
Azinphos,methyl	1.098	1.134	3.287	%

CALIBRATION STANDARD REPORT

DATAFILE : P26182 ANALYSIS DATE : 11/09/97 14:25
SAMPLE : 1.0 NG/UL 8141 END OF RUN CALIB. VERIFICATION
LABORATORY : Sound Analytical Services
OPERATOR : Brent Hepner
INSTRUMENT : ITS40
ANALYSIS : GCMS Analysis

Compound name	Ret. Time	Amount	Area	I.S. Area	RF
D8-Napthalene(IS)	7.33	1.000 NG/UL	11538915	11538915	1.000
d8-Acenaphthene(IS)	9.66	1.000 NG/UL	10772276	10772276	1.000
d10-Phenanthrene(IS)	11.57	1.000 NG/UL	14128273	14128273	1.000
d12-Chrysene(IS)	14.95	1.000 NG/UL	7462757	7462757	1.000
Triphenyl Phosphate	14.61	1.000 NG/UL	1854137	7462757	0.248
Dichlorvos	7.87	1.000 NG/UL	4948566	11538915	0.429
Dimethoate	11.20	1.000 NG/UL	3867138	14128273	0.274
Diazinon	11.56	1.000 NG/UL	4854163	14128273	0.344
Disulfoton	11.67	1.000 NG/UL	6193528	14128273	0.438
Paraoxon,methyl	11.68	1.000 NG/UL	2869972	14128273	0.203
Parathion,methyl	12.14	1.000 NG/UL	3706906	14128273	0.262
Paraoxon,ethyl	12.28	1.000 NG/UL	2242826	14128273	0.159
Malathion	12.51	1.000 NG/UL	5167081	14128273	0.366
Parathion	12.66	1.000 NG/UL	1680392	14128273	0.119
Ethion	14.05	1.000 NG/UL	9113086	7462757	1.221
Azinphos,methyl	15.29	1.000 NG/UL	8359237	7462757	1.120

PAGE 1

CHLORINATED PESTICIDE DATA PACKAGE

INITIAL CALIBRATION DATA

Pesticide %RSD

Date Analyzed: 7-Nov-97
Instrument: 3400 Dual Column
Analytical Column: DB-1701

COMPOUND	A RF	B RF	C RF	D RF	E RF	F RF	Average RF	Average RF	Stdev.	%RSD	Correlation Coefficient
TCMX	5336	5219	5339	4823	4795	4918	5072	1.9717E-04	233	4.6	0.9951
alpha-BHC	8223	8202	8330	8393	8093	8108	8225	1.2158E-04	109	1.3	0.9975
Lindane	7593	7274	7583	7199	6988	7245	7314	1.3673E-04	214	2.9	0.9995
Heptachlor	7563	7557	7689	7367	7151	7497	7471	1.3386E-04	172	2.3	0.9992
Aldrin	7724	7601	7580	7047	6892	7120	7327	1.3648E-04	318	4.3	0.9995
B-BHC	2729	2669	2705	2584	2474	2542	2617	3.8212E-04	91	3.5	0.9996
D-BHC	5668	5903	6236	5958	5903	6229	5983	1.6714E-04	199	3.3	0.9990
Heptachlor Epoxide	5494	5582	5822	5539	5444	5591	5579	1.7925E-04	120	2.2	0.9997
Endosulfan-I	4857	5054	5551	4976	4798	4799	5006	1.9977E-04	261	5.2	0.9965
gamma-Chlordane	6509	6217	6293	6132	6067	6335	6259	1.5977E-04	144	2.3	0.9993
alpha-Chlordane	5733	5825	6145	5784	5648	5772	5818	1.7189E-04	156	2.7	0.9997
4,4'-DDE	5850	5652	5849	5478	5400	5505	5622	1.7787E-04	177	3.2	0.9998
Dieldrin	5340	5091	5202	4912	4923	4988	5076	1.9700E-04	155	3.0	0.9999
Endrin	4141	4283	4212	4160	4001	4241	4173	2.3963E-04	90	2.2	0.9989
4,4'-DDD	3303	3618	3770	3640	3609	3784	3621	2.7619E-04	158	4.4	0.9992
Endosulfan-II	4049	4305	4345	4099	4037	4211	4174	2.3956E-04	121	2.9	0.9951
4,4'-DDT	4077	4032	4266	3786	3646	3515	3887	2.5727E-04	260	6.7	0.9968
Endrin Aldehyde	1896	2345	2501	2812	2866	3111	2588	3.8635E-04	397	15.3	0.9950
Methox/Endo Sulfate	2396	2292	2357	2300	2223	2192	2293	4.3606E-04	71	3.1	0.9958
Endrin Ketone	4200	4406	4463	4245	4281	4409	4334	2.3075E-04	97	2.2	0.9996
Decachlorobiphenyl	4171	3887	3806	3583	3491	3637	3762	2.6578E-04	226	6.0	0.9993

Sample Concentration = (Linear Regression Value) x (Analyte Response)

Pesticide %RSD

Date Analyzed: 7-Nov-97
Instrument: 3400 Dual Column
Analytical Column: DB-17

COMPOUND	A RF	B RF	C RF	D RF	E RF	F RF	Average RF	Average RF	Stdev.	%RSD	Correlation Coefficient
TCMX	6741	6408	6505	6306	6334	6850	6524	1.5328E-04	204	3.1	0.9965
alpha-BHC	8685	9300	9571	9572	9617	10079	9471	1.0559E-04	420	4.4	0.9992
Lindane	8062	8488	8705	8387	8526	9152	8553	1.1691E-04	330	3.9	0.9981
beta-BHC	4003	3264	3389	3155	3087	3214	3352	2.9833E-04	306	9.1	0.9993
Heptachlor	8947	9048	8400	8097	8039	8508	8507	1.1756E-04	384	4.5	0.9988
D-BHC	6469	7139	7239	6980	7117	7737	7113	1.4058E-04	374	5.3	0.9973
Aldrin	9375	8825	8718	8316	8340	8808	8730	1.1454E-04	355	4.1	0.9988
Heptachlor Epoxide	7464	6710	6692	6288	6294	6574	6670	1.4992E-04	393	5.9	0.9992
gamma-Chlordane	6570	7555	7430	6935	6791	7064	7057	1.4169E-04	344	4.9	0.9993
alpha-Chlordane	6475	6966	7036	6524	6414	6705	6687	1.4955E-04	240	3.6	0.9992
Endosulfan-I	4978	5815	6049	5881	5959	6239	5820	1.7181E-04	400	6.9	0.9992
4,4'-DDE	6594	6096	6295	6070	6227	6904	6364	1.5713E-04	296	4.7	0.9960
Dieldrin	5178	5416	5557	5388	5565	6150	5542	1.8043E-04	301	5.4	0.9961
Endrin	4297	4467	4548	4490	4536	4949	4548	2.1989E-04	197	4.3	0.9973
4,4'-DDD	5824	4064	4299	4093	4221	4598	4516	2.2142E-04	610	13.5	0.9970
Endosulfan-II	4262	4288	4384	4270	4402	4775	4397	2.2744E-04	178	4.0	0.9974
4,4'-DDT	4871	4535	4726	4575	4731	5190	4771	2.0958E-04	217	4.6	0.9966
Endrin Aldehyde	2995	3168	3337	3202	3248	3536	3248	3.0792E-04	165	5.1	0.9973
Endosulfan Sulfate	3687	3725	3862	3793	3881	4185	3856	2.5936E-04	162	4.2	0.9978
Methoxychlor	1842	1924	1979	1941	2072	2130	1981	5.0470E-04	96	4.8	0.9992
Endrin Ketone	5159	4808	4985	4810	4981	5471	5036	1.9858E-04	228	4.5	0.9965
Decachlorobiphenyl	5437	4708	4747	4347	4194	4412	4641	2.1549E-04	406	8.7	0.9989

Sample Concentration = (Linear Regression Value) x (Analyte Response)

Pesticide %RSD

Date Analyzed: 7-Nov-97
Instrument: 3400 Dual Column
Analytical Column: DB-1701

COMPOUND	A RF	B RF	C RF	D RF	E RF	F RF	Average RF	Average RF	Stdev.	%RSD	Linear Regression
2,4-DDE	4111	4015	3749	3565	3386	3353	3696	2.7053E-04	291	7.9	0.9972
2,4-DDD	3036	2838	2743	2779	2660	2668	2787	3.5879E-04	127	4.6	0.9982
2,4-DDT	3935	3721	3535	3439	3377	3341	3558	2.8105E-04	209	5.9	0.9956

Date Analyzed: 7-Nov-97
Instrument: 3400 Dual Column
Analytical Column: DB-17

COMPOUND	A RF	B RF	C RF	D RF	E RF	F RF	Average RF	Average RF	Stdev.	%RSD	Linear Regression
2,4-DDE	4824	4563	4275	4052	4021	4102	4306	2.3221E-04	295	6.9	0.9998
2,4-DDD	3163	3478	3211	3201	3151	3152	3226	3.0998E-04	115	3.6	0.9986
2,4-DDT	5449	4307	4064	3883	3890	3962	4259	2.3480E-04	551	12.9	0.9978

Sample Concentration = (Linear Regression Value) x (Analyte Response)

inserted w/ p. 58
mw. 11-28-97

CONTINUING CALIBRATION DATA

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079721
Date Analyzed: 11/7/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	40	43.46	8.7%	OK
alpha-BHC	20	21.2	6.0%	OK
Lindane	20	21.6	8.0%	OK
Heptachlor	20	21.35	6.8%	OK
Aldrin	20	22.34	11.7%	OK
B-BHC	20	21.99	9.9%	OK
D-BHC	20	22.44	12.2%	OK
Heptachlor Epoxide	20	22.57	12.9%	OK
Endosulfan-I	20	22.5	12.5%	OK
gamma-Chlordane	20	21.81	9.0%	OK
alpha-Chlordane	20	22.9	14.5%	OK
4,4'-DDE	40	45.62	14.1%	OK
Dieldrin	40	44.52	11.3%	OK
Endrin	40	45.32	13.3%	OK
4,4'-DDD	40	43.53	8.8%	OK
Endosulfan-II	40	41.84	4.6%	OK
4,4'-DDT	40	42.27	5.7%	OK
Endrin Aldehyde	40	36.09	9.8%	OK
Methoxychlor	200	227.24	13.6%	OK
Endosulfan Sulfate	40	39.92	0.2%	OK
Endrin Ketone	40	38.56	3.6%	OK
Decachlorobiphenyl	80	88	10.1%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079722
Date Analyzed: 11/7/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.2	10.9%	OK
2,4-DDD	20	22.1	10.3%	OK
2,4-DDT	20	21.8	8.9%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079735
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	52.61	5.2%	OK
alpha-BHC	25	26.98	7.9%	OK
Lindane	25	26.12	4.5%	OK
Heptachlor	25	26.2	4.8%	OK
Aldrin	25	26.84	7.4%	OK
B-BHC	25	27.16	8.6%	OK
D-BHC	25	26.61	6.4%	OK
Heptachlor Epoxide	25	26.79	7.2%	OK
Endosulfan-I	25	27.84	11.4%	OK
gamma-Chlordane	25	25.79	3.2%	OK
alpha-Chlordane	25	25.71	2.8%	OK
4,4'-DDE	50	56.31	12.6%	OK
Dieldrin	50	53.67	7.3%	OK
Endrin	50	55.21	10.4%	OK
4,4'-DDD	50	53.18	6.4%	OK
Endosulfan-II	50	52.09	4.2%	OK
4,4'-DDT	50	54.56	9.1%	OK
Endrin Aldehyde	50	49.65	0.7%	OK
Methoxychlor	250	275.97	10.4%	OK
Endosulfan Sulfate	50	51.36	2.7%	OK
Endrin Ketone	50	52.78	5.6%	OK
Decachlorobiphenyl	100	108	8.2%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079736
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.5	12.6%	OK
2,4-DDD	20	21.8	9.0%	OK
2,4-DDT	20	22.3	11.7%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079749
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	51.65	3.3%	OK
alpha-BHC	25	26.38	5.5%	OK
Lindane	25	25.92	3.7%	OK
Heptachlor	25	25.97	3.9%	OK
Aldrin	25	26.44	5.8%	OK
B-BHC	25	26.78	7.1%	OK
D-BHC	25	26.5	6.0%	OK
Heptachlor Epoxide	25	26.65	6.6%	OK
Endosulfan-I	25	25.6	2.4%	OK
gamma-Chlordane	25	27.04	8.2%	OK
alpha-Chlordane	25	25.49	2.0%	OK
4,4'-DDE	50	51.73	3.5%	OK
Dieldrin	50	52.96	5.9%	OK
Endrin	50	53.86	7.7%	OK
4,4'-DDD	50	53.12	6.2%	OK
Endosulfan-II	50	49.66	0.7%	OK
4,4'-DDT	50	56.2	12.4%	OK
Endrin Aldehyde	50	43.59	12.8%	OK
Methoxychlor	250	270.99	8.4%	OK
Endosulfan Sulfate	50	50.28	0.6%	OK
Endrin Ketone	50	51.54	3.1%	OK
Decachlorobiphenyl	100	105	4.7%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079750
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.6	13.0%	OK
2,4-DDD	20	22.0	10.1%	OK
2,4-DDT	20	22.5	12.4%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079763
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	51.57	3.1%	OK
alpha-BHC	25	27.05	8.2%	OK
Lindane	25	26.67	6.7%	OK
Heptachlor	25	26.86	7.4%	OK
Aldrin	25	26.28	5.1%	OK
B-BHC	25	28.44	13.8%	OK
D-BHC	25	27.05	8.2%	OK
Heptachlor Epoxide	25	27.1	8.4%	OK
Endosulfan-I	25	27.43	9.7%	OK
gamma-Chlordane	25	27.01	8.0%	OK
alpha-Chlordane	25	27	8.0%	OK
4,4'-DDE	50	54.21	8.4%	OK
Dieldrin	50	54.4	8.8%	OK
Endrin	50	57.38	14.8%	OK
4,4'-DDD	50	51.12	2.2%	OK
Endosulfan-II	50	51.95	3.9%	OK
4,4'-DDT	50	55.82	11.6%	OK
Endrin Aldehyde	50	42.66	14.7%	OK
Methoxychlor	250	284.96	14.0%	OK
Endosulfan Sulfate	50	51.48	3.0%	OK
Endrin Ketone	50	51.72	3.4%	OK
Decachlorobiphenyl	100	105	5.5%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079764
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.1	10.3%	OK
2,4-DDD	20	22.2	11.0%	OK
2,4-DDT	20	22.7	13.4%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099703
Date Analyzed: 11/9/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	48.13	3.7%	OK
alpha-BHC	25	23.78	4.9%	OK
Lindane	25	23.63	5.5%	OK
Heptachlor	25	23.87	4.5%	OK
Aldrin	25	24.22	3.1%	OK
B-BHC	25	24.86	0.6%	OK
D-BHC	25	24.15	3.4%	OK
Heptachlor Epoxide	25	24.47	2.1%	OK
Endosulfan-I	25	26.12	4.5%	OK
gamma-Chlordane	25	23.31	6.8%	OK
alpha-Chlordane	25	24.34	2.6%	OK
4,4'-DDE	50	47.56	4.9%	OK
Dieldrin	50	48.18	3.6%	OK
Endrin	50	48.02	4.0%	OK
4,4'-DDD	50	48.96	2.1%	OK
Endosulfan-II	50	48.47	3.1%	OK
4,4'-DDT	50	48.35	3.3%	OK
Endrin Aldehyde	50	43.75	12.5%	OK
Methoxychlor	250	235.15	5.9%	OK
Endosulfan Sulfate	50	45.83	8.3%	OK
Endrin Ketone	50	47.23	5.5%	OK
Decachlorobiphenyl	100	96	3.7%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099704
Date Analyzed: 11/9/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	21.8	8.9%	OK
2,4-DDD	20	21.7	8.6%	OK
2,4-DDT	20	21.6	7.9%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099717
Date Analyzed: 11/10/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	50.9	1.8%	OK
alpha-BHC	25	24.43	2.3%	OK
Lindane	25	25.47	1.9%	OK
Heptachlor	25	25.49	2.0%	OK
Aldrin	25	25.55	2.2%	OK
B-BHC	25	26.57	6.3%	OK
D-BHC	25	24.98	0.1%	OK
Heptachlor Epoxide	25	25.51	2.0%	OK
Endosulfan-I	25	26.08	4.3%	OK
gamma-Chlordane	25	25.42	1.7%	OK
alpha-Chlordane	25	25.6	2.4%	OK
4,4'-DDE	50	50.41	0.8%	OK
Dieldrin	50	51.04	2.1%	OK
Endrin	50	49.87	0.3%	OK
4,4'-DDD	50	50.11	0.2%	OK
Endosulfan-II	50	51.08	2.2%	OK
4,4'-DDT	50	50.48	1.0%	OK
Endrin Aldehyde	50	45.11	9.8%	OK
Methoxychlor	250	264.44	5.8%	OK
Endosulfan Sulfate	50	48.48	3.0%	OK
Endrin Ketone	50	51	2.0%	OK
Decachlorobiphenyl	100	99	1.1%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099718
Date Analyzed: 11/10/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.5	12.7%	OK
2,4-DDD	20	21.2	5.7%	OK
2,4-DDT	20	22.4	12.1%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099730
Date Analyzed: 11/10/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	52.33	4.7%	OK
alpha-BHC	25	22.66	9.4%	OK
Lindane	25	25.69	2.8%	OK
Heptachlor	25	26.67	6.7%	OK
Aldrin	25	26.1	4.4%	OK
B-BHC	25	26.98	7.9%	OK
D-BHC	25	26.04	4.2%	OK
Heptachlor Epoxide	25	26.79	7.2%	OK
Endosulfan-I	25	26.43	5.7%	OK
gamma-Chlordane	25	26.95	7.8%	OK
alpha-Chlordane	25	26.53	6.1%	OK
4,4'-DDE	50	52.03	4.1%	OK
Dieldrin	50	53.21	6.4%	OK
Endrin	50	54.69	9.4%	OK
4,4'-DDD	50	52.66	5.3%	OK
Endosulfan-II	50	53.18	6.4%	OK
4,4'-DDT	50	53.08	6.2%	OK
Endrin Aldehyde	50	45.23	9.5%	OK
Methoxychlor	250	265.73	6.3%	OK
Endosulfan Sulfate	50	50.39	0.8%	OK
Endrin Ketone	50	49.43	1.1%	OK
Decachlorobiphenyl	100	102	2.1%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099731
Date Analyzed: 11/10/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.8	13.9%	OK
2,4-DDD	20	22.1	10.5%	OK
2,4-DDT	20	23.0	15.0%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11119706
Date Analyzed: 11/11/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	51.44	2.9%	OK
alpha-BHC	25	26.94	7.8%	OK
Lindane	25	26.6	6.4%	OK
Heptachlor	25	24.99	0.0%	OK
Aldrin	25	25.9	3.6%	OK
B-BHC	25	26.21	4.8%	OK
D-BHC	25	26.01	4.0%	OK
Heptachlor Epoxide	25	25.76	3.0%	OK
Endosulfan-I	25	25.73	2.9%	OK
gamma-Chlordane	25	25.59	2.4%	OK
alpha-Chlordane	25	25.4	1.6%	OK
4,4'-DDE	50	50.13	0.3%	OK
Dieldrin	50	51.03	2.1%	OK
Endrin	50	47.51	5.0%	OK
4,4'-DDD	50	53.39	6.8%	OK
Endosulfan-II	50	50.7	1.4%	OK
4,4'-DDT	50	44.07	11.9%	OK
Endrin Aldehyde	50	45.7	8.6%	OK
Methoxychlor	250	242.66	2.9%	OK
Endosulfan Sulfate	50	45.38	9.2%	OK
Endrin Ketone	50	50.15	0.3%	OK
Decachlorobiphenyl	100	99	1.0%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11119706
Date Analyzed: 11/11/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	51.44	2.9%	OK
alpha-BHC	25	26.94	7.8%	OK
Lindane	25	26.6	6.4%	OK
Heptachlor	25	24.99	0.0%	OK
Aldrin	25	25.9	3.6%	OK
B-BHC	25	26.21	4.8%	OK
D-BHC	25	26.01	4.0%	OK
Heptachlor Epoxide	25	25.76	3.0%	OK
Endosulfan-I	25	25.73	2.9%	OK
gamma-Chlordane	25	25.59	2.4%	OK
alpha-Chlordane	25	25.4	1.6%	OK
4,4'-DDE	50	50.13	0.3%	OK
Dieldrin	50	51.03	2.1%	OK
Endrin	50	47.51	5.0%	OK
4,4'-DDD	50	53.39	6.8%	OK
Endosulfan-II	50	50.7	1.4%	OK
4,4'-DDT	50	44.07	11.9%	OK
Endrin Aldehyde	50	45.7	8.6%	OK
Methoxychlor	250	242.66	2.9%	OK
Endosulfan Sulfate	50	45.38	9.2%	OK
Endrin Ketone	50	50.15	0.3%	OK
Decachlorobiphenyl	100	99	1.0%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11119723
Date Analyzed: 11/12/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	54.45	8.9%	OK
alpha-BHC	25	27.51	10.0%	OK
Lindane	25	25.73	2.9%	OK
Heptachlor	25	24.34	2.6%	OK
Aldrin	25	24.78	0.9%	OK
B-BHC	25	25.59	2.4%	OK
D-BHC	25	25.71	2.8%	OK
Heptachlor Epoxide	25	25.31	1.2%	OK
Endosulfan-I	25	26.25	5.0%	OK
gamma-Chlordane	25	24.06	3.8%	OK
alpha-Chlordane	25	24.5	2.0%	OK
4,4'-DDE	50	48.02	4.0%	OK
Dieldrin	50	49.33	1.3%	OK
Endrin	50	46.88	6.2%	OK
4,4'-DDD	50	51.61	3.2%	OK
Endosulfan-II	50	47.05	5.9%	OK
4,4'-DDT	50	41.65	16.7%	
Endrin Aldehyde	50	42.76	14.5%	OK
Methoxychlor	250	225.7	9.7%	OK
Endosulfan Sulfate	50	40.35	19.3%	
Endrin Ketone	50	49.24	1.5%	OK
Decachlorobiphenyl	100	98	2.2%	OK

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11079720
Date Analyzed: 11/7/97

DB-1701

Compound	Response (Area)
4,4'-DDE	4989
4,4'-DDD	0
4,4'-DDT	458385
Endrin Aldehyde	6607
Endrin Ketone	11561
Endrin	239546
DDT % Breakdown	1.1%
Endrin % Breakdown	7.0%
Total % Breakdown	8.1%

DB-17

Compound	Response (Area)
4,4'-DDE	0
4,4'-DDD	0
4,4'-DDT	540552
Endrin Aldehyde	16988
Endrin Ketone	16574
Endrin	250905
DDT % Breakdown	0.0%
Endrin % Breakdown	11.8%
Total % Breakdown	11.8%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11079734
Date Analyzed: 11/8/97

DB-1701

Compound	Response (Area)
4,4'-DDE	84909
4,4'-DDD	4923
4,4'-DDT	513736
Endrin Aldehyde	7180
Endrin Ketone	8106
Endrin	249304
DDT % Breakdown	14.9%
Endrin % Breakdown	5.8%
Total % Breakdown	20.7%

DB-17

Compound	Response (Area)
4,4'-DDE	78321
4,4'-DDD	16415
4,4'-DDT	614599
Endrin Aldehyde	11025
Endrin Ketone	0
Endrin	268717
DDT % Breakdown	13.4%
Endrin % Breakdown	3.9%
Total % Breakdown	17.3%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11079748
Date Analyzed: 11/8/97

DB-1701

Compound	Response (Area)
4,4'-DDE	54872
4,4'-DDD	6156
4,4'-DDT	555540
Endrin Aldehyde	5636
Endrin Ketone	8600
Endrin	250267
DDT % Breakdown	9.9%
Endrin % Breakdown	5.4%
Total % Breakdown	15.3%

DB-17

Compound	Response (Area)
4,4'-DDE	20568
4,4'-DDD	25573
4,4'-DDT	649211
Endrin Aldehyde	11424
Endrin Ketone	14284
Endrin	273089
DDT % Breakdown	6.6%
Endrin % Breakdown	8.6%
Total % Breakdown	15.2%

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SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11079762
Date Analyzed: 11/8/97

DB-1701

Compound	Response (Area)
4,4'-DDE	7153
4,4'-DDD	0
4,4'-DDT	486319
Endrin Aldehyde	0
Endrin Ketone	6007
Endrin	269682
DDT % Breakdown	1.4%
Endrin % Breakdown	2.2%
Total % Breakdown	3.6%

DB-17

Compound	Response (Area)
4,4'-DDE	0
4,4'-DDD	0
4,4'-DDT	592084
Endrin Aldehyde	0
Endrin Ketone	0
Endrin	292872
DDT % Breakdown	0.0%
Endrin % Breakdown	0.0%
Total % Breakdown	0.0%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11099702
Date Analyzed: 11/9/97

DB-1701

Compound	Response (Area)
4,4'-DDE	0
4,4'-DDD	0
4,4'-DDT	413759
Endrin Aldehyde	5971
Endrin Ketone	0
Endrin	222506
DDT % Breakdown	0.0%
Endrin % Breakdown	2.6%
Total % Breakdown	2.6%

DB-17

Compound	Response (Area)
4,4'-DDE	0
4,4'-DDD	0
4,4'-DDT	521371
Endrin Aldehyde	12076
Endrin Ketone	13158
Endrin	250984
DDT % Breakdown	0.0%
Endrin % Breakdown	9.1%
Total % Breakdown	9.1%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11099716
Date Analyzed: 11/10/97

DB-1701

Compound	Response (Area)
4,4'-DDE	4773
4,4'-DDD	0
4,4'-DDT	459846
Endrin Aldehyde	10254
Endrin Ketone	10938
Endrin	239405
DDT % Breakdown	1.0%
Endrin % Breakdown	8.1%
Total % Breakdown	9.2%

DB-17

Compound	Response (Area)
4,4'-DDE	5777
4,4'-DDD	4831
4,4'-DDT	536432
Endrin Aldehyde	14372
Endrin Ketone	9735
Endrin	256376
DDT % Breakdown	1.9%
Endrin % Breakdown	8.6%
Total % Breakdown	10.5%

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SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11099729
Date Analyzed: 11/10/97

DB-1701

Compound	Response (Area)
4,4'-DDE	5634
4,4'-DDD	0
4,4'-DDT	480295
Endrin Aldehyde	6989
Endrin Ketone	9767
Endrin	259008
DDT % Breakdown	1.2%
Endrin % Breakdown	6.1%
Total % Breakdown	7.2%

DB-17

Compound	Response (Area)
4,4'-DDE	4576
4,4'-DDD	0
4,4'-DDT	564460
Endrin Aldehyde	11061
Endrin Ketone	7693
Endrin	277523
DDT % Breakdown	0.8%
Endrin % Breakdown	6.3%
Total % Breakdown	7.1%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11119705
Date Analyzed: 11/11/97

DB-1701

Compound	Response (Area)
4,4'-DDE	0
4,4'-DDD	17780
4,4'-DDT	387637
Endrin Aldehyde	7436
Endrin Ketone	18575
Endrin	219702
DDT % Breakdown	4.4%
Endrin % Breakdown	10.6%
Total % Breakdown	15.0%

DB-17

Compound	Response (Area)
4,4'-DDE	0
4,4'-DDD	22672
4,4'-DDT	443630
Endrin Aldehyde	11747
Endrin Ketone	17085
Endrin	228383
DDT % Breakdown	4.9%
Endrin % Breakdown	11.2%
Total % Breakdown	16.1%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11119722
Date Analyzed: 11/12/97

DB-1701

Compound	Response (Area)
4,4'-DDE	0
4,4'-DDD	37280
4,4'-DDT	336176
Endrin Aldehyde	4358
Endrin Ketone	21839
Endrin	214724
DDT % Breakdown	10.0%
Endrin % Breakdown	10.9%
Total % Breakdown	20.9%

DB-17

Compound	Response (Area)
4,4'-DDE	0
4,4'-DDD	32170
4,4'-DDT	354103
Endrin Aldehyde	0
Endrin Ketone	16525
Endrin	200337
DDT % Breakdown	8.3%
Endrin % Breakdown	7.6%
Total % Breakdown	15.9%

Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy East • Tacoma, WA 98424
(253) 922-2310 • FAX (253) 922-5047
e-mail: SoundL@aol.com

TRANSMITTAL MEMORANDUM

DATE: November 19, 1997

TO: Mike Webb
Garry Struthers Associates, Inc.
3150 Richards Road, Ste. 100
Bellevue, WA 98005-4446

PROJECT: Wenatchee Test Plot Soils, USACOE

REPORT NUMBER: 68599

Enclosed are the test results for five samples received at Sound Analytical Services on November 5, 1997.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chain-of-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Lila Transue

Lila Transue
Project Manager

Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy East • Tacoma, WA 98424
(253) 922-2310 • FAX (253) 922-5047
e-mail: SoundL@aol.com

ANALYTICAL NARRATIVE

Client: Garry Struthers Associates, Inc.

Date: November 19, 1997

Project: WTFREC

Lab No.: 68599

Delivered By: Client

Condition of samples upon receipt: Samples were received in good condition. Chain of custody was in order.

Sample Identification:

Lab. No.	Client ID	Date Sampled	Matrix	Description
68599-1	SW1AWN04715	11-04-97	Soil	Dry, light brown, fine sand
68599-2	SW1BWN04716	11-04-97	Soil	Dry, light brown, fine sand
68599-3	SW5ANN04717	11-04-97	Soil	Dry, light brown, fine sand
68599-4	SW7ANN04718	11-04-97	Soil	Dry, light brown, fine sand
68599-5	SW8ANN04719	11-04-97	Soil	Dry, light brown, fine sand

SAMPLE EXTRACTION AND ANALYSIS

ORGANOCHLORINE PESTICIDES

Samples 68599-1 through 68599-5 were analyzed for organochlorine pesticides in accordance with EPA SW-846 Method 8081. The samples were extracted in accordance with EPA SW-846 Method 3540 on 11-07-97 and analyzed on 11-07-97, 11-08-97 and 11-09-97.

Sample 68599-4 required dilution prior to analysis. Surrogate recoveries could not be determined for this sample.

The samples required secondary dilution analyses due to the high concentrations of various target analytes.

All detected compounds were confirmed as present using a second dissimilar column. All relative percent difference values between the two analytical columns were less than or equal to 40%, except for 4,4'-DDD, which coelutes with 2,4'-DDT on the confirmation column, as most samples that contained 4,4'-DDD contained significant concentrations of 2,4'-DDT.

The percent recovery of 4,4'-DDE in the matrix spike and matrix spike duplicate analysis of sample 68600-10 (batch QC) was outside the quality control limits due to the high level of 4,4'-DDE in the original sample.

Two DDT/Endrin evaluation standard breakdowns (files 11079734 and 11079748) were slightly above project specified limits.

All other quality control parameters were within acceptance limits.

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	SW1AWN04715
Lab ID:	68599-01
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	92.29
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	High
TCMX	74		65	130
Decachlorobiphenyl	109		65	130

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Aldrin	ND		0.44	0.066	
alpha-BHC	ND		18	0.068	
beta-BHC	ND		18	0.13	
delta-BHC	ND		18	0.069	
gamma-BHC (Lindane)	ND		18	0.15	
Chlordane (technical)	ND		8.9	2.2	
4,4'-DDD		39	18	0.15	C
4,4'-DDE		6100	18	0.32	D C
4,4'-DDT		3200	18	1.1	D C
2,4'-DDD		52	18	1.3	C
2,4'-DDE		82	18	1.3	C
2,4'-DDT		1200	18	1.3	D C
Dieldrin	ND		0.89	0.063	
Endosulfan I	ND		1.8	0.29	
Endosulfan II	ND		1.8	0.15	
Endosulfan sulfate	ND		1.8	0.21	
Endrin		15	0.89	0.11	C
Endrin aldehyde		3.2	18	0.79	J C
Heptachlor	ND		18	0.09	
Heptachlor epoxide	ND		18	0.15	
Methoxychlor	ND		18	2	
Toxaphene	ND		18	39	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	SW1BWN04716
Lab ID:	68599-02
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	91.85
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	92		65	130
Decachlorobiphenyl	119		65	130

Sample results are on a dry weight basis.

Analyte		**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	ND		0.44	0.066	
alpha-BHC	ND		18	0.068	
beta-BHC	ND		18	0.13	
delta-BHC	ND		18	0.069	
gamma-BHC (Lindane)	ND		18	0.15	
Chlordane (technical)	ND		8.9	2.2	
4,4'-DDD		8.2	18	0.15	J C
4,4'-DDE		3200	18	0.32	D C
4,4'-DDT		1100	18	1.1	D C
2,4'-DDD		21	18	1.3	C
2,4'-DDE		41	18	1.3	C
2,4'-DDT		420	18	1.3	D C
Dieldrin	ND		0.89	0.063	
Endosulfan I	ND		1.8	0.29	
Endosulfan II	ND		1.8	0.15	
Endosulfan sulfate	ND		1.8	0.21	
Endrin		3	0.89	0.11	C
Endrin aldehyde		2.4	18	0.79	J C
Heptachlor	ND		18	0.09	
Heptachlor epoxide	ND		18	0.15	
Methoxychlor	ND		18	2	
Toxaphene	ND		18	39	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	SW5ANN04717
Lab ID:	68599-03
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	90.81
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	High
TCMX	70		65	130
Decachlorobiphenyl	83		65	130

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Aldrin	ND		0.43	0.064	
alpha-BHC	ND		17	0.066	
beta-BHC	ND		17	0.12	
delta-BHC	ND		17	0.067	
gamma-BHC (Lindane)	ND		17	0.15	
Chlordane (technical)	ND		8.6	2.1	
4,4'-DDD		5.7	17	0.15	J C
4,4'-DDE		2400	17	0.31	D C
4,4'-DDT		570	17	1.1	D C
2,4'-DDD		18	17	1.3	C
2,4'-DDE		62	17	1.3	C
2,4'-DDT		380	17	1.3	D C
Dieldrin	ND		0.86	0.061	
Endosulfan I	ND		1.7	0.28	
Endosulfan II	ND		1.7	0.14	
Endosulfan sulfate	ND		1.7	0.21	
Endrin		6.6	0.86	0.1	C
Endrin aldehyde	ND		17	0.77	
Heptachlor	ND		17	0.088	
Heptachlor epoxide	ND		17	0.14	
Methoxychlor	ND		17	1.9	
Toxaphene	ND		17	38	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	SW7ANN04718
Lab ID:	68599-04
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	91.51
Dilution Factor	20

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	-	X8	65	130
Decachlorobiphenyl	-	X8	65	130

Sample results are on a dry weight basis.

Analyte		**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	ND		9.1	1.4	
alpha-BHC	ND		360	1.4	
beta-BHC	ND		360	2.6	
delta-BHC	ND		360	1.4	
gamma-BHC (Lindane)	ND		360	3.1	
Chlordane (technical)	ND		180	45	
4,4'-DDD		42	360	3.1	J C
4,4'-DDE		5800	360	6.5	D C
4,4'-DDT		2600	360	23	D C
2,4'-DDD		160	360	27	J C
2,4'-DDE		120	360	27	J C
2,4'-DDT		1100	360	27	C
Dieldrin		150	18	1.3	C
Endosulfan I	ND		36	5.9	
Endosulfan II	ND		36	3	
Endosulfan sulfate	ND		36	4.4	
Endrin	ND		18	2.2	
Endrin aldehyde	ND		360	16	
Heptachlor	ND		360	1.9	
Heptachlor epoxide	ND		360	3	
Methoxychlor	ND		360	40	
Toxaphene	ND		360	800	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	SW8ANN04719
Lab ID:	68599-05
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/8/97
% Solids	91.92
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	70		65	130
Decachlorobiphenyl	90		65	130

Sample results are on a dry weight basis.

Analyte		**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	ND		0.43	0.064	
alpha-BHC	ND		17	0.065	
beta-BHC	ND		17	0.12	
delta-BHC	ND		17	0.067	
gamma-BHC (Lindane)	ND		17	0.15	
Chlordane (technical)	ND		8.5	2.1	
4,4'-DDD		66	17	0.14	C
4,4'-DDE		6700	17	0.31	D C
4,4'-DDT		5200	17	1.1	D C
2,4'-DDD		95	17	1.3	C
2,4'-DDE		130	17	1.3	C
2,4'-DDT		1700	17	1.3	D C
Dieldrin		40	0.85	0.061	C
Endosulfan I	ND		1.7	0.28	
Endosulfan II		34	1.7	0.14	C
Endosulfan sulfate	ND		1.7	0.21	
Endrin		22	0.85	0.1	C
Endrin aldehyde		17	17	0.76	C
Heptachlor	ND		17	0.087	
Heptachlor epoxide		2.1	17	0.14	J C
Methoxychlor		35	17	1.9	C
Toxaphene	ND		17	37	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - PE829
Date Received:	-
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	93		65	130
Decachlorobiphenyl	114		65	130

Sample results are on an as received basis.

Analyte		**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	ND		0.42	0.062	
alpha-BHC	ND		17	0.064	
beta-BHC	ND		17	0.12	
delta-BHC	ND		17	0.065	
gamma-BHC (Lindane)	ND		17	0.14	
Chlordane (technical)	ND		8.3	2	
4,4'-DDD	ND		17	0.14	
4,4'-DDE	ND		17	0.3	
4,4'-DDT	ND		17	1	
2,4'-DDD	ND		17	1.2	
2,4'-DDE	ND		17	1.2	
2,4'-DDT	ND		17	1.2	
Dieldrin	ND		0.83	0.059	
Endosulfan I	ND		1.7	0.27	
Endosulfan II	ND		1.7	0.14	
Endosulfan sulfate	ND		1.7	0.2	
Endrin	ND		0.83	0.1	
Endrin aldehyde	ND		17	0.74	
Heptachlor	ND		17	0.085	
Heptachlor epoxide	ND		17	0.14	
Methoxychlor	ND		17	1.9	
Toxaphene	ND		17	36	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	PE829
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
QC Batch ID:	PE829

Organochlorine Pesticides by USEPA Method 8081

Parameter Name	Blank Result (ug/kg)	Spike Amount (ug/kg)	BS Result (ug/kg)	BS % Rec.	Flag
Aldrin	0	21	15	73	
gamma-BHC (Lindane)	0	21	16	75	
4,4'-DDD	0	42	35	83	
4,4'-DDE	0	42	36	88	
4,4'-DDT	0	42	33	80	
2,4'-DDD	0	42	36	87	
2,4'-DDE	0	42	35	85	
2,4'-DDT	0	42	36	86	
Dieldrin	0	42	37	88	
Endrin	0	42	36	87	
Heptachlor	0	21	16	75	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	
Lab ID:	SPE829
Date Received:	-
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	70		65	130
Decachlorobiphenyl	89		65	130

Sample results are on an as received basis.

Analyte	**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	15	0.42	0.062	C
gamma-BHC (Lindane)	16	17	0.14	J C
4,4'-DDD	35	17	0.14	C
4,4'-DDE	36	17	0.3	C
4,4'-DDT	33	17	1	C
2,4'-DDD	36	17	1.2	C
2,4'-DDE	35	17	1.2	C
2,4'-DDT	36	17	1.2	C
Dieldrin	37	0.83	0.059	C
Endrin	36	0.83	0.1	C
Heptachlor	16	17	0.085	J C

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	FC2A2N04710
Lab ID:	68600-10
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
QC Batch ID:	PE829

Organochlorine Pesticides by USEPA Method 8081

Compound Name	Sample Result (ug/kg)	Spike Amount (ug/kg)	MS Result (ug/kg)	MS % Rec.	MSD Result (ug/kg)	MSD % Rec.	RPD	Flag
Aldrin	0	21.2	18.3	86.7	18.3	87.7	1.1	
gamma-BHC (Lindane)	0	21.2	17.3	81.8	17.8	85.4	4.3	
4,4'-DDD	4.2	42.3	44.3	94.7	43.5	94	0.74	
4,4'-DDE	440	42.3	360	0	359	0	0	X7a
4,4'-DDT	190	42.3	251	135	238	104	26	
2,4'-DDD	3.3	42.3	48.5	107	48	107	0	
2,4'-DDE	9.8	42.3	47.5	89.2	48.6	92.9	4.1	
2,4'-DDT	79	42.3	124	106	122	104	1.9	
Dieldrin	22	42.3	75.6	127	78.6	136	6.8	
Endrin	1.9	42.3	49.9	113	47.7	110	2.7	
Heptachlor	0	21.2	18.7	88.5	18.7	89.4	1	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC2A2N04710 - ms
Lab ID:	68600S10
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	97.22
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	81		65	130
Decachlorobiphenyl	99		65	130

Sample results are on a dry weight basis.

Analyte	**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	18	0.42	0.063	C
gamma-BHC (Lindane)	17	17	0.15	C
4,4'-DDD	44	17	0.14	C
4,4'-DDE	360	17	0.3	E C
4,4'-DDT	250	17	1.1	E C
2,4'-DDD	49	17	1.3	C
2,4'-DDE	47	17	1.3	C
2,4'-DDT	120	17	1.3	C
Dieldrin	76	0.85	0.06	C
Endrin	50	0.85	0.1	C
Heptachlor	19	17	0.086	C

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC2A2N04710 - msd
Lab ID:	68600D10
Date Received:	11/5/97
Date Prepared:	11/7/97
Date Analyzed:	11/7/97
% Solids	97.22
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	82		65	130
Decachlorobiphenyl	105		65	130

Sample results are on a dry weight basis.

Analyte	**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	18	0.42	0.062	C
gamma-BHC (Lindane)	18	17	0.14	C
4,4'-DDD	43	17	0.14	C
4,4'-DDE	360	17	0.3	E C
4,4'-DDT	240	17	1.1	E C
2,4'-DDD	48	17	1.3	C
2,4'-DDE	49	17	1.3	C
2,4'-DDT	120	17	1.3	C
Dieldrin	79	0.84	0.06	C
Endrin	48	0.84	0.1	C
Heptachlor	19	17	0.085	C

DATA QUALIFIER DEFINITIONS

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE: (253) 922-2310 - FAX: (253) 922-5047

DATA QUALIFIERS AND ABBREVIATIONS

B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).

B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).

C: Additional confirmation performed.

D: The reported result for this analyte is calculated based on a secondary dilution factor.

E: The concentration of this analyte exceeded the instrument calibration range.

J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

MCL: Maximum Contaminant Level

MDL: Method Detection Limit

N: See analytical narrative.

ND: Not Detected

PQL: Practical Quantitation Limit

X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____ .

X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.

X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.

X4: RPD for duplicates outside advisory QC limits. Sample was re-analyzed with similar results.

X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.

X5: Matrix spike was diluted out during analysis.

X6: Recovery of matrix spike was outside advisory QC limits. Sample was re-analyzed with similar results.

X7: Recovery of matrix spike outside advisory QC limits. Matrix interference is indicated by blank spike recovery data.

X7a: Recovery and/or RPD values for MS/MSD outside advisory QC limits due to high contaminant levels.

X8: Surrogate was diluted out during analysis.

X9: Surrogate recovery outside advisory QC limits due to matrix composition.

CHAIN OF CUSTODY

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS

38544

4813 Pacific Hwy. East
Tacoma, Washington 98424
(253) 922-2310 • FAX (253) 922-5047

9/2

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS COC #11

CLIENT: GARRY STRUTHERS ASSOC
PROJECT NAME: WTFREC
CONTACT: MIKE WEBB
PHONE NO: 425-519-0300 X217

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	OC Pesticides
1	SW1AWN04715	11/4/97	1322	SOIL	1														✓
2	SW1BWN04716	11/4/97	1348	↓	1														✓
3	SW5ANN04717	11/4/97	1410	↓	1														✓
4	SW7ANN04718	11/4/97	1436	↓	1														✓
5	SW8ANN04719	11/4/97	1455	↓	1														✓

	Signature	Printed Name	Firm	Time / Date
Relinquished By	Michael Webb	Michael Webb	GSA Inc	1155 am 11/5/97
Received By	S Giang	Giang	SAS	1155 11/5/97
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:
SAMPLED BY KIM CONVERSE
These samples will be disposed of 45 days after receipt.
Check this box to have samples returned ☐.
LAB CONTACT KATIE DOWNIE
USACE PROJECT — USE QAPP
72 HR TAT

#1 #1 MW

68577
68600
SAS LAB NO. 68600/

PAGE 1 OF 2

COOLER RECEIPT FORM

PROJECT: Wenatchee Test Plot. Soils, USACE W.O.# —

COOLER RECEIVED ON 11-5-97 AND OPENED ON 11-5-97 BY Siang

Siang
(SIGNATURE)

Temperature upon receipt: cooler 6 °C
temp. blank _____ °C

1. Were custody seals on outside of cooler and intact? YES (NO)
   a. If YES, how many and where: Hand delivered
   b. Were signature and date correct? YES (NO)
2. Were custody papers taped to lid inside cooler? YES (NO)
3. Were custody papers properly filled out (ink, signed, etc)? (YES) NO
4. Did you sign custody papers in the appropriate place? (YES) NO
5. Did you attach shipper's packing slip to this form? YES (NO)
6. What kind of packing material was used? bubble wrap
7. Was sufficient ice used (if appropriate)? (YES) NO
8. Were all bottles sealed in separate plastic bags? (YES) NO
9. Did all bottles arrive in good condition (unbroken)? (YES) NO
10. Were all bottle labels complete (no., date, signed, pres, etc)? (YES) NO
11. Did all bottle labels and tags agree with custody papers? (YES) NO
12. Were correct bottles used for the test indicated? (YES) NO
13. If present, were VOA vials checked for absence of air bubbles and noted if found? N/A YES NO
14. Adequate volume of VOA vials received per sample? N/A YES NO
15. Was sufficient amount of sample sent in each bottle? (YES) NO
16. Were correct preservatives used? N/A YES NO
17. Corrective action taken, if necessary:
    a. Name of person contacted: _____
    b. Date: _____

68599
68600
SAS LAB NO. 68601

PAGE 2 OF 2

COOLER RECEIPT FORM

PROJECT: Wenatchee Test Pilot Series, USACOE W.O.# —

COOLER RECEIVED ON 11-5-97 AND OPENED ON 11-5-97 BY S Siang

S Siang
(SIGNATURE)

Temperature upon receipt: cooler 4 °C
temp. blank 3 °C

1.	Were custody seals on outside of cooler and intact?	YES (NO)
	a. If YES, how many and where: hand delivered	
	b. Were signature and date correct?	YES (NO)
2.	Were custody papers taped to lid inside cooler?	YES (NO)
3.	Were custody papers properly filled out (ink, signed, etc)?	(YES) NO
4.	Did you sign custody papers in the appropriate place?	(YES) NO
5.	Did you attach shipper's packing slip to this form?	YES (NO)
6.	What kind of packing material was used? bubblewrap	
7.	Was sufficient ice used (if appropriate)?	(YES) NO
8.	Were all bottles sealed in separate plastic bags?	(YES) NO
9.	Did all bottles arrive in good condition (unbroken)?	(YES) NO
10.	Were all bottle labels complete (no., date, signed, pres, etc)?	(YES) NO
11.	Did all bottle labels and tags agree with custody papers?	(YES) NO
12.	Were correct bottles used for the test indicated?	(YES) NO
13.	If present, were VOA vials checked for absence of air bubbles and noted if found? N/A	YES NO
14.	Adequate volume of VOA vials received per sample? N/A	YES NO
15.	Was sufficient amount of sample sent in each bottle?	(YES) NO
16.	Were correct preservatives used? N/A	YES NO

17. Corrective action taken, if necessary:

a. Name of person contacted: _____
b. Date: _____

CHLORINATED PESTICIDE DATA PACKAGE

INITIAL CALIBRATION DATA

Pesticide %RSD

Date Analyzed: 7-Nov-97
Instrument: 3400 Dual Column
Analytical Column: DB-1701

COMPOUND	A RF	B RF	C RF	D RF	E RF	F RF	Average RF	Average RF	Stdev.	%RSD	Correlation Coefficient
TCMX	5336	5219	5339	4823	4795	4918	5072	1.9717E-04	233	4.6	0.9951
alpha-BHC	8223	8202	8330	8393	8093	8108	8225	1.2158E-04	109	1.3	0.9975
Lindane	7593	7274	7583	7199	6988	7245	7314	1.3673E-04	214	2.9	0.9995
Heptachlor	7563	7557	7689	7367	7151	7497	7471	1.3386E-04	172	2.3	0.9992
Aldrin	7724	7601	7580	7047	6892	7120	7327	1.3648E-04	318	4.3	0.9995
B-BHC	2729	2669	2705	2584	2474	2542	2617	3.8212E-04	91	3.5	0.9996
D-BHC	5668	5903	6236	5958	5903	6229	5983	1.6714E-04	199	3.3	0.9990
Heptachlor Epoxide	5494	5582	5822	5539	5444	5591	5579	1.7925E-04	120	2.2	0.9997
Endosulfan-I	4857	5054	5551	4976	4798	4799	5006	1.9977E-04	261	5.2	0.9965
gamma-Chlordane	6509	6217	6293	6132	6067	6335	6259	1.5977E-04	144	2.3	0.9993
alpha-Chlordane	5733	5825	6145	5784	5648	5772	5818	1.7189E-04	156	2.7	0.9997
4,4'-DDE	5850	5652	5849	5478	5400	5505	5622	1.7787E-04	177	3.2	0.9998
Dieldrin	5340	5091	5202	4912	4923	4988	5076	1.9700E-04	155	3.0	0.9999
Endrin	4141	4283	4212	4160	4001	4241	4173	2.3963E-04	90	2.2	0.9989
4,4'-DDD	3303	3618	3770	3640	3609	3784	3621	2.7619E-04	158	4.4	0.9992
Endosulfan-II	4049	4305	4345	4099	4037	4211	4174	2.3956E-04	121	2.9	0.9951
4,4'-DDT	4077	4032	4266	3786	3646	3515	3887	2.5727E-04	260	6.7	0.9968
Endrin Aldehyde	1896	2345	2501	2812	2866	3111	2588	3.8635E-04	397	15.3	0.9950
Methox/Endo Sulfate	2396	2292	2357	2300	2223	2192	2293	4.3606E-04	71	3.1	0.9958
Endrin Ketone	4200	4406	4463	4245	4281	4409	4334	2.3075E-04	97	2.2	0.9996
Decachlorobiphenyl	4171	3887	3806	3583	3491	3637	3762	2.6578E-04	226	6.0	0.9993

Sample Concentration = (Linear Regression Value) x (Analyte Response)

Pesticide %RSD

Date Analyzed: 7-Nov-97
Instrument: 3400 Dual Column
Analytical Column: DB-17

COMPOUND	A RF	B RF	C RF	D RF	E RF	F RF	Average RF	Average RF	Stdev.	%RSD	Correlation Coefficient
TCMX	6741	6408	6505	6306	6334	6850	6524	1.5328E-04	204	3.1	0.9965
alpha-BHC	8685	9300	9571	9572	9617	10079	9471	1.0559E-04	420	4.4	0.9992
Lindane	8062	8488	8705	8387	8526	9152	8553	1.1691E-04	330	3.9	0.9981
beta-BHC	4003	3264	3389	3155	3087	3214	3352	2.9833E-04	306	9.1	0.9993
Heptachlor	8947	9048	8400	8097	8039	8508	8507	1.1756E-04	384	4.5	0.9988
D-BHC	6469	7139	7239	6980	7117	7737	7113	1.4058E-04	374	5.3	0.9973
Aldrin	9375	8825	8718	8316	8340	8808	8730	1.1454E-04	355	4.1	0.9988
Heptachlor Epoxide	7464	6710	6692	6288	6294	6574	6670	1.4992E-04	393	5.9	0.9992
gamma-Chlordane	6570	7555	7430	6935	6791	7064	7057	1.4169E-04	344	4.9	0.9993
alpha-Chlordane	6475	6966	7036	6524	6414	6705	6687	1.4955E-04	240	3.6	0.9992
Endosulfan-I	4978	5815	6049	5881	5959	6239	5820	1.7181E-04	400	6.9	0.9992
4,4'-DDE	6594	6096	6295	6070	6227	6904	6364	1.5713E-04	296	4.7	0.9960
Dieldrin	5178	5416	5557	5388	5565	6150	5542	1.8043E-04	301	5.4	0.9961
Endrin	4297	4467	4548	4490	4536	4949	4548	2.1989E-04	197	4.3	0.9973
4,4'-DDD	5824	4064	4299	4093	4221	4598	4516	2.2142E-04	610	13.5	0.9970
Endosulfan-II	4262	4288	4384	4270	4402	4775	4397	2.2744E-04	178	4.0	0.9974
4,4'-DDT	4871	4535	4726	4575	4731	5190	4771	2.0958E-04	217	4.6	0.9966
Endrin Aldehyde	2995	3168	3337	3202	3248	3536	3248	3.0792E-04	165	5.1	0.9973
Endosulfan Sulfate	3687	3725	3862	3793	3881	4185	3856	2.5936E-04	162	4.2	0.9978
Methoxychlor	1842	1924	1979	1941	2072	2130	1981	5.0470E-04	96	4.8	0.9992
Endrin Ketone	5159	4808	4985	4810	4981	5471	5036	1.9858E-04	228	4.5	0.9965
Decachlorobiphenyl	5437	4708	4747	4347	4194	4412	4641	2.1549E-04	406	8.7	0.9989

Sample Concentration = (Linear Regression Value) x (Analyte Response)

CONTINUING CALIBRATION DATA

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079721
Date Analyzed: 11/7/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	40	43.46	8.7%	OK
alpha-BHC	20	21.2	6.0%	OK
Lindane	20	21.6	8.0%	OK
Heptachlor	20	21.35	6.8%	OK
Aldrin	20	22.34	11.7%	OK
B-BHC	20	21.99	9.9%	OK
D-BHC	20	22.44	12.2%	OK
Heptachlor Epoxide	20	22.57	12.9%	OK
Endosulfan-I	20	22.5	12.5%	OK
gamma-Chlordane	20	21.81	9.0%	OK
alpha-Chlordane	20	22.9	14.5%	OK
4,4'-DDE	40	45.62	14.1%	OK
Dieldrin	40	44.52	11.3%	OK
Endrin	40	45.32	13.3%	OK
4,4'-DDD	40	43.53	8.8%	OK
Endosulfan-II	40	41.84	4.6%	OK
4,4'-DDT	40	42.27	5.7%	OK
Endrin Aldehyde	40	36.09	9.8%	OK
Methoxychlor	200	227.24	13.6%	OK
Endosulfan Sulfate	40	39.92	0.2%	OK
Endrin Ketone	40	38.56	3.6%	OK
Decachlorobiphenyl	80	88	10.1%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079722
Date Analyzed: 11/7/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.2	10.9%	OK
2,4-DDD	20	22.1	10.3%	OK
2,4-DDT	20	21.8	8.9%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079735
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	52.61	5.2%	OK
alpha-BHC	25	26.98	7.9%	OK
Lindane	25	26.12	4.5%	OK
Heptachlor	25	26.2	4.8%	OK
Aldrin	25	26.84	7.4%	OK
B-BHC	25	27.16	8.6%	OK
D-BHC	25	26.61	6.4%	OK
Heptachlor Epoxide	25	26.79	7.2%	OK
Endosulfan-I	25	27.84	11.4%	OK
gamma-Chlordane	25	25.79	3.2%	OK
alpha-Chlordane	25	25.71	2.8%	OK
4,4'-DDE	50	56.31	12.6%	OK
Dieldrin	50	53.67	7.3%	OK
Endrin	50	55.21	10.4%	OK
4,4'-DDD	50	53.18	6.4%	OK
Endosulfan-II	50	52.09	4.2%	OK
4,4'-DDT	50	54.56	9.1%	OK
Endrin Aldehyde	50	49.65	0.7%	OK
Methoxychlor	250	275.97	10.4%	OK
Endosulfan Sulfate	50	51.36	2.7%	OK
Endrin Ketone	50	52.78	5.6%	OK
Decachlorobiphenyl	100	108	8.2%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079736
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.5	12.6%	OK
2,4-DDD	20	21.8	9.0%	OK
2,4-DDT	20	22.3	11.7%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079749
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	51.65	3.3%	OK
alpha-BHC	25	26.38	5.5%	OK
Lindane	25	25.92	3.7%	OK
Heptachlor	25	25.97	3.9%	OK
Aldrin	25	26.44	5.8%	OK
B-BHC	25	26.78	7.1%	OK
D-BHC	25	26.5	6.0%	OK
Heptachlor Epoxide	25	26.65	6.6%	OK
Endosulfan-I	25	25.6	2.4%	OK
gamma-Chlordane	25	27.04	8.2%	OK
alpha-Chlordane	25	25.49	2.0%	OK
4,4'-DDE	50	51.73	3.5%	OK
Dieldrin	50	52.96	5.9%	OK
Endrin	50	53.86	7.7%	OK
4,4'-DDD	50	53.12	6.2%	OK
Endosulfan-II	50	49.66	0.7%	OK
4,4'-DDT	50	56.2	12.4%	OK
Endrin Aldehyde	50	43.59	12.8%	OK
Methoxychlor	250	270.99	8.4%	OK
Endosulfan Sulfate	50	50.28	0.6%	OK
Endrin Ketone	50	51.54	3.1%	OK
Decachlorobiphenyl	100	105	4.7%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079750
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.6	13.0%	OK
2,4-DDD	20	22.0	10.1%	OK
2,4-DDT	20	22.5	12.4%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079763
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	51.57	3.1%	OK
alpha-BHC	25	27.05	8.2%	OK
Lindane	25	26.67	6.7%	OK
Heptachlor	25	26.86	7.4%	OK
Aldrin	25	26.28	5.1%	OK
B-BHC	25	28.44	13.8%	OK
D-BHC	25	27.05	8.2%	OK
Heptachlor Epoxide	25	27.1	8.4%	OK
Endosulfan-I	25	27.43	9.7%	OK
gamma-Chlordane	25	27.01	8.0%	OK
alpha-Chlordane	25	27	8.0%	OK
4,4'-DDE	50	54.21	8.4%	OK
Dieldrin	50	54.4	8.8%	OK
Endrin	50	57.38	14.8%	OK
4,4'-DDD	50	51.12	2.2%	OK
Endosulfan-II	50	51.95	3.9%	OK
4,4'-DDT	50	55.82	11.6%	OK
Endrin Aldehyde	50	42.66	14.7%	OK
Methoxychlor	250	284.96	14.0%	OK
Endosulfan Sulfate	50	51.48	3.0%	OK
Endrin Ketone	50	51.72	3.4%	OK
Decachlorobiphenyl	100	105	5.5%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079764
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.1	10.3%	OK
2,4-DDD	20	22.2	11.0%	OK
2,4-DDT	20	22.7	13.4%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099703
Date Analyzed: 11/9/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	48.13	3.7%	OK
alpha-BHC	25	23.78	4.9%	OK
Lindane	25	23.63	5.5%	OK
Heptachlor	25	23.87	4.5%	OK
Aldrin	25	24.22	3.1%	OK
B-BHC	25	24.86	0.6%	OK
D-BHC	25	24.15	3.4%	OK
Heptachlor Epoxide	25	24.47	2.1%	OK
Endosulfan-I	25	26.12	4.5%	OK
gamma-Chlordane	25	23.31	6.8%	OK
alpha-Chlordane	25	24.34	2.6%	OK
4,4'-DDE	50	47.56	4.9%	OK
Dieldrin	50	48.18	3.6%	OK
Endrin	50	48.02	4.0%	OK
4,4'-DDD	50	48.96	2.1%	OK
Endosulfan-II	50	48.47	3.1%	OK
4,4'-DDT	50	48.35	3.3%	OK
Endrin Aldehyde	50	43.75	12.5%	OK
Methoxychlor	250	235.15	5.9%	OK
Endosulfan Sulfate	50	45.83	8.3%	OK
Endrin Ketone	50	47.23	5.5%	OK
Decachlorobiphenyl	100	96	3.7%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099704
Date Analyzed: 11/9/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	21.8	8.9%	OK
2,4-DDD	20	21.7	8.6%	OK
2,4-DDT	20	21.6	7.9%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099717
Date Analyzed: 11/10/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	50.9	1.8%	OK
alpha-BHC	25	24.43	2.3%	OK
Lindane	25	25.47	1.9%	OK
Heptachlor	25	25.49	2.0%	OK
Aldrin	25	25.55	2.2%	OK
B-BHC	25	26.57	6.3%	OK
D-BHC	25	24.98	0.1%	OK
Heptachlor Epoxide	25	25.51	2.0%	OK
Endosulfan-I	25	26.08	4.3%	OK
gamma-Chlordane	25	25.42	1.7%	OK
alpha-Chlordane	25	25.6	2.4%	OK
4,4'-DDE	50	50.41	0.8%	OK
Dieldrin	50	51.04	2.1%	OK
Endrin	50	49.87	0.3%	OK
4,4'-DDD	50	50.11	0.2%	OK
Endosulfan-II	50	51.08	2.2%	OK
4,4'-DDT	50	50.48	1.0%	OK
Endrin Aldehyde	50	45.11	9.8%	OK
Methoxychlor	250	264.44	5.8%	OK
Endosulfan Sulfate	50	48.48	3.0%	OK
Endrin Ketone	50	51	2.0%	OK
Decachlorobiphenyl	100	99	1.1%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099718
Date Analyzed: 11/10/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.5	12.7%	OK
2,4-DDD	20	21.2	5.7%	OK
2,4-DDT	20	22.4	12.1%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099730
Date Analyzed: 11/10/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	52.33	4.7%	OK
alpha-BHC	25	22.66	9.4%	OK
Lindane	25	25.69	2.8%	OK
Heptachlor	25	26.67	6.7%	OK
Aldrin	25	26.1	4.4%	OK
B-BHC	25	26.98	7.9%	OK
D-BHC	25	26.04	4.2%	OK
Heptachlor Epoxide	25	26.79	7.2%	OK
Endosulfan-I	25	26.43	5.7%	OK
gamma-Chlordane	25	26.95	7.8%	OK
alpha-Chlordane	25	26.53	6.1%	OK
4,4'-DDE	50	52.03	4.1%	OK
Dieldrin	50	53.21	6.4%	OK
Endrin	50	54.69	9.4%	OK
4,4'-DDD	50	52.66	5.3%	OK
Endosulfan-II	50	53.18	6.4%	OK
4,4'-DDT	50	53.08	6.2%	OK
Endrin Aldehyde	50	45.23	9.5%	OK
Methoxychlor	250	265.73	6.3%	OK
Endosulfan Sulfate	50	50.39	0.8%	OK
Endrin Ketone	50	49.43	1.1%	OK
Decachlorobiphenyl	100	102	2.1%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099731
Date Analyzed: 11/10/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.8	13.9%	OK
2,4-DDD	20	22.1	10.5%	OK
2,4-DDT	20	23.0	15.0%	OK

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11079720
Date Analyzed: 11/7/97

DB-1701

Compound	Response (Area)
4,4'-DDE	4989
4,4'-DDD	0
4,4'-DDT	458385
Endrin Aldehyde	6607
Endrin Ketone	11561
Endrin	239546
DDT % Breakdown	1.1%
Endrin % Breakdown	7.0%
Total % Breakdown	8.1%

DB-17

Compound	Response (Area)
4,4'-DDE	0
4,4'-DDD	0
4,4'-DDT	540552
Endrin Aldehyde	16988
Endrin Ketone	16574
Endrin	250905
DDT % Breakdown	0.0%
Endrin % Breakdown	11.8%
Total % Breakdown	11.8%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11079734
Date Analyzed: 11/8/97

DB-1701

Compound	Response (Area)
4,4'-DDE	84909
4,4'-DDD	4923
4,4'-DDT	513736
Endrin Aldehyde	7180
Endrin Ketone	8106
Endrin	249304
DDT % Breakdown	14.9%
Endrin % Breakdown	5.8%
Total % Breakdown	20.7%

DB-17

Compound	Response (Area)
4,4'-DDE	78321
4,4'-DDD	16415
4,4'-DDT	614599
Endrin Aldehyde	11025
Endrin Ketone	0
Endrin	268717
DDT % Breakdown	13.4%
Endrin % Breakdown	3.9%
Total % Breakdown	17.3%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11079748
Date Analyzed: 11/8/97

DB-1701

Compound	Response (Area)
4,4'-DDE	54872
4,4'-DDD	6156
4,4'-DDT	555540
Endrin Aldehyde	5636
Endrin Ketone	8600
Endrin	250267
DDT % Breakdown	9.9%
Endrin % Breakdown	5.4%
Total % Breakdown	15.3%

DB-17

Compound	Response (Area)
4,4'-DDE	20568
4,4'-DDD	25573
4,4'-DDT	649211
Endrin Aldehyde	11424
Endrin Ketone	14284
Endrin	273089
DDT % Breakdown	6.6%
Endrin % Breakdown	8.6%
Total % Breakdown	15.2%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11079762
Date Analyzed: 11/8/97

DB-1701

Compound	Response (Area)
4,4'-DDE	7153
4,4'-DDD	0
4,4'-DDT	486319
Endrin Aldehyde	0
Endrin Ketone	6007
Endrin	269682
DDT % Breakdown	1.4%
Endrin % Breakdown	2.2%
Total % Breakdown	3.6%

DB-17

Compound	Response (Area)
4,4'-DDE	0
4,4'-DDD	0
4,4'-DDT	592084
Endrin Aldehyde	0
Endrin Ketone	0
Endrin	292872
DDT % Breakdown	0.0%
Endrin % Breakdown	0.0%
Total % Breakdown	0.0%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11099702
Date Analyzed: 11/9/97

DB-1701

Compound	Response (Area)
4,4'-DDE	0
4,4'-DDD	0
4,4'-DDT	413759
Endrin Aldehyde	5971
Endrin Ketone	0
Endrin	222506
DDT % Breakdown	0.0%
Endrin % Breakdown	2.6%
Total % Breakdown	2.6%

DB-17

Compound	Response (Area)
4,4'-DDE	0
4,4'-DDD	0
4,4'-DDT	521371
Endrin Aldehyde	12076
Endrin Ketone	13158
Endrin	250984
DDT % Breakdown	0.0%
Endrin % Breakdown	9.1%
Total % Breakdown	9.1%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11099716
Date Analyzed: 11/10/97

DB-1701

Compound	Response (Area)
4,4'-DDE	4773
4,4'-DDD	0
4,4'-DDT	459846
Endrin Aldehyde	10254
Endrin Ketone	10938
Endrin	239405
DDT % Breakdown	1.0%
Endrin % Breakdown	8.1%
Total % Breakdown	9.2%

DB-17

Compound	Response (Area)
4,4'-DDE	5777
4,4'-DDD	4831
4,4'-DDT	536432
Endrin Aldehyde	14372
Endrin Ketone	9735
Endrin	256376
DDT % Breakdown	1.9%
Endrin % Breakdown	8.6%
Total % Breakdown	10.5%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11099729
Date Analyzed: 11/10/97

DB-1701

Compound	Response (Area)
4,4'-DDE	5634
4,4'-DDD	0
4,4'-DDT	480295
Endrin Aldehyde	6989
Endrin Ketone	9767
Endrin	259008
DDT % Breakdown	1.2%
Endrin % Breakdown	6.1%
Total % Breakdown	7.2%

DB-17

Compound	Response (Area)
4,4'-DDE	4576
4,4'-DDD	0
4,4'-DDT	564460
Endrin Aldehyde	11061
Endrin Ketone	7693
Endrin	277523
DDT % Breakdown	0.8%
Endrin % Breakdown	6.3%
Total % Breakdown	7.1%

MEMORANDUM

DATE: November 28, 1997

TO: Fred Luck, Project Manager

FROM: Michael Webb, Chemical Data Quality Manager

SUBJECT: Contract DACA67-95-G-0001-38
Wenatchee Tree Fruit Research Center Remediation
Summary Chemical Data Quality Control Report:
Rinse Water Sampling and Final Confirmation Equipment Blank November 4, 1997
Sound Analytical Report #68601

Analytical Methods:

- Method 8081 for Organochlorine Pesticides
- Method 8141 for Organophosphorus Pesticides, Modified for GC/MS
- Method 6020 for Metals
- Method 7470 for Mercury
- Method 160.2 for Total Suspended Solids

Data Use Intended:

- Rinse Water Samples: To establish whether the water had concentrations above the MTCA Method B groundwater clean-up standards.

Summary of Qualified and Rejected Data:

- No water data were rejected due to quality control problems.
- The result for dieldrin in sample RWSWN0474 was not confirmed on the secondary column within the 40% acceptance limit. This result has been qualified with a "J" qualifier to indicate use with caution. The result reported is the lesser of the two values and the result on the confirmation column has been assigned to an interference. This assignment is supported by the presence of an unidentified compound in the primary chromatogram at a level similar to that of the dieldrin peak in the confirmation chromatogram. The quantitation reports for the chromatograms are attached in Appendix 1. This unidentified compound is at a level of 10 to 50 times the concentration reported for dieldrin and possibly could be identified in the sample analyzed by GC/MS.
- One of two surrogates were below project target levels in each sample but were within the laboratory statistical limits (an SW-846 requirement). The low recoveries are not a significant problem for the use of these data. No decisions were affected.
- Some results were below the quantitation limit and were flagged with "J" qualifiers. "C" flags were used to indicate that second-column confirmation had confirmed the results (4,4'-DDD and 2,4'-DDT cannot be confirmed when both are present). "U" qualifiers were not used for undetected results, rather "ND" was placed in the quantitative value data field.

Summary of Method 8081 Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled November 4, 1997: FCEBN04714 (equipment blank for soil), RWGSAN0471, RWGSAN0472 (field duplicate), EBGSAN0473 (equipment blank for water), RWSWN0474.
- Sample Handling, Holding Time and Chain of Custody - **Acceptable.**
- Performance Evaluation (PE) Results - **Not evaluated in this delivery group.**
- Analytical Sensitivity - **Acceptable.**
- Accuracy -

  Calibration (Initial and Continuing) - **Acceptable.** The initial calibration results for the 2,4'-isomers have been inserted following page 47 of the report.
  DDT and Endrin Breakdown Standards - **Acceptable.** The laboratory reported a nonconformance for some analytical runs, but this QC parameter was within the project specifications.
  Surrogates - **Not Acceptable.** One of two surrogates were below project targets but within the laboratory statistical window of acceptance as required by SW-846. No corrective action was warranted.
  Matrix Spikes - **Acceptable.** High analyte concentrations caused nonconformances for 4,4'-DDE. No corrective action was necessary. The laboratory control sample results were acceptable.
  Laboratory Control Samples (LCS) - **Acceptable for all analytes except aldrin.** No corrective action was taken because this analyte did not show up in any samples.
  Laboratory Blanks - **Acceptable.**
  Field Blanks - **Acceptable.**

- Laboratory Precision - **Acceptable.**
- Field Precision - **Acceptable.** The major analytes present showed acceptable precision. The endosulfans at low concentration showed variability. No further action was taken because the levels were far below the regulatory limit.

Summary of Method 8141 (Modified) Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled November 4, 1997: FCEBN04714 (equipment blank for soil), RWGSAN0471, RWGSAN0472 (field duplicate), EBGSAN0473 (equipment blank for water), RWSWN0474.
- Sample Handling, Holding Time and Chain of Custody - **Acceptable.**
- Performance Evaluation (PE) Results - **Not evaluated in this delivery group.**
- Analytical Sensitivity - **Acceptable.**
- Accuracy -

  Calibration, Tune, and Internal Standard Response- **Acceptable.** These parameters were verified with the laboratory, however, data summaries for internal standard response were not included in the data package provided by the laboratory.
  Surrogates - **Acceptable.**
  Matrix Spikes - **Acceptable.**
  Laboratory Control Samples (LCS) - **Acceptable.**

Laboratory Blanks - **Acceptable.**
Field Blanks - **Acceptable.**

- Laboratory Precision - **Acceptable.**
- Field Precision - **Acceptable.**

Summary of Methods 6020 and 7470 Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled November 4, 1997: RWGSAN0471, RWGSAN0472 (field duplicate), EBGSAN0473 (equipment blank for water), RWSWN0474.
- Sample Handling, Holding Time and Chain of Custody - **Acceptable.**
- Performance Evaluation (PE) Results - **Not evaluated in this delivery group.**
- Analytical Sensitivity - **Acceptable.**
- Accuracy -

  Calibration, and Calibration Verification - **Acceptable.**
  Surrogates - **Acceptable.**
  Matrix Spikes - **Acceptable.**
  Laboratory Control Samples (LCS) - **Acceptable.**
  Laboratory Blanks - **Acceptable.**
  Field Blanks - **Acceptable.**

- Laboratory Precision - **Acceptable.**
- Field Precision - **Acceptable.**

Summary of Method 160.2 Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled November 4, 1997: RWGSAN0471, RWGSAN0472 (field duplicate), RWSWN0474.
- Sample Handling, Holding Time and Chain of Custody - **Acceptable.**
- Performance Evaluation (PE) Results - **Not evaluated in this delivery group.**
- Analytical Sensitivity - **Acceptable.**
- Accuracy -

  Calibration, Tune, and Internal Standard Response - **Not applicable to a gravimetric test.**
  Surrogates - **Acceptable.**
  Matrix Spikes - **Acceptable.**
  Laboratory Control Samples (LCS) - **Acceptable.**
  Laboratory Blanks - **Acceptable.**
  Field Blanks - **Acceptable.**

- Laboratory Precision - **Acceptable.**
- Field Precision - **Acceptable.**

Summary of Data Comparability, Representativeness, and Completeness

- **Field Sampling Issues** - No problems were encountered. The samples of rinse water taken from the tank (sample numbers containing "RWGSA") were sampled with a decontaminated HDPE cup with extension handle. The sample of rinse water taken as a composite from barrels at the drainfield site (sample number containing "RWSW") were sampled by submerging the jars and obtaining an approximately equal amount from each barrel.
- **Data Completeness** - The data completeness was 100% for this phase of work.

Overall Conclusions

These data are acceptable for the intended use. The QC results meet the accuracy, precision, and completeness DQOs for the project except as noted.

Appendix 1

GC Quantitation Reports for Dieldrin on DB-1701 and DB-17 Columns

Sound Analytical Report #68601

SOUND ANALYTICAL SERVICES, INC.

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424
TELEPHONE: (253) 922-2310
FAX: (253) 922-5047

Facsimile Cover Sheet

To: Mike Webb
Company: Garry Struthers Associates
Phone: 425-519-0300
Fax: 425-519-0309

From: Katie Downie
Date: 12 December, 1997
Pages including this cover page: 3

Comments: The concentration measured on the DB-1701 column was 121.26 ppb, the concentration measured on the DB-17 was 2.88 ppm. The conversion factor to get back to the original solution concentration is 0.01 (1 liter of sample was extracted and concentrated to 10 ml). Thus, the concentration using the higher measurement would be 1.2 ppb. I am enclosing copies of the quant report for this sample. Call if you have any questions.

MAXIMA 820 CUSTOM REPORT

Printed: 9-NOV-1997 23:41:46

SAMPLE: 68604-5
Type: UNKN
332 in Method: 8080 PESTICIDES - 11/03 ICAL
Instrument: Pesticides
Acquired: 8-NOV-1997 12:10
Filename: 11079760
Rate: 3.5 points/sec
Index: Disk
Duration: 19.999 minutes
Operator: JDW

DIC

DETECTOR: ECD DB-1701

Relative Time	Retention Time (minutes)	Component Name		ID#	Peak Area	Area Percent (per cent)	Solution Conc (ppb)	Original Conc (ppb)	
0.332	5.227	TCMX	1701	1	42973	5.04	8.57	8.57	
0.420	6.614	A-BHC	1701	3	17955	2.06	2.21 M	2.21	
0.458	7.222	LINDANE	1701	5	22415	2.57	3.12 M	3.12	
(0.482)	(7.597)	HEPTACHLOR	1701	6	0	0.00	0.0	0.0	
(0.510)	(8.036)	ALDRIN	1701	9	0	0.00	0.0	0.0	
(0.527)	(8.295)	B-BHC	1701	11	0	0.00	0.0	0.0	
(0.554)	(8.732)	D-BHC	1701	13	0	0.00	0.0	0.0	
0.583	9.179	HEPT-EPOX	1701	15	10080	1.16	1.82 M	1.82	
(0.617)	(9.720)	ENDO I	1701	16	0	0.00	0.0	0.0	
(0.620)	(9.763)	G-CHLORDANE	1701	17	0	0.00	0.0	0.0	
(0.629)	(9.910)	A-CHLORDANE	1701	18	0	0.00	0.0	0.0	
0.632	9.953	DDE	1701	20	27007	3.09	4.93	4.93	
0.648	10.200	DIELDRIN	1701	22	602362	69.03	121.26	121.26	spurious dieldrin
0.679	10.703	ENDRIN	1701	25	8424	0.97	2.02 M	2.02	
0.723	11.397	DDD	1701	28	8531	0.98	2.29	2.29	
(0.740)	(11.658)	ENDO II	1701	29	0	0.00	0.0	0.0	
0.746	11.744	DDT	1701	30	45104	5.17	10.72	10.72	
(0.788)	(12.418)	END ALD	1701	34	0	0.00	0.0	0.0	
0.820	12.922	METHOXY	1701	36	26653	3.05	12.06 M	12.06	
(0.839)	(13.064)	ENDOSULFTE	1701	37	0	0.00	0.0	0.0	
0.865	13.625	END KETONE	1701	40	18504	2.13	~~4.26~~	4.26	
1.000	15.753	DCB	1701	43	41595	4.77	11.57	11.57	
TOTAL					872664		184.81	184.81	

DETECTOR: ECD DB-17

Relative Time	Retention Time (minutes)	Component Name		ID#	Peak Area	Area Percent (per cent)	Solution Conc (ppb)	Original Conc (ppb)
0.315	5.759	TCMX	17	2	46617	3.41	6.99	6.99
(0.380)	(6.943)	A-BHC	17	4	0	0.00	0.0	0.0

(0.418)	(7.641)	LINDANE	17	7	0	0.00	0.0	0.0
(0.423)	(7.739)	B-BHC	17	8	0	0.00	0.0	0.0
(0.449)	(8.205)	HEPTACHLOR	17	10	0	0.00	0.0	0.0
0.456	8.328	D-BHC	17	12	14352	1.05	1.91	1.91
(0.484)	(8.847)	ALDRIN	17	14	0	0.00	0.0	0.0
(0.546)	(9.981)	HEPT-EPOX	17	19	0	0.00	0.0	0.0
(0.563)	(10.293)	G-CHLORDNE	17	21	0	0.00	0.0	0.0
0.575	10.509	A-CHLORDNE	17	23	1145294	83.84	173.04!!	173.04!!
(0.584)	(10.670)	ENDO I	17	24	0	0.00	0.0	0.0
0.605	11.055	DDE	17	26	35942	2.36	4.64	4.64
0.617	11.278	DIELDRIN	17	27	17121	1.25	2.88	2.88
(0.660)	(12.055)	ENDRIN	17	31	0	0.00	0.0	0.0
0.670	12.247	DDD	17	32	23056	1.69	5.17	5.17
(0.679)	(12.401)	ENDO II	17	33	0	0.00	0.0	0.0
0.703	12.841	DDT	17	35	36958	2.71	7.36	7.36
(0.716)	(13.083)	END ALD	17	38	0	0.00	0.0	0.0
(0.730)	(13.335)	ENDOSULFTE	17	39	0	0.00	0.0	0.0
(0.802)	(14.660)	METHOXY	17	41	0	0.00	0.0	0.0
(0.823)	(15.048)	END KETONE	17	42	0	0.00	0.0	0.0
1.000	18.275	DCB	17	44	51760	3.79	11.90	11.90
TOTAL					1366121		213.89!!	213.89!!

!! Result calculation based on peak response more than 10% outside of calibration range.

ikhknap peak

valve reporte

MEMORANDUM

DATE: November 28, 1997

TO: Fred Luck, Project Manager

FROM: Michael Webb, Chemical Data Quality Manager New Draft

SUBJECT: Contract DACA67-95-G-0001-38
Wenatchee Tree Fruit Research Center Remediation
Summary Chemical Data Quality Control Report:
Rinse Water Sampling and Final Confirmation Equipment Blank November 4, 1997
Sound Analytical Report #68601

Analytical Methods:

- Method 8081 for Organochlorine Pesticides
- Method 8141 for Organophosphorus Pesticides, Modified for GC/MS
- Method 6020 for Metals
- Method 7470 for Mercury
- Method 160.2 for Total Suspended Solids

Data Use Intended:

- Rinse Water Samples: To establish whether the water had concentrations above the MTCA Method B groundwater ~~the~~ clean-up standards.

Summary of Qualified and Rejected Data and Definitions of Qualifiers:

- No water data were rejected due to quality control problems. J for QC surro
- The result for dieldrin in sample RWSWN0474 was not confirmed within the 40% acceptance limit on the secondary column. This result has been qualified with a "J" qualifier to indicate use with caution. However, the result reported is the lesser of the two values and the result on the confirmation column has been assigned to an interference. This assignment is supported by the presence of an unidentified compound in the the primary chromatogram at a level similar to that of the dieldrin peak on the confirmation column. This unidentified compound is at a level of 10 to 50 times the concentration reported for dieldrin and possibly could be identified in the sample analyzed by GC/MS for organophosphorus pesticides. The quantitation reports are attached in Appendix I
- Some results were below the quantitation limit and were flagged with "J" qualifiers. "C" flags were used to indicate that second-column confirmation had confirmed the results (4,4'-DDD and 2,4'-DDT cannot be confirmed when both are present due to coelutions on the confirmation column). "U" qualifiers were not used for undetected results, rather "ND" was placed in the quantitative value data field.

Summary of Method 8081 Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled November 4, 1997: FCEBN04714 (equipment blank for soil), RWGSAN0471, RWGSAN0472 (field duplicate), EBGSAN0473 (equipment blank for water), RWSWN0474.
- Sample Handling, Holding Time and Chain of Custody - **Acceptable.**
- Performance Evaluation (PE) Results - **Not evaluated in this delivery group.**
- Analytical Sensitivity - **Acceptable.** Some samples were diluted prior to analysis due to high analyte concentration, thereby elevating the reporting limits to above the action levels. In all cases these sample locations needed to be re-excavated and resampled, so no further actions were necessary.
- Accuracy -

  Calibration (Initial and Continuing) - **Acceptable.**
  DDT and Endrin Breakdown Standards - **Acceptable.** The laboratory reported a nonconformance for some analytical runs, but this QC parameter was within the project specifications.
  Second Column Confirmation: - **Not Acceptable for dieldrin in sample RWSWN0474.**
  Surrogates - **Not Acceptable.** One of two surrogates were below project targets but within the laboratory statistical window of acceptance as required by SW-846. No corrective action was warranted.
  Matrix Spikes - **Acceptable.** High analyte concentrations caused nonconformances for 4,4'-DDE. No corrective action was necessary because the laboratory control sample results were acceptable.
  Laboratory Control Samples (LCS) - **Acceptable for all analytes except aldrin.** No corrective action was taken because this analyte did not show up in any samples.
  Laboratory Blanks - **Acceptable.**
  Field Blanks - **Acceptable.**

- Laboratory Precision - **Acceptable.**
- Field Precision - **Acceptable.** The major analytes present showed acceptable precision. The endosulfans at low concentration showed variability. No further action was taken because the levels were far below the regulatory limit.

Summary of Method 8141 (Modified) Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled November 4, 1997: FCEBN04714 (equipment blank for soil), RWGSAN0471, RWGSAN0472 (field duplicate), EBGSAN0473 (equipment blank for water), RWSWN0474.
- Sample Handling, Holding Time and Chain of Custody - **Acceptable.**
- Performance Evaluation (PE) Results - **Not evaluated in this delivery group.**
- Analytical Sensitivity - **Acceptable.**
- Accuracy -

  Calibration, Tune, and Internal Standard Response- **Acceptable.** These parameters were verified with the laboratory, however, data summaries for internal standard response were not included in the data package provided by the laboratory.
  Surrogates - **Acceptable.**

Matrix Spikes - **Acceptable.**
Laboratory Control Samples (LCS) - **Acceptable.**
Laboratory Blanks - **Acceptable.**
Field Blanks - **Acceptable.**

- Laboratory Precision - **Acceptable.**
- Field Precision - **Acceptable.**

Summary of Methods 6020 and 7470 Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled November 4, 1997: RWGSAN0471, RWGSAN0472 (field duplicate), EBGSAN0473 (equipment blank for water), RWSWN0474.
- Sample Handling, Holding Time and Chain of Custody - **Acceptable.**
- Performance Evaluation (PE) Results - **Not evaluated for this parameter.** in this delivery group
- Analytical Sensitivity - **Acceptable.**
- Accuracy -

  Calibration and Calibration Verification - **Acceptable.**
  Matrix Spikes - **Acceptable.**
  Laboratory Control Samples (LCS) - **Acceptable.**
  Laboratory Blanks - **Acceptable.**
  Field Blanks - **Acceptable.**

- Laboratory Precision - **Acceptable.**
- Field Precision - **Acceptable.**

Summary of Method 160.2 Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled November 4, 1997: RWGSAN0471, RWGSAN0472 (field duplicate), RWSWN0474.
- Sample Handling, Holding Time and Chain of Custody - **Acceptable.**
- Performance Evaluation (PE) Results - **Not evaluated for this parameter.** in this delivery group
- Analytical Sensitivity - **Acceptable.**
- Accuracy - check spikes (gravimetric)

  Calibration - **Not Applicable (gravimatric test).**
  Matrix Spikes - **Acceptable.**
  Laboratory Control Samples (LCS) - **Acceptable.**
  Laboratory Blanks - **Acceptable.**
  Field Blanks - **Not evaluated for this parameter (not a trace analysis).**

- Laboratory Precision - **Acceptable.**
- Field Precision - **Acceptable.**

Summary of Data Comparability, Representativeness, and Completeness

- **Field Sampling Issues** - No problems were encountered. The samples of rinse water taken from the tank (sample numbers containing "RWGSA") were sampled with a decontaminated HDPE cup with extension handle. The sample of rinse water taken as a composite from barrels at the drainfield site (sample number containing "RWSW") were sampled by submerging the jars and obtaining an approximately equal amount from each barrel.
- **Data Completeness** - The data completeness was 100% for this phase of work (focused removal)

Overall Conclusions

These data are acceptable for the intended use. The QC results meet the accuracy, precision, and completeness DQOs for the project except as noted.

Summary Chemical Data Quality Control Report (Sound Analytical Report #68601)
Appendix 1

Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy East • Tacoma, WA 98424
(253) 922-2310 • FAX (253) 922-5047
e-mail: SoundL@aol.com

TRANSMITTAL MEMORANDUM

DATE: November 13, 1997

TO: Mike Webb
Garry Struthers Associates, Inc.
3150 Richards Road, Ste. 100
Bellevue, WA 98005-4446

PROJECT: Wenatchee Test Plot Soils

REPORT NUMBER: 68601

Enclosed are the test results for five samples received at Sound Analytical Services on November 5, 1997.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chain-of-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Lila A Transue

Lila Transue
Project Manager

Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy East • Tacoma, WA 98424
(253) 922-2310 • FAX (253) 922-5047
e-mail: SoundL@aol.com

ANALYTICAL NARRATIVE

Client: Garry Struthers Associates, Inc.

Date: November 13, 1997

Project: WTFREC

Lab No.: 68601

Delivered By: Client

Condition of samples upon receipt: Samples were received in good condition. Chain of custody was in order.

Sample Identification:

Lab. No.	Client ID	Date Sampled	Matrix	Description
68601-1	FCEBN04714	11-04-97	Liquid	Clear, colorless
68601-2	RWGSAN0471	11-04-97	Liquid	Turbid, yellow
68601-3	RWGSAN0472	11-04-97	Liquid	Turbid, yellow liquid
68601-4	EBGSAN9473	11-04-97	Liquid	Clear, colorless
68601-5	RWSWN0464	11-04-97	Liquid	Clear, colorless

SAMPLE EXTRACTION AND ANALYSIS

ORGANOPHOSPHORUS PESTICIDES

Samples 68601-1 through 68601-5 were analyzed for organophosphorus pesticides in accordance with EPA SW-846 Method 8141. The samples were extracted in accordance with EPA SW-846 Method 3540 on 11-06-97 and analyzed on 11-06-97.

The percent recoveries for paraoxon, ethyl in the blank spike and blank spike duplicate associated with this sample batch were outside project specified QC limits. No action was taken, as the matrix spike recovery for this analyte was wtihin project specified QC limits.

All other quality control parameters were within acceptance limits.

ORGANOCHLORINE PESTICIDES

Samples 68601-1 through 68601-5 were analyzed for organochlorine pesticides in accordance with EPA SW-846 Method 8081. The samples were extracted in accordance with EPA SW-846 Method 3540 on 11-06-97 and analyzed on 11-8-97.

All detected compounds were confirmed as present using a second dissimilar column. All relative percent difference values between the two analytical columns were less than or equal to 40%, except for dieldrin in sample 68601-5, and for 4,4'-DDD, which coelutes with 2,4'-DDT on the confirmation column, as most samples that contained 4,4'-DDD contained significant concentrations of 2,4'-DDT.

ANALYTICAL NARRATIVE

Client: Garry Struthers Associates, Inc. Date: November 13, 1997

Project: WTFREC Lab No.: 68601

ORGANOCHLORINE PESTICIDES, Continued
Samples 68601-2 and 68601-3 required secondary dilution analyses due to the high concentrations of various target analytes.

The DDT/endrin evaluation standard breakdowns (files 11079734 and 11079748) were slightly above project specified limits.

The percent recoveries for tetrachloro-m-xylene (surrogate) were outside the project specified QC limits for samples 68601-1, 68601-2, 68601-4 and 68601-5. The percent recoveries were within the laboratory's quality control limits, which were established by charting the actual recoveries of the surrogates in samples analyzed by the laboratory. The percent recovery for decachlorobiphenyl was outside the project and laboratory control limits for samples 68601-3 and 68601-5 due to matrix interference.

All other quality control parameters were within acceptance limits.

METALS
Samples 68601-2 through 68601-5 were analyzed for the priority pollutant list of metals in accordance with EPA SW-846 Method 6020. The samples were digested by EPA SW-846 Method 3010 on 11-06-97 and analyzed on 11-06-97. The samples were analyyzed for mercury in accordance with EPA SW-846 Method 7470 on 11-07-97.

The percent recovery of silver in the matrix spike analysis of sample 68601-2 was below the quality control limits. Sample matrix interference is indicated by the blank spike recovery data.

All other quality control parameters were within acceptance limits.

TOTAL SUSPENDED SOLIDS
Samples 68601-2 through 68601-5 were analyzed for total suspended solids in accordance with EPA Method 160.2. The samples were analyzed on 11-07-97.

All quality control parameters were within acceptance limits.

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FCEBN04714
Lab ID:	68601-01
Date Received:	11/5/97
Date Prepared:	11/6/97
Date Analyzed:	11/6/97
% Solids	-
Dilution Factor	2

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	87		65	135

Analyte	Result (ug/L)	PQL	MDL	Flags
Dichlorvos	ND	0.55	0.34	
Dimethoate	ND	0.24	0.099	
Diazinon	ND	0.15	0.14	
Disulfoton	ND	0.16	0.095	
Parathion,methyl	ND	0.23	0.2	
Malathion	ND	0.11	0.11	
Parathion	ND	0.3	0.28	
Azinphos,methyl	ND	0.45	0.2	
Ethion	ND	0.27	0.14	
Paraoxon,methyl	ND	0.27	0.14	
Paraoxon,ethyl	ND	0.27	0.14	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	RWGSAN0471
Lab ID:	68601-02
Date Received:	11/5/97
Date Prepared:	11/6/97
Date Analyzed:	11/6/97
% Solids	-
Dilution Factor	2

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	107		65	135

Analyte		Result (ug/L)		PQL	MDL	Flags
Dichlorvos	ND			0.4	0.25	
Dimethoate	ND			0.17	0.072	
Diazinon	ND			0.11	0.11	
Disulfoton			1.8	0.12	0.069	
Parathion,methyl	ND			0.17	0.14	
Malathion			0.38	0.082	0.077	
Parathion			0.87	0.22	0.21	
Azinphos,methyl	ND			0.33	0.14	
Ethion	ND			0.2	0.1	
Paraoxon,methyl	ND			0.2	0.1	
Paraoxon,ethyl	ND			0.2	0.1	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	RWGSAN0472
Lab ID:	68601-03
Date Received:	11/5/97
Date Prepared:	11/6/97
Date Analyzed:	11/6/97
% Solids	-
Dilution Factor	2

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	110		65	135

Analyte		Result (ug/L)	PQL	MDL	Flags
Dichlorvos	ND		0.4	0.25	
Dimethoate	ND		0.17	0.072	
Diazinon	ND		0.11	0.11	
Disulfoton		1.8	0.12	0.069	
Parathion,methyl	ND		0.17	0.14	
Malathion		0.34	0.082	0.077	
Parathion		0.79	0.22	0.21	
Azinphos,methyl	ND		0.33	0.14	
Ethion	ND		0.2	0.1	
Paraoxon,methyl	ND		0.2	0.1	
Paraoxon,ethyl	ND		0.2	0.1	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	EBGSAN0473
Lab ID:	68601-04
Date Received:	11/5/97
Date Prepared:	11/6/97
Date Analyzed:	11/6/97
% Solids	-
Dilution Factor	2

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	94		65	135

Analyte		Result (ug/L)	PQL	MDL	Flags
Dichlorvos	ND		0.4	0.25	
Dimethoate	ND		0.17	0.072	
Diazinon	ND		0.11	0.11	
Disulfoton	ND		0.12	0.069	
Parathion,methyl	ND		0.17	0.14	
Malathion	ND		0.082	0.077	
Parathion	ND		0.22	0.21	
Azinphos,methyl	ND		0.33	0.14	
Ethion	ND		0.2	0.1	
Paraoxon,methyl	ND		0.2	0.1	
Paraoxon,ethyl	ND		0.2	0.1	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	RWSWN0474
Lab ID:	68601-05
Date Received:	11/5/97
Date Prepared:	11/6/97
Date Analyzed:	11/6/97
% Solids	-
Dilution Factor	2

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Triphenyl Phosphate	92		65	135

Analyte		Result (ug/L)	PQL	MDL	Flags
Dichlorvos	ND		0.4	0.25	
Dimethoate	ND		0.17	0.072	
Diazinon	ND		0.11	0.11	
Disulfoton	ND		0.12	0.069	
Parathion,methyl	ND		0.17	0.14	
Malathion	ND		0.082	0.077	
Parathion	ND		0.22	0.21	
Azinphos,methyl	ND		0.33	0.14	
Ethion	ND		0.2	0.1	
Paraoxon,methyl	ND		0.2	0.1	
Paraoxon,ethyl	ND		0.2	0.1	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FCEBN04714
Lab ID:	68601-01
Date Received:	11/5/97
Date Prepared:	11/6/97
Date Analyzed:	11/8/97
% Solids	-
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	61	N	65	130
Decachlorobiphenyl	79		65	130

Analyte	**Result (ug/L)**	**PQL**	**MDL**	**Flags**
Aldrin	ND	0.012	0.0009	
alpha-BHC	ND	0.012	0.00092	
beta-BHC	ND	0.012	0.0017	
delta-BHC	ND	0.012	0.00094	
gamma-BHC (Lindane)	ND	0.012	0.0021	
Chlordane (technical)	ND	0.12	0.03	
4,4'-DDD	ND	0.024	0.0021	
4,4'-DDE	ND	0.024	0.0044	
4,4'-DDT	ND	0.024	0.015	
2,4'-DDD	ND	0.024	0.018	
2,4'-DDE	ND	0.024	0.018	
2,4'-DDT	ND	0.024	0.018	
Dieldrin	ND	0.024	0.0029	
Endosulfan I	ND	0.024	0.0015	
Endosulfan II	ND	0.024	0.011	
Endosulfan sulfate	ND	0.012	0.0012	
Endrin	ND	0.012	0.002	
Endrin aldehyde	ND	0.12	0.027	
Heptachlor	ND	0.024	0.0038	
Heptachlor epoxide	ND	1.2	0.65	
Methoxychlor	ND	0.012	0.0033	
Toxaphene	ND	1.2	0.11	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	RWGSAN0471
Lab ID:	68601-02
Date Received:	11/5/97
Date Prepared:	11/6/97
Date Analyzed:	11/8/97
% Solids	-
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	54	N	65	130
Decachlorobiphenyl	70		65	130

Analyte		**Result (ug/L)**	**PQL**	**MDL**	**Flags**
Aldrin	ND		0.01	0.00075	
alpha-BHC		0.032	0.01	0.00077	C
beta-BHC	ND		0.01	0.0014	
delta-BHC		0.049	0.01	0.00078	C
gamma-BHC (Lindane)		0.042	0.01	0.0017	C
Chlordane (technical)	ND		0.1	0.025	
4,4'-DDD		0.17	0.02	0.0017	C
4,4'-DDE		1.2	0.02	0.0036	C
4,4'-DDT		1.2	0.02	0.013	C
2,4'-DDD		0.095	0.02	0.015	C
2,4'-DDE		0.27	0.02	0.015	C
2,4'-DDT		0.42	0.02	0.015	C
Dieldrin		2.6	0.02	0.0024	D C
Endosulfan I		1.4	0.02	0.0012	D C
Endosulfan II		0.43	0.02	0.0089	C
Endosulfan sulfate	ND		0.01	0.001	
Endrin		0.85	0.01	0.0017	C
Endrin aldehyde	ND		0.1	0.022	
Heptachlor		0.018	0.02	0.0032	J C
Heptachlor epoxide	ND		1	0.54	
Methoxychlor	ND		0.01	0.0028	
Toxaphene	ND		1	0.089	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	RWGSAN0472
Lab ID:	68601-03
Date Received:	11/5/97
Date Prepared:	11/6/97
Date Analyzed:	11/8/97
% Solids	-
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
TCMX	70		65	130
Decachlorobiphenyl	59	X9	65	130

Analyte		Result (ug/L)	PQL	MDL	Flags
Aldrin	ND		0.01	0.00075	
alpha-BHC		0.038	0.01	0.00077	C
beta-BHC		0.037	0.01	0.0014	C
delta-BHC		0.044	0.01	0.00078	C
gamma-BHC (Lindane)		0.048	0.01	0.0017	C
Chlordane (technical)	ND		0.1	0.025	
4,4'-DDD		0.17	0.02	0.0017	C
4,4'-DDE		1.1	0.02	0.0036	C
4,4'-DDT		0.91	0.02	0.013	C
2,4'-DDD		0.082	0.02	0.015	C
2,4'-DDE		0.25	0.02	0.015	C
2,4'-DDT		0.36	0.02	0.015	C
Dieldrin		2.3	0.02	0.0024	D C
Endosulfan I		1.3	0.02	0.0012	D C
Endosulfan II		0.4	0.02	0.0089	C
Endosulfan sulfate	ND		0.01	0.001	
Endrin		0.79	0.01	0.0017	C
Endrin aldehyde		0.039	0.1	0.022	J C
Heptachlor		0.028	0.02	0.0032	C
Heptachlor epoxide	ND		1	0.54	
Methoxychlor	ND		0.01	0.0028	
Toxaphene	ND		1	0.089	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	EBGSAN0473
Lab ID:	68601-04
Date Received:	11/5/97
Date Prepared:	11/6/97
Date Analyzed:	11/8/97
% Solids	-
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	45	N	65	130
Decachlorobiphenyl	78		65	130

Analyte		**Result (ug/L)**	**PQL**	**MDL**	**Flags**
Aldrin	ND		0.01	0.00075	
alpha-BHC	ND		0.01	0.00077	
beta-BHC	ND		0.01	0.0014	
delta-BHC	ND		0.01	0.00078	
gamma-BHC (Lindane)	ND		0.01	0.0017	
Chlordane (technical)	ND		0.1	0.025	
4,4'-DDD	ND		0.02	0.0017	
4,4'-DDE	ND		0.02	0.0036	
4,4'-DDT	ND		0.02	0.013	
2,4'-DDD	ND		0.02	0.015	
2,4'-DDE	ND		0.02	0.015	
2,4'-DDT	ND		0.02	0.015	
Dieldrin	ND		0.02	0.0024	
Endosulfan I	ND		0.02	0.0012	
Endosulfan II	ND		0.02	0.0089	
Endosulfan sulfate	ND		0.01	0.001	
Endrin	ND		0.01	0.0017	
Endrin aldehyde	ND		0.1	0.022	
Heptachlor	ND		0.02	0.0032	
Heptachlor epoxide	ND		1	0.54	
Methoxychlor	ND		0.01	0.0028	
Toxaphene	ND		1	0.089	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	RWSWN0474
Lab ID:	68601-05
Date Received:	11/5/97
Date Prepared:	11/6/97
Date Analyzed:	11/8/97
% Solids	-
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	43	N	65	130
Decachlorobiphenyl	58	X9	65	130

Analyte		**Result (ug/L)**	**PQL**	**MDL**	**Flags**
Aldrin	ND		0.01	0.00075	
alpha-BHC	ND		0.01	0.00077	
beta-BHC	ND		0.01	0.0014	
delta-BHC	ND		0.01	0.00078	
gamma-BHC (Lindane)	ND		0.01	0.0017	
Chlordane (technical)	ND		0.1	0.025	
4,4'-DDD		0.023	0.02	0.0017	C
4,4'-DDE		0.049	0.02	0.0036	C
4,4'-DDT		0.11	0.02	0.013	C
2,4'-DDD	ND		0.02	0.015	
2,4'-DDE		0.02	0.02	0.015	C
2,4'-DDT		0.062	0.02	0.015	C
Dieldrin		0.029	0.02	0.0024	N C
Endosulfan I	ND		0.02	0.0012	
Endosulfan II	ND		0.02	0.0089	
Endosulfan sulfate	ND		0.01	0.001	
Endrin	ND		0.01	0.0017	
Endrin aldehyde	ND		0.1	0.022	
Heptachlor	ND		0.02	0.0032	
Heptachlor epoxide	ND		1	0.54	
Methoxychlor	ND		0.01	0.0028	
Toxaphene	ND		1	0.089	

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SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

Report To: Garry Struthers Associates, Inc. Date: November 12, 1997

Report On: Analysis of Liquid Report No.: 68601

IDENTIFICATION:
Samples received on 11-05-97
Project: Wenatchee Test Plot Soils

ANALYSIS:

Lab Sample No. 68601-2 Client ID: RWGSAN0471

General Chemistry
Date Analyzed: 11-07-97
Units: mg/L

Parameter	Method	Result	PQL
Total Suspended Solids	EPA 160.2	140	10

ND - Not Detected
PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

Garry Struthers Associates, Inc.
Project: Wenatchee Test Plot Soils
Report No. 68601
November 12, 1997

Lab Sample No. 68601-3 Client ID: RWGSAN0472

General Chemistry
Date Analyzed: 11-07-97
Units: mg/L

Parameter	Method	Result	PQL
Total Suspended Solids	EPA 160.2	170	10

ND - Not Detected
PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

Garry Struthers Associates, Inc.
Project: Wenatchee Test Plot Soils
Report No. 68601
November 12, 1997

Lab Sample No. 68601-4 Client ID: EBGSAN0473

General Chemistry
Date Analyzed: 11-07-97
Units: mg/L

Parameter	Method	Result	PQL
Total Suspended Solids	EPA 160.2	ND	2

ND - Not Detected
PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

Garry Struthers Associates, Inc.
Project: Wenatchee Test Plot Soils
Report No. 68601
November 12, 1997

Lab Sample No. 68601-5 Client ID: RWSWN0474

General Chemistry
Date Analyzed: 11-07-97
Units: mg/L

Parameter	Method	Result	PQL
Total Suspended Solids	EPA 160.2	6	2

ND - Not Detected
PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

	Method Blank - 0
Lab ID:	-
Date Received:	-
Date Prepared:	11/6/97
Date Analyzed:	-
% Solids	2
Dilution Factor	

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	89		65	135

Analyte	Result (ug/L)	PQL	MDL	Flags
Dichlorvos	ND	0.4	0.25	
Dimethoate	ND	0.17	0.072	
Diazinon	ND	0.11	0.11	
Disulfoton	ND	0.12	0.069	
Parathion,methyl	ND	0.17	0.14	
Malathion	ND	0.082	0.077	
Parathion	ND	0.22	0.21	
Azinphos,methyl	ND	0.33	0.14	
Ethion	ND	0.2	0.1	
Paraoxon,methyl	ND	0.2	0.1	
Paraoxon,ethyl	ND	0.2	0.1	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike/Blank Spike Duplicate Report

Lab ID:	OP210
Date Prepared:	11/6/97
Date Analyzed:	11/6/97
QC Batch ID:	OP210

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Compound Name	Blank Result (ug/L)	Spike Amount (ug/L)	BS Result (ug/L)	BS % Rec.	BSD Result (ug/L)	BSD % Rec.	RPD	Flag
Dichlorvos	0	1	0.938	93.8	0.912	91.2	2.8	
Dimethoate	0	1	0.686	68.6	0.778	77.8	13	
Diazinon	0	1	0.746	74.6	0.78	78	4.5	
Disulfoton	0	1	0.8	80	0.81	81	1.2	
Parathion,methyl	0	1	0.822	82.2	0.93	93	12	
Malathion	0	1	0.756	75.6	0.884	88.4	16	
Parathion	0	1	0.784	78.4	0.886	88.6	12	
Azinphos,methyl	0	1	0.864	86.4	0.854	85.4	1.2	
Ethion	0	1	0.856	85.6	0.772	77.2	10	
Paraoxon,methyl	0	1	0.76	76	0.788	78.8	3.6	
Paraoxon,ethyl	0	1	0.652	65.2	0.71	71	8.5	

SOUND ANALYTICAL SERVICES, INC.

Client Name	0
Client ID:	SOP210
Lab ID:	-
Date Received:	11/6/97
Date Prepared:	11/6/97
Date Analyzed:	-
% Solids	2
Dilution Factor	

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	94		65	135

Analyte	Result (ug/L)	PQL	MDL	Flags
Dichlorvos	0.94	0.4	0.25	
Dimethoate	0.69	0.17	0.072	
Diazinon	0.75	0.11	0.11	
Disulfoton	0.8	0.12	0.069	
Parathion,methyl	0.82	0.17	0.14	
Malathion	0.76	0.082	0.077	
Parathion	0.78	0.22	0.21	
Azinphos,methyl	0.86	0.33	0.14	
Ethion	0.86	0.2	0.1	
Paraoxon,methyl	0.76	0.2	0.1	
Paraoxon,ethyl	0.65	0.2	0.1	

SOUND ANALYTICAL SERVICES, INC.

Client Name	0
Client ID:	DOP210
Lab ID:	-
Date Received:	11/6/97
Date Prepared:	11/6/97
Date Analyzed:	-
% Solids	2
Dilution Factor	

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	96		65	135

Analyte	Result (ug/L)	PQL	MDL	Flags
Dichlorvos	0.91	0.4	0.25	
Dimethoate	0.78	0.17	0.072	
Diazinon	0.78	0.11	0.11	
Disulfoton	0.81	0.12	0.069	
Parathion,methyl	0.93	0.17	0.14	
Malathion	0.88	0.082	0.077	
Parathion	0.89	0.22	0.21	
Azinphos,methyl	0.85	0.33	0.14	
Ethion	0.77	0.2	0.1	
Paraoxon,methyl	0.79	0.2	0.1	
Paraoxon,ethyl	0.71	0.2	0.1	

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike Report

Client Sample ID:	EBGSAN0473
Lab ID:	68601-04
Date Prepared:	11/6/97
Date Analyzed:	11/6/97
QC Batch ID:	OP210

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Parameter Name	Sample Result (ug/L)	Spike Amount (ug/L)	MS Result (ug/L)	MS % Rec.	Flag
Dichlorvos	0	1	0.88	88	
Dimethoate	0	1	0.76	76	
Diazinon	0	1	0.69	69	
Disulfoton	0	1	0.75	75	
Parathion,methyl	0	1	0.85	85	
Malathion	0	1	0.77	77	
Parathion	0	1	0.85	85	
Azinphos,methyl	0	1	1.1	106	
Ethion	0	1	0.79	79	
Paraoxon,methyl	0	1	0.75	75	
Paraoxon,ethyl	0	1	0.74	74	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	EBGSAN0473 - ms
Lab ID:	68601S04
Date Received:	11/5/97
Date Prepared:	11/6/97
Date Analyzed:	11/6/97
% Solids	-
Dilution Factor	2

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	105		65	135

Analyte	Result (ug/L)	PQL	MDL	Flags
Dichlorvos	0.88	0.4	0.25	
Dimethoate	0.76	0.17	0.072	
Diazinon	0.69	0.11	0.11	
Disulfoton	0.75	0.12	0.069	
Parathion,methyl	0.85	0.17	0.14	
Malathion	0.77	0.082	0.077	
Parathion	0.85	0.22	0.21	
Azinphos,methyl	1.1	0.33	0.14	
Ethion	0.79	0.2	0.1	
Paraoxon,methyl	0.75	0.2	0.1	
Paraoxon,ethyl	0.74	0.2	0.1	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - PE828
Date Received:	-
Date Prepared:	11/6/97
Date Analyzed:	11/10/97
% Solids	-
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	High
TCMX	74		65	130
Decachlorobiphenyl	85		65	130

Analyte	Result (ug/L)	PQL	MDL	Flags
Aldrin	ND	0.01	0.00075	
alpha-BHC	ND	0.01	0.00077	
beta-BHC	ND	0.01	0.0014	
delta-BHC	ND	0.01	0.00078	
gamma-BHC (Lindane)	ND	0.01	0.0017	
Chlordane (technical)	ND	0.1	0.025	
4,4'-DDD	ND	0.02	0.0017	
4,4'-DDE	ND	0.02	0.0036	
4,4'-DDT	ND	0.02	0.013	
2,4'-DDD	ND	0.02	0.015	
2,4'-DDE	ND	0.02	0.015	
2,4'-DDT	ND	0.02	0.015	
Dieldrin	ND	0.02	0.0024	
Endosulfan I	ND	0.02	0.0012	
Endosulfan II	ND	0.02	0.0089	
Endosulfan sulfate	ND	0.01	0.001	
Endrin	ND	0.01	0.0017	
Endrin aldehyde	ND	0.1	0.022	
Heptachlor	ND	0.02	0.0032	
Heptachlor epoxide	ND	1	0.54	
Methoxychlor	ND	0.01	0.0028	
Toxaphene	ND	1	0.089	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike/Blank Spike Duplicate Report

Lab ID:	PE828
Date Prepared:	11/6/97
Date Analyzed:	11/10/97
QC Batch ID:	PE828

Organochlorine Pesticides by USEPA Method 8081

Compound Name	Blank Result (ug/L)	Spike Amount (ug/L)	BS Result (ug/L)	BS % Rec.	BSD Result (ug/L)	BSD % Rec.	RPD	Flag
Aldrin	0	0.25	0.188	75.2	0.193	77.1	2.5	
gamma-BHC (Lindane)	0	0.25	0.195	77.9	0.192	76.6	1.7	
4,4'-DDD	0	0.5	0.442	88.4	0.421	84.2	4.9	
4,4'-DDE	0	0.5	0.491	98.2	0.442	88.5	10	
4,4'-DDT	0	0.5	0.505	101	0.472	94.3	6.9	
2,4'-DDD	0	0.5	0.46	92.1	0.422	84.4	8.7	
2,4'-DDE	0	0.5	0.451	90.2	0.42	84	7.1	
2,4'-DDT	0	0.5	0.462	92.4	0.424	84.7	8.7	
Dieldrin	0	0.5	0.458	91.7	0.447	89.4	2.5	
Endrin	0	0.5	0.453	90.5	0.441	88.3	2.5	
Heptachlor	0	0.25	0.195	77.9	0.199	79.4	1.9	

SOUND ANALYTICAL SERVICES, INC.

Client Name	0
Client ID:	
Lab ID:	SPE828
Date Received:	-
Date Prepared:	11/6/97
Date Analyzed:	11/10/97
% Solids	-
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	High
TCMX	69		65	130
Decachlorobiphenyl	93		65	130

Analyte	Result (ug/L)	PQL	MDL	Flags
Aldrin	0.19	0.01	0.00075	C
gamma-BHC (Lindane)	0.19	0.01	0.0017	C
4,4'-DDD	0.44	0.02	0.0017	C
4,4'-DDE	0.49	0.02	0.0036	C
4,4'-DDT	0.5	0.02	0.013	C
2,4'-DDD	0.46	0.02	0.015	C
2,4'-DDE	0.45	0.02	0.015	C
2,4'-DDT	0.46	0.02	0.015	C
Dieldrin	0.46	0.02	0.0024	C
Endrin	0.45	0.01	0.0017	C
Heptachlor	0.19	0.02	0.0032	C

SOUND ANALYTICAL SERVICES, INC.

Client Name	0
Client ID:	
Lab ID:	DPE828
Date Received:	-
Date Prepared:	11/6/97
Date Analyzed:	11/8/97
% Solids	-
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
TCMX	69		65	130
Decachlorobiphenyl	84		65	130

Analyte	Result (ug/L)	PQL	MDL	Flags
Aldrin	0.19	0.01	0.00075	C
gamma-BHC (Lindane)	0.19	0.01	0.0017	C
4,4'-DDD	0.42	0.02	0.0017	C
4,4'-DDE	0.44	0.02	0.0036	C
4,4'-DDT	0.47	0.02	0.013	C
2,4'-DDD	0.42	0.02	0.015	C
2,4'-DDE	0.42	0.02	0.015	C
2,4'-DDT	0.42	0.02	0.015	C
Dieldrin	0.45	0.02	0.0024	C
Endrin	0.44	0.01	0.0017	C
Heptachlor	0.2	0.02	0.0032	C

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (253)922-2310 - FAX (253)922-5047

QUALITY CONTROL REPORT

General Chemistry

Client: Garry Struthers Associates, Inc.
Lab No: 68601q
Units: mg/L

QC Batch No. 300
Sample No. 68601-2
Date Analyzed: 11-7-97

METHOD BLANK

Parameter	Result	PQL
Total Suspended Solids	ND	2

ND = Not Detected
PQL = Practical Quantitation Limit

DUPLICATE

Parameter	Sample Result	Duplicate Result	RPD	Flag
Total Suspended Solids	140	150	6.9	

RPD = Relative Percent Difference

DATA QUALIFIER DEFINITIONS

SOUND ANALYTICAL SERVICES, INC.

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 • TELEPHONE 206-922-2310 • FAX 206-922-5047

DATA QUALIFIERS AND ABBREVIATIONS

B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).

B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).

C: Additional confirmation performed.

D: The reported result for this analyte is calculated based on a secondary dilution factor.

E: The concentration of this analyte exceeded the instrument calibration range.

J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

MCL: Maximum Contaminant Level

MDL: Method Detection Limit

N: See analytical narrative.

ND: Not Detected

PQL: Practical Quantitation Limit

X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.

X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.

X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.

X4: RPD for duplicates outside advisory QC limits. Sample was re-analyzed with similar results.

X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.

X5: Matrix spike was diluted out during analysis.

X6: Recovery of matrix spike was outside advisory QC limits. Sample was re-analyzed with similar results.

X7: Recovery of matrix spike outside advisory QC limits. Matrix interference is indicated by blank spike recovery data.

X7a: Recovery and/or RPD values for MS/MSD outside advisory QC limits due to high contaminant levels.

X8: Surrogate was diluted out during analysis.

X9: Surrogate recovery outside advisory QC limits due to matrix composition.

CHAIN OF CUSTODY

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. East
Tacoma, Washington 98424
(253) 922-2310 • FAX (253) 922-5047

68000 (Soils) 68001 (Water) → 16 COC#10

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

CLIENT: Garry Struthers Assoc.
PROJECT NAME: WTFREC
CONTACT: Mike Webb
PHONE NO: 425-519-0300 X 217

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	OP Pesticides	OC Pesticides
	FC9B2N0471	11/4/97	1340	Soil	1														✓	✓
	FC8A4N0472		1330		1														✓	✓
	FC7A2N0473		1400		1														✓	✓
	FC7A2N0474		1410		1														✓	✓
	FC6C2N0475		1420		1														✓	✓
	FC5C4N0476		1430		1														✓	✓
	FC4B1N0477		1440		1														✓	✓
	FC4B3N0478		1455		1															✓
	FC3A5N0479		1500		1														✓	✓
	FC2A2N04710		1515		1														✓	✓
	FC1A1N04711		1520		1														✓	✓
	FC10A1N04712		1545		1															✓
	FC10B1N04713		1542	↓	1														✓	
68601-1	FCEBN04714	↓	1550	WATER	2														✓	✓
	TEMP. BLANK																			

	Signature	Printed Name	Firm	Time / Date
Relinquished By	Michael Webb	Michael Webb	GSA Inc	1155 am 11/5/97
Received By	S Giang	Giang	SAS	1155 am 11/5/97
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:
SAMPLED BY MIKE WEBB
These samples will be disposed of 45 days after receipt.
Check this box to have samples returned ☐.
LAB CONTACT KATIE DOWNIE
USACE PROJECT – ANALYZE AS PER QAPP
72 HR TAT – BATCH FCEBN04714 WITH WATER SAMPLES TO BE DELIVERED LATER.
HAND DELIVERED BY MIKE WEBB
DO NOT SPIKE FCEBN04714 FOR QC.

1 of 1

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. East
Tacoma, Washington 9842
(253) 922-2310 • FAX (253) 922-5047

68601 (PH≤5?) 5/8

CHAIN OF COUSTODY / REQUEST FOR LABORATORY ANALYSIS COC#14

CLIENT: GARRY STRUTHERS ASSOC

PROJECT NAME: WTFREC

CONTACT: MIKE WEBB

PHONE NO: 425-519-0300

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	OP/OC Pesticides	Priority Pollutant metals (ICPMS)	TSS
68601-2	RWGSAN0471	11/?/97	1833	WATER	4														✓✓	✓	✓
68601-3	RWGSAN0472	11/4/97	1835	WATER	4														✓2	✓	✓
	TEMP. BLANK																				

	Signature	Printed Name	Firm	Time / Date
Relinquished By	Michael Webb	Michael Webb	GSA Inc.	940Am 11/6/97
Received By	S Giang	Giang	SAS	940am 11/6/97
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:
SAMPLED BY FRED LUCK
These samples will be disposed of 45 days after receipt.
Check this box to have samples returned ☐.
(See Sampling Log #3 for previous COC history)
• US Army Corps of Engineers Project - analyze as per QAPP
• Combine these samples with previous water samples and rinsate blanks (COC #10 & 15)

Page 1 of 1

6800l (PHV SF)

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. East
Tacoma, Washington 98424
(253) 922-2310 • FAX (253) 922-5047

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

COC #15

CLIENT: GARRY STRUTHERS ASSOC.
PROJECT NAME: WTFREC
CONTACT: MIKE WEBB
PHONE NO: 425-519-0300

ANALYSIS REQUESTED:

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	OP/OC Pesticides	Priority Pollutant Metals ICPMS	TSS
68601-4	EBGSAN0473	11/4/97	1750	WATER	4														✓✓	✓	✓
68601-5	RWSWN0474	11/4/97	1809	WATER	4														✓✓	✓	✓
	TEMP. BLANK																			*	

* Metals samples preserved w/ HNO_3

	Signature	Printed Name	Firm	Time / Date
Relinquished By	Michael Webb	Michael Webb	GSA Inc	9:25 11/6/97
Received By	Mary Curtiss	Mary Curtiss	SAS	9:25 11/6/97
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:
SAMPLED BY FRED LUCK — see Sampling Log #32 for previous COC history
These samples will be disposed of 45 days after receipt.
Check this box to have samples returned ☐.
• US Army Corps of Engineers Project — analyze as per QAPP.
• Combine these samples with previous water samples/rinsate blanks (COC# 10 & 14)

Cooler #14

SAS LAB NO. 68601

PAGE 1 OF 2

COOLER RECEIPT FORM

PROJECT: Wenatchee Test Pilot Soils W.O.# —

COOLER RECEIVED ON 11-6-97 AND OPENED ON 11-6-97 BY S Siang

S Siang
(SIGNATURE)

Temperature upon receipt: cooler 4 °C
temp. blank 2 °C

1.	Were custody seals on outside of cooler and intact? hand delivered	YES (NO)
	a. If YES, how many and where:	
	b. Were signature and date correct?	YES (NO)
2.	Were custody papers taped to lid inside cooler?	YES (NO)
3.	Were custody papers properly filled out (ink, signed, etc)?	(YES) NO
4.	Did you sign custody papers in the appropriate place?	(YES) NO
5.	Did you attach shipper's packing slip to this form?	YES (NO)
6.	What kind of packing material was used? bubblewrap	
7.	Was sufficient ice used (if appropriate)?	(YES) NO
8.	Were all bottles sealed in separate plastic bags?	(YES) NO
9.	Did all bottles arrive in good condition (unbroken)?	(YES) NO
10.	Were all bottle labels complete (no., date, signed, pres, etc)?	(YES) NO
11.	Did all bottle labels and tags agree with custody papers?	(YES) NO
12.	Were correct bottles used for the test indicated?	(YES) NO
13.	If present, were VOA vials checked for absence of air bubbles and noted if found? n/a	YES NO
14.	Adequate volume of VOA vials received per sample? n/a	YES NO
15.	Was sufficient amount of sample sent in each bottle?	(YES) NO
16.	Were correct preservatives used?	(YES) NO
17.	Corrective action taken, if necessary:	
	a. Name of person contacted:	
	b. Date:	

cooler #15

SAS LAB NO. 68601

COOLER RECEIPT FORM

PROJECT: Wenatchee Test Plot Soils W.O.#

COOLER RECEIVED ON 11-6-97 AND OPENED ON 11-6-97 BY SGiang

SGiang
(SIGNATURE)

Temperature upon receipt: cooler #5 °C
temp. blank 7 °C

1. Were custody seals on outside of cooler and intact? YES (NO)
   a. If YES, how many and where: Hand delivered
   b. Were signature and date correct? YES (NO)
2. Were custody papers taped to lid inside cooler? YES (NO)
3. Were custody papers properly filled out (ink, signed, etc)? (YES) NO
4. Did you sign custody papers in the appropriate place? (YES) NO
5. Did you attach shipper's packing slip to this form? YES (NO)
6. What kind of packing material was used? bubblewrap
7. Was sufficient ice used (if appropriate)? (YES) NO
8. Were all bottles sealed in separate plastic bags? (YES) NO
9. Did all bottles arrive in good condition (unbroken)? (YES) NO
10. Were all bottle labels complete (no., date, signed, pres, etc)? (YES) NO
11. Did all bottle labels and tags agree with custody papers? (YES) NO
12. Were correct bottles used for the test indicated? (YES) NO
13. If present, were VOA vials checked for absence of air bubbles and noted if found? N/A YES NO
14. Adequate volume of VOA vials received per sample? N/A YES NO
15. Was sufficient amount of sample sent in each bottle? (YES) NO
16. Were correct preservatives used? (YES) NO
17. Corrective action taken, if necessary:
    a. Name of person contacted:
    b. Date:

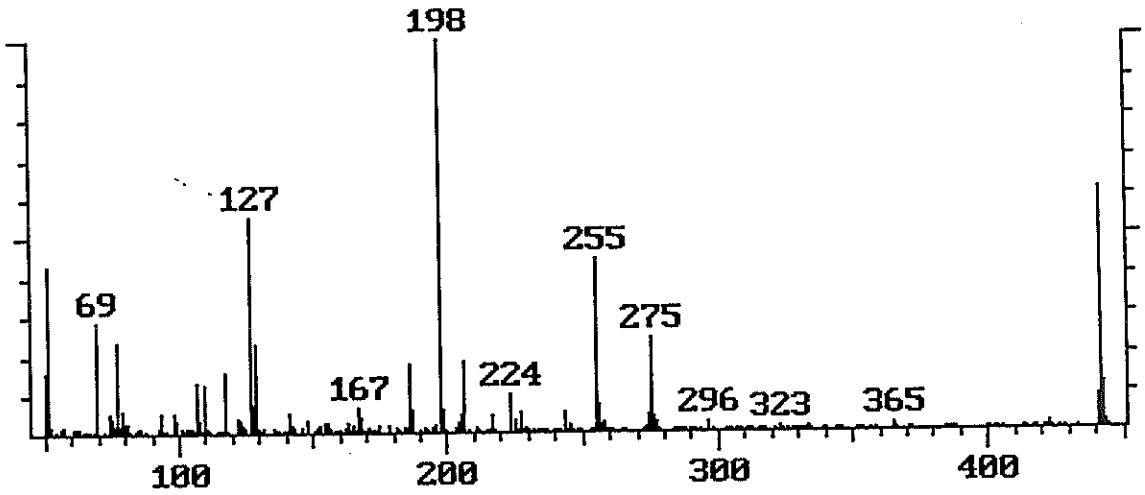
ORGANOPHOSPHORUS PESTICIDE DATA PACKAGE

INITIAL CALIBRATION DATA

Method 8270 DFTPP Report

Data File: P25863
Cali File: DFTPP

Acqu Date: 10/22/97
Acqu Time: 17:30



Mass	Acceptance Criterion	Value	Pass/Fail
51	30-60% of Mass 198	42.73	Pass
68	<= 2% of Mass 69	1.75	Pass
69	Exists Only	28.27	Pass
70	<= 2% of Mass 69	0.00	Pass
127	40-60% of Mass 198	55.13	Pass
197	<= 1% of Mass 198	0.00	Pass
198	Base Peak	100.00	Pass
199	5 - 9% of Mass 198	5.59	Pass
275	10-30% of Mass 198	24.09	Pass
365	>= 1% of Mass 198	1.78	Pass
441	Exists/<= Mass 443	13.25	Pass
442	40-100% of Mass 198	61.38	Pass
443	17-23% of Mass 442	18.73	Pass

Initial Calibration Report

INSTRUMENT : ITS40
LABORATORY : Sound Analytical Services
OPERATOR : Brent Hepner 10/22/97

HIT ANY KEY TO CONTINUE

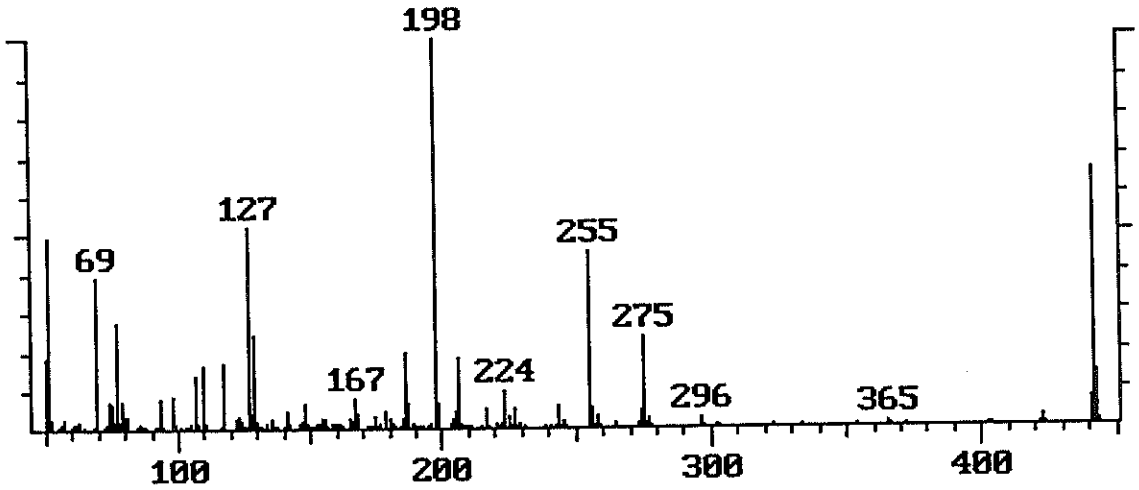
						AVE	RSD
Triphenyl Phosphate	0.244	0.242	0.244	0.267	0.194	0.238	11.3%
Dichlorvos	0.404	0.420	0.422	0.484	0.415	0.429	7.4%
Phorate	0.215	0.208	0.184	0.205	0.181	0.199	7.6%
Dimethoate	0.256	0.297	0.298	0.340	0.292	0.297	10.1%
Diazinon	0.321	0.321	0.338	0.421	0.364	0.353	11.8%
Disulfoton	0.441	0.460	0.374	0.371	0.316	0.393	14.8%
Paraoxon,methyl	0.178	0.211	0.220	0.269	0.221	0.220	14.8%
Phosphamidon	0.424	0.446	0.439	0.460	0.424	0.438	3.5%
Parathion,methyl	0.219	0.260	0.243	0.310	0.279	0.262	13.2%
Paraoxon,ethyl	0.194	0.186	0.170	0.195	0.180	0.185	5.7%
Malathion	0.368	0.414	0.431	0.467	0.411	0.418	8.6%
Chlorpyrifos	0.198	0.206	0.202	0.246	0.230	0.216	9.6%
Parathion	0.114	0.118	0.123	0.162	0.130	0.129	14.7%
Ethion	0.951	1.133	1.091	1.375	1.154	1.141	13.4%
Phosmet	1.638	1.717	1.643	1.816	1.530	1.669	6.3%
Azinphos,methyl	1.128	1.225	1.126	1.126	0.883	1.098	11.6%

CONTINUING CALIBRATION DATA

Method 8270 DFTPP Report

Data File: P26148
Cali File: DFTPP

Acqu Date: 11/06/97
Acqu Time: 16:06



Mass	Acceptance Criterion	Value	Pass/Fail
51	30-60% of Mass 198	49.42	Pass
68	<= 2% of Mass 69	0.85	Pass
69	Exists Only	38.91	Pass
70	<= 2% of Mass 69	0.00	Pass
127	40-60% of Mass 198	52.12	Pass
197	<= 1% of Mass 198	0.00	Pass
198	Base Peak	100.00	Pass
199	5 - 9% of Mass 198	6.44	Pass
275	10-30% of Mass 198	23.16	Pass
365	>= 1% of Mass 198	1.06	Pass
441	Exists/<= Mass 443	10.71	Pass
442	40-100% of Mass 198	65.80	Pass
443	17-23% of Mass 442	20.20	Pass

Calibration Check Report

DATAFILE : P26149 ANALYSIS DATE : 11/06/97 18:01
SAMPLE : 1.0 NG/UL 8141 SPECIAL MIX CCAL STD NO 0045-64-1
LABORATORY : Sound Analytical Services
OPERATOR : Brent Hepner
INSTRUMENT : ITS40
ANALYSIS : GC-MS Analysis

HIT ANY KEY TO CONTINUE

	AVE RF	CONT. RF	RPD	
Triphenyl Phosphate	0.238	0.215	9.546	%
Dichlorvos	0.429	0.476	10.916	%
Dimethoate	0.297	0.288	2.849	%
Diazinon	0.353	0.302	14.534	%
Disulfoton	0.393	0.358	8.846	%
Paraoxon,methyl	0.220	0.240	9.048	%
Parathion,methyl	0.262	0.268	2.022	%
Paraoxon,ethyl	0.185	0.177	4.497	%
Malathion	0.418	0.391	6.410	%
Parathion	0.129	0.141	9.335	%
Ethion	1.141	1.110	2.675	%
Azinphos,methyl	1.098	1.206	9.796	%

Calibration Check Report

DATAFILE : P26159 ANALYSIS DATE : 11/06/97 23:34
SAMPLE : 1.0 NG/UL 8141 END OF RUN CALIB. VERIFICATION OCS
LABORATORY : Sound Analytical Services
OPERATOR : Brent Hepner
INSTRUMENT : ITS40
ANALYSIS : GC-MS Analysis

HIT ANY KEY TO CONTINUE

	AVE RF	CONT. RF	RPD	
Triphenyl Phosphate	0.238	0.211	11.589	%
Dichlorvos	0.429	0.420	2.143	%
Dimethoate	0.297	0.303	2.179	%
Diazinon	0.353	0.347	1.687	%
Disulfoton	0.393	0.406	3.507	%
Paraoxon,methyl	0.220	0.217	1.338	%
Parathion,methyl	0.262	0.252	3.844	%
Paraoxon,ethyl	0.185	0.176	5.041	%
Malathion	0.418	0.376	10.097	%
Parathion	0.129	0.136	4.783	%
Ethion	1.141	1.005	11.918	%
Azinphos,methyl	1.098	0.957	12.880	%

CHLORINATED PESTICIDE DATA PACKAGE

INITIAL CALIBRATION DATA

Pesticide %RSD

Date Analyzed: 7-Nov-97
Instrument: 3400 Dual Column
Analytical Column: DB-1701

COMPOUND	A RF	B RF	C RF	D RF	E RF	F RF	Average RF	Average RF	Stdev.	%RSD	Correlation Coefficient
TCMX	5336	5219	5339	4823	4795	4918	5072	1.9717E-04	233	4.6	0.9951
alpha-BHC	8223	8202	8330	8393	8093	8108	8225	1.2158E-04	109	1.3	0.9975
Lindane	7593	7274	7583	7199	6988	7245	7314	1.3673E-04	214	2.9	0.9995
Heptachlor	7563	7557	7689	7367	7151	7497	7471	1.3386E-04	172	2.3	0.9992
Aldrin	7724	7601	7580	7047	6892	7120	7327	1.3648E-04	318	4.3	0.9995
B-BHC	2729	2669	2705	2584	2474	2542	2617	3.8212E-04	91	3.5	0.9996
D-BHC	5668	5903	6236	5958	5903	6229	5983	1.6714E-04	199	3.3	0.9990
Heptachlor Epoxide	5494	5582	5822	5539	5444	5591	5579	1.7925E-04	120	2.2	0.9997
Endosulfan-I	4857	5054	5551	4976	4798	4799	5006	1.9977E-04	261	5.2	0.9965
gamma-Chlordane	6509	6217	6293	6132	6067	6335	6259	1.5977E-04	144	2.3	0.9993
alpha-Chlordane	5733	5825	6145	5784	5648	5772	5818	1.7189E-04	156	2.7	0.9997
4,4'-DDE	5850	5652	5849	5478	5400	5505	5622	1.7787E-04	177	3.2	0.9998
Dieldrin	5340	5091	5202	4912	4923	4988	5076	1.9700E-04	155	3.0	0.9999
Endrin	4141	4283	4212	4160	4001	4241	4173	2.3963E-04	90	2.2	0.9989
4,4'-DDD	3303	3618	3770	3640	3609	3784	3621	2.7619E-04	158	4.4	0.9992
Endosulfan-II	4049	4305	4345	4099	4037	4211	4174	2.3956E-04	121	2.9	0.9951
4,4'-DDT	4077	4032	4266	3786	3646	3515	3887	2.5727E-04	260	6.7	0.9968
Endrin Aldehyde	1896	2345	2501	2812	2866	3111	2588	3.8635E-04	397	15.3	0.9950
Methox/Endo Sulfate	2396	2292	2357	2300	2223	2192	2293	4.3606E-04	71	3.1	0.9958
Endrin Ketone	4200	4406	4463	4245	4281	4409	4334	2.3075E-04	97	2.2	0.9996
Decachlorobiphenyl	4171	3887	3806	3583	3491	3637	3762	2.6578E-04	226	6.0	0.9993

Sample Concentration = (Linear Regression Value) x (Analyte Response)

Pesticide %RSD

Date Analyzed: 7-Nov-97
Instrument: 3400 Dual Column
Analytical Column: DB-17

COMPOUND	A RF	B RF	C RF	D RF	E RF	F RF	Average RF	Average RF	Stdev.	%RSD	Correlation Coefficient
TCMX	6741	6408	6505	6306	6334	6850	6524	1.5328E-04	204	3.1	0.9965
alpha-BHC	8685	9300	9571	9572	9617	10079	9471	1.0559E-04	420	4.4	0.9992
Lindane	8062	8488	8705	8387	8526	9152	8553	1.1691E-04	330	3.9	0.9981
beta-BHC	4003	3264	3389	3155	3087	3214	3352	2.9833E-04	306	9.1	0.9993
Heptachlor	8947	9048	8400	8097	8039	8508	8507	1.1756E-04	384	4.5	0.9988
D-BHC	6469	7139	7239	6980	7117	7737	7113	1.4058E-04	374	5.3	0.9973
Aldrin	9375	8825	8718	8316	8340	8808	8730	1.1454E-04	355	4.1	0.9988
Heptachlor Epoxide	7464	6710	6692	6288	6294	6574	6670	1.4992E-04	393	5.9	0.9992
gamma-Chlordane	6570	7555	7430	6935	6791	7064	7057	1.4169E-04	344	4.9	0.9993
alpha-Chlordane	6475	6966	7036	6524	6414	6705	6687	1.4955E-04	240	3.6	0.9992
Endosulfan-I	4978	5815	6049	5881	5959	6239	5820	1.7181E-04	400	6.9	0.9992
4,4'-DDE	6594	6096	6295	6070	6227	6904	6364	1.5713E-04	296	4.7	0.9960
Dieldrin	5178	5416	5557	5388	5565	6150	5542	1.8043E-04	301	5.4	0.9961
Endrin	4297	4467	4548	4490	4536	4949	4548	2.1989E-04	197	4.3	0.9973
4,4'-DDD	5824	4064	4299	4093	4221	4598	4516	2.2142E-04	610	13.5	0.9970
Endosulfan-II	4262	4288	4384	4270	4402	4775	4397	2.2744E-04	178	4.0	0.9974
4,4'-DDT	4871	4535	4726	4575	4731	5190	4771	2.0958E-04	217	4.6	0.9966
Endrin Aldehyde	2995	3168	3337	3202	3248	3536	3248	3.0792E-04	165	5.1	0.9973
Endosulfan Sulfate	3687	3725	3862	3793	3881	4185	3856	2.5936E-04	162	4.2	0.9978
Methoxychlor	1842	1924	1979	1941	2072	2130	1981	5.0470E-04	96	4.8	0.9992
Endrin Ketone	5159	4808	4985	4810	4981	5471	5036	1.9858E-04	228	4.5	0.9965
Decachlorobiphenyl	5437	4708	4747	4347	4194	4412	4641	2.1549E-04	406	8.7	0.9989

Sample Concentration = (Linear Regression Value) x (Analyte Response)

Pesticide %RSD

Date Analyzed: 7-Nov-97
Instrument: 3400 Dual Column
Analytical Column: DB-1701

COMPOUND	A RF	B RF	C RF	D RF	E RF	F RF	Average RF	Average RF	Stdev.	%RSD	Linear Regression
2,4-DDE	4111	4015	3749	3565	3386	3353	3696	2.7053E-04	291	7.9	0.9972
2,4-DDD	3036	2838	2743	2779	2660	2668	2787	3.5879E-04	127	4.6	0.9982
2,4-DDT	3935	3721	3535	3439	3377	3341	3558	2.8105E-04	209	5.9	0.9956

Date Analyzed: 7-Nov-97
Instrument: 3400 Dual Column
Analytical Column: DB-17

COMPOUND	A RF	B RF	C RF	D RF	E RF	F RF	Average RF	Average RF	Stdev.	%RSD	Linear Regression
2,4-DDE	4824	4563	4275	4052	4021	4102	4306	2.3221E-04	295	6.9	0.9998
2,4-DDD	3163	3478	3211	3201	3151	3152	3226	3.0998E-04	115	3.6	0.9986
2,4-DDT	5449	4307	4064	3883	3890	3962	4259	2.3480E-04	551	12.9	0.9978

Sample Concentration = (Linear Regression Value) x (Analyte Response)

mailed after p47 MW 12-12-97

CONTINUING CALIBRATION DATA

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079721
Date Analyzed: 11/7/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	40	43.46	8.7%	OK
alpha-BHC	20	21.2	6.0%	OK
Lindane	20	21.6	8.0%	OK
Heptachlor	20	21.35	6.8%	OK
Aldrin	20	22.34	11.7%	OK
B-BHC	20	21.99	9.9%	OK
D-BHC	20	22.44	12.2%	OK
Heptachlor Epoxide	20	22.57	12.9%	OK
Endosulfan-I	20	22.5	12.5%	OK
gamma-Chlordane	20	21.81	9.0%	OK
alpha-Chlordane	20	22.9	14.5%	OK
4,4'-DDE	40	45.62	14.1%	OK
Dieldrin	40	44.52	11.3%	OK
Endrin	40	45.32	13.3%	OK
4,4'-DDD	40	43.53	8.8%	OK
Endosulfan-II	40	41.84	4.6%	OK
4,4'-DDT	40	42.27	5.7%	OK
Endrin Aldehyde	40	36.09	9.8%	OK
Methoxychlor	200	227.24	13.6%	OK
Endosulfan Sulfate	40	39.92	0.2%	OK
Endrin Ketone	40	38.56	3.6%	OK
Decachlorobiphenyl	80	88	10.1%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079722
Date Analyzed: 11/7/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.2	10.9%	OK
2,4-DDD	20	22.1	10.3%	OK
2,4-DDT	20	21.8	8.9%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079735
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	52.61	5.2%	OK
alpha-BHC	25	26.98	7.9%	OK
Lindane	25	26.12	4.5%	OK
Heptachlor	25	26.2	4.8%	OK
Aldrin	25	26.84	7.4%	OK
B-BHC	25	27.16	8.6%	OK
D-BHC	25	26.61	6.4%	OK
Heptachlor Epoxide	25	26.79	7.2%	OK
Endosulfan-I	25	27.84	11.4%	OK
gamma-Chlordane	25	25.79	3.2%	OK
alpha-Chlordane	25	25.71	2.8%	OK
4,4'-DDE	50	56.31	12.6%	OK
Dieldrin	50	53.67	7.3%	OK
Endrin	50	55.21	10.4%	OK
4,4'-DDD	50	53.18	6.4%	OK
Endosulfan-II	50	52.09	4.2%	OK
4,4'-DDT	50	54.56	9.1%	OK
Endrin Aldehyde	50	49.65	0.7%	OK
Methoxychlor	250	275.97	10.4%	OK
Endosulfan Sulfate	50	51.36	2.7%	OK
Endrin Ketone	50	52.78	5.6%	OK
Decachlorobiphenyl	100	108	8.2%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079736
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.5	12.6%	OK
2,4-DDD	20	21.8	9.0%	OK
2,4-DDT	20	22.3	11.7%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079749
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	51.65	3.3%	OK
alpha-BHC	25	26.38	5.5%	OK
Lindane	25	25.92	3.7%	OK
Heptachlor	25	25.97	3.9%	OK
Aldrin	25	26.44	5.8%	OK
B-BHC	25	26.78	7.1%	OK
D-BHC	25	26.5	6.0%	OK
Heptachlor Epoxide	25	26.65	6.6%	OK
Endosulfan-I	25	25.6	2.4%	OK
gamma-Chlordane	25	27.04	8.2%	OK
alpha-Chlordane	25	25.49	2.0%	OK
4,4'-DDE	50	51.73	3.5%	OK
Dieldrin	50	52.96	5.9%	OK
Endrin	50	53.86	7.7%	OK
4,4'-DDD	50	53.12	6.2%	OK
Endosulfan-II	50	49.66	0.7%	OK
4,4'-DDT	50	56.2	12.4%	OK
Endrin Aldehyde	50	43.59	12.8%	OK
Methoxychlor	250	270.99	8.4%	OK
Endosulfan Sulfate	50	50.28	0.6%	OK
Endrin Ketone	50	51.54	3.1%	OK
Decachlorobiphenyl	100	105	4.7%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079750
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.6	13.0%	OK
2,4-DDD	20	22.0	10.1%	OK
2,4-DDT	20	22.5	12.4%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079763
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	51.57	3.1%	OK
alpha-BHC	25	27.05	8.2%	OK
Lindane	25	26.67	6.7%	OK
Heptachlor	25	26.86	7.4%	OK
Aldrin	25	26.28	5.1%	OK
B-BHC	25	28.44	13.8%	OK
D-BHC	25	27.05	8.2%	OK
Heptachlor Epoxide	25	27.1	8.4%	OK
Endosulfan-I	25	27.43	9.7%	OK
gamma-Chlordane	25	27.01	8.0%	OK
alpha-Chlordane	25	27	8.0%	OK
4,4'-DDE	50	54.21	8.4%	OK
Dieldrin	50	54.4	8.8%	OK
Endrin	50	57.38	14.8%	OK
4,4'-DDD	50	51.12	2.2%	OK
Endosulfan-II	50	51.95	3.9%	OK
4,4'-DDT	50	55.82	11.6%	OK
Endrin Aldehyde	50	42.66	14.7%	OK
Methoxychlor	250	284.96	14.0%	OK
Endosulfan Sulfate	50	51.48	3.0%	OK
Endrin Ketone	50	51.72	3.4%	OK
Decachlorobiphenyl	100	105	5.5%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11079764
Date Analyzed: 11/8/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.1	10.3%	OK
2,4-DDD	20	22.2	11.0%	OK
2,4-DDT	20	22.7	13.4%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099703
Date Analyzed: 11/9/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	48.13	3.7%	OK
alpha-BHC	25	23.78	4.9%	OK
Lindane	25	23.63	5.5%	OK
Heptachlor	25	23.87	4.5%	OK
Aldrin	25	24.22	3.1%	OK
B-BHC	25	24.86	0.6%	OK
D-BHC	25	24.15	3.4%	OK
Heptachlor Epoxide	25	24.47	2.1%	OK
Endosulfan-I	25	26.12	4.5%	OK
gamma-Chlordane	25	23.31	6.8%	OK
alpha-Chlordane	25	24.34	2.6%	OK
4,4'-DDE	50	47.56	4.9%	OK
Dieldrin	50	48.18	3.6%	OK
Endrin	50	48.02	4.0%	OK
4,4'-DDD	50	48.96	2.1%	OK
Endosulfan-II	50	48.47	3.1%	OK
4,4'-DDT	50	48.35	3.3%	OK
Endrin Aldehyde	50	43.75	12.5%	OK
Methoxychlor	250	235.15	5.9%	OK
Endosulfan Sulfate	50	45.83	8.3%	OK
Endrin Ketone	50	47.23	5.5%	OK
Decachlorobiphenyl	100	96	3.7%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099704
Date Analyzed: 11/9/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	21.8	8.9%	OK
2,4-DDD	20	21.7	8.6%	OK
2,4-DDT	20	21.6	7.9%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099717
Date Analyzed: 11/10/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	50.9	1.8%	OK
alpha-BHC	25	24.43	2.3%	OK
Lindane	25	25.47	1.9%	OK
Heptachlor	25	25.49	2.0%	OK
Aldrin	25	25.55	2.2%	OK
B-BHC	25	26.57	6.3%	OK
D-BHC	25	24.98	0.1%	OK
Heptachlor Epoxide	25	25.51	2.0%	OK
Endosulfan-I	25	26.08	4.3%	OK
gamma-Chlordane	25	25.42	1.7%	OK
alpha-Chlordane	25	25.6	2.4%	OK
4,4'-DDE	50	50.41	0.8%	OK
Dieldrin	50	51.04	2.1%	OK
Endrin	50	49.87	0.3%	OK
4,4'-DDD	50	50.11	0.2%	OK
Endosulfan-II	50	51.08	2.2%	OK
4,4'-DDT	50	50.48	1.0%	OK
Endrin Aldehyde	50	45.11	9.8%	OK
Methoxychlor	250	264.44	5.8%	OK
Endosulfan Sulfate	50	48.48	3.0%	OK
Endrin Ketone	50	51	2.0%	OK
Decachlorobiphenyl	100	99	1.1%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099718
Date Analyzed: 11/10/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.5	12.7%	OK
2,4-DDD	20	21.2	5.7%	OK
2,4-DDT	20	22.4	12.1%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099730
Date Analyzed: 11/10/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	52.33	4.7%	OK
alpha-BHC	25	22.66	9.4%	OK
Lindane	25	25.69	2.8%	OK
Heptachlor	25	26.67	6.7%	OK
Aldrin	25	26.1	4.4%	OK
B-BHC	25	26.98	7.9%	OK
D-BHC	25	26.04	4.2%	OK
Heptachlor Epoxide	25	26.79	7.2%	OK
Endosulfan-I	25	26.43	5.7%	OK
gamma-Chlordane	25	26.95	7.8%	OK
alpha-Chlordane	25	26.53	6.1%	OK
4,4'-DDE	50	52.03	4.1%	OK
Dieldrin	50	53.21	6.4%	OK
Endrin	50	54.69	9.4%	OK
4,4'-DDD	50	52.66	5.3%	OK
Endosulfan-II	50	53.18	6.4%	OK
4,4'-DDT	50	53.08	6.2%	OK
Endrin Aldehyde	50	45.23	9.5%	OK
Methoxychlor	250	265.73	6.3%	OK
Endosulfan Sulfate	50	50.39	0.8%	OK
Endrin Ketone	50	49.43	1.1%	OK
Decachlorobiphenyl	100	102	2.1%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11099731
Date Analyzed: 11/10/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.8	13.9%	OK
2,4-DDD	20	22.1	10.5%	OK
2,4-DDT	20	23.0	15.0%	OK

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11079720
Date Analyzed: 11/7/97

DB-1701

Compound	Response (Area)
4,4'-DDE	4989
4,4'-DDD	0
4,4'-DDT	458385
Endrin Aldehyde	6607
Endrin Ketone	11561
Endrin	239546
DDT % Breakdown	1.1%
Endrin % Breakdown	7.0%
Total % Breakdown	8.1%

DB-17

Compound	Response (Area)
4,4'-DDE	0
4,4'-DDD	0
4,4'-DDT	540552
Endrin Aldehyde	16988
Endrin Ketone	16574
Endrin	250905
DDT % Breakdown	0.0%
Endrin % Breakdown	11.8%
Total % Breakdown	11.8%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11079734
Date Analyzed: 11/8/97

DB-1701

Compound	Response (Area)
4,4'-DDE	84909
4,4'-DDD	4923
4,4'-DDT	513736
Endrin Aldehyde	7180
Endrin Ketone	8106
Endrin	249304
DDT % Breakdown	14.9%
Endrin % Breakdown	5.8%
Total % Breakdown	20.7%

DB-17

Compound	Response (Area)
4,4'-DDE	78321
4,4'-DDD	16415
4,4'-DDT	614599
Endrin Aldehyde	11025
Endrin Ketone	0
Endrin	268717
DDT % Breakdown	13.4%
Endrin % Breakdown	3.9%
Total % Breakdown	17.3%

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SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11079748
Date Analyzed: 11/8/97

DB-1701

Compound	Response (Area)
4,4'-DDE	54872
4,4'-DDD	6156
4,4'-DDT	555540
Endrin Aldehyde	5636
Endrin Ketone	8600
Endrin	250267
DDT % Breakdown	9.9%
Endrin % Breakdown	5.4%
Total % Breakdown	15.3%

DB-17

Compound	Response (Area)
4,4'-DDE	20568
4,4'-DDD	25573
4,4'-DDT	649211
Endrin Aldehyde	11424
Endrin Ketone	14284
Endrin	273089
DDT % Breakdown	6.6%
Endrin % Breakdown	8.6%
Total % Breakdown	15.2%

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SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11079762
Date Analyzed: 11/8/97

DB-1701		DB-17	
Compound	**Response (Area)**	**Compound**	**Response (Area)**
4,4'-DDE	7153	4,4'-DDE	0
4,4'-DDD	0	4,4'-DDD	0
4,4'-DDT	486319	4,4'-DDT	592084
Endrin Aldehyde	0	Endrin Aldehyde	0
Endrin Ketone	6007	Endrin Ketone	0
Endrin	269682	Endrin	292872
DDT % Breakdown	1.4%	DDT % Breakdown	0.0%
Endrin % Breakdown	2.2%	Endrin % Breakdown	0.0%
Total % Breakdown	3.6%	Total % Breakdown	0.0%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11099702
Date Analyzed: 11/9/97

DB-1701

Compound	Response (Area)
4,4'-DDE	0
4,4'-DDD	0
4,4'-DDT	413759
Endrin Aldehyde	5971
Endrin Ketone	0
Endrin	222506

DDT % Breakdown	0.0%
Endrin % Breakdown	2.6%
Total % Breakdown	2.6%

DB-17

Compound	Response (Area)
4,4'-DDE	0
4,4'-DDD	0
4,4'-DDT	521371
Endrin Aldehyde	12076
Endrin Ketone	13158
Endrin	250984

DDT % Breakdown	0.0%
Endrin % Breakdown	9.1%
Total % Breakdown	9.1%

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SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11099716
Date Analyzed: 11/10/97

DB-1701

Compound	Response (Area)
4,4'-DDE	4773
4,4'-DDD	0
4,4'-DDT	459846
Endrin Aldehyde	10254
Endrin Ketone	10938
Endrin	239405
DDT % Breakdown	1.0%
Endrin % Breakdown	8.1%
Total % Breakdown	9.2%

DB-17

Compound	Response (Area)
4,4'-DDE	5777
4,4'-DDD	4831
4,4'-DDT	536432
Endrin Aldehyde	14372
Endrin Ketone	9735
Endrin	256376
DDT % Breakdown	1.9%
Endrin % Breakdown	8.6%
Total % Breakdown	10.5%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11099729
Date Analyzed: 11/10/97

DB-1701

Compound	Response (Area)
4,4'-DDE	5634
4,4'-DDD	0
4,4'-DDT	480295
Endrin Aldehyde	6989
Endrin Ketone	9767
Endrin	259008
DDT % Breakdown	1.2%
Endrin % Breakdown	6.1%
Total % Breakdown	7.2%

DB-17

Compound	Response (Area)
4,4'-DDE	4576
4,4'-DDD	0
4,4'-DDT	564460
Endrin Aldehyde	11061
Endrin Ketone	7693
Endrin	277523
DDT % Breakdown	0.8%
Endrin % Breakdown	6.3%
Total % Breakdown	7.1%

TOTAL METALS DATA PACKAGE

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

ıb Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A__ SAS No.: 68601_ SDG No.:SAN047

SOW No.: ILM02.1

EPA Sample No.	Lab Sample ID
SAN0471	68601-2
SAN0472	68601-3
SAN0473	68601-4
SAN0474	68601-5

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES

If yes - were raw data generated before application of background corrections ? Yes/No NO_

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SAN0471

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.: SAN047

Matrix (soil/water): WATER Lab Sample ID: 68601-2

Level (low/med): LOW__ Date Received: 11/05/97

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_				NR
7440-36-0	Antimony_	1.8	U		M_
7440-38-2	Arsenic__	116			M_
7440-39-3	Barium___				NR
7440-41-7	Beryllium	0.66	U		M_
7440-43-9	Cadmium__	2.1	B		M_
7440-70-2	Calcium__				NR
7440-47-3	Chromium_	2.8	B		M_
7440-48-4	Cobalt___				NR
7440-50-8	Copper___	14.5	B		M_
7439-89-6	Iron_____				NR
7439-92-1	Lead_____	184			M_
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury__	0.59			AV
7440-02-0	Nickel___	9.4	B		M_
7440-09-7	Potassium				NR
7782-49-2	Selenium_	2.4	U		M_
7440-22-4	Silver___	0.32	U		M_
7440-23-5	Sodium___				NR
7440-28-0	Thallium_	0.16	U		M_
7440-62-2	Vanadium_				NR
7440-66-6	Zinc_____	217			M_
0000-00-0	Molybdenu				NR

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

_____

_____

_____

_____

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SAN0472

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.: SAN047

Matrix (soil/water): WATER Lab Sample ID: 68601-3

Level (low/med): LOW__ Date Received: 11/05/97

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_		_		NR
7440-36-0	Antimony_	1.8	U		M_
7440-38-2	Arsenic__	112	_		M_
7440-39-3	Barium___		_		NR
7440-41-7	Beryllium	0.66	U		M_
7440-43-9	Cadmium__	1.5	B		M_
7440-70-2	Calcium__		_		NR
7440-47-3	Chromium_	2.2	B		M_
7440-48-4	Cobalt___		_		NR
7440-50-8	Copper___	11.6	B		M_
7439-89-6	Iron_____		_		NR
7439-92-1	Lead_____	154	_		M_
7439-95-4	Magnesium		_		NR
7439-96-5	Manganese		_		NR
7439-97-6	Mercury__	0.17	U		AV
7440-02-0	Nickel___	8.2	B		M_
7440-09-7	Potassium		_		NR
7782-49-2	Selenium_	2.4	U		M_
7440-22-4	Silver___	0.32	U		M_
7440-23-5	Sodium___		_		NR
7440-28-0	Thallium_	0.16	U		M_
7440-62-2	Vanadium_		_		NR
7440-66-6	Zinc_____	214	_		M_
0000-00-0	Molybdenu		_		NR
			_		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SAN0473

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.: SAN047

Matrix (soil/water): WATER Lab Sample ID: 68601-4

Level (low/med): LOW__ Date Received: 11/05/97

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_		_		NR
7440-36-0	Antimony_	1.8	U		M_
7440-38-2	Arsenic__	0.50	U		M_
7440-39-3	Barium___				NR
7440-41-7	Beryllium	0.66	U		M_
7440-43-9	Cadmium__	0.16	U		M_
7440-70-2	Calcium__				NR
7440-47-3	Chromium_	0.58	U		M_
7440-48-4	Cobalt___				NR
7440-50-8	Copper___	0.57	U		M_
7439-89-6	Iron_____				NR
7439-92-1	Lead_____	0.45	U		M_
7439-95-4	Magnesium		_		NR
7439-96-5	Manganese				NR
7439-97-6	Mercury__	0.17	U		AV
7440-02-0	Nickel___	0.53	B		M_
7440-09-7	Potassium				NR
7782-49-2	Selenium_	2.4	U		M_
7440-22-4	Silver___	0.32	U		M_
7440-23-5	Sodium___				NR
7440-28-0	Thallium_	0.16	U		M_
7440-62-2	Vanadium_				NR
7440-66-6	Zinc_____	4.4	U		M_
0000-00-0	Molybdenu		_		NR
			_		

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SAN0474

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.: SAN047

Matrix (soil/water): WATER Lab Sample ID: 68601-5

Level (low/med): LOW__ Date Received: 11/05/97

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_				NR
7440-36-0	Antimony_	1.8	U		M_
7440-38-2	Arsenic__	2.9			M_
7440-39-3	Barium___				NR
7440-41-7	Beryllium	0.66	U		M_
7440-43-9	Cadmium__	0.16	U		M_
7440-70-2	Calcium__				NR
7440-47-3	Chromium_	0.58	U		M_
7440-48-4	Cobalt___				NR
7440-50-8	Copper___	0.57	U		M_
7439-89-6	Iron_____				NR
7439-92-1	Lead_____	2.5			M_
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury__	0.17	U		AV
7440-02-0	Nickel___	1.5	B		M_
7440-09-7	Potassium				NR
7782-49-2	Selenium_	2.4	U		M_
7440-22-4	Silver___	0.32	U		M_
7440-23-5	Sodium___				NR
7440-28-0	Thallium_	0.16	U		M_
7440-62-2	Vanadium_				NR
7440-66-6	Zinc_____	83.9			M_
0000-00-0	Molybdenu				NR

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.: SAN047

Initial Calibration Source: ENVIR.RESOUR

Continuing Calibration Source: LEEMAN LABS_

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum									NR
Antimony	10.0	11.00	110.0	50.0	49.74	99.5	47.60	95.2	M
Arsenic	10.0	10.03	100.3	50.0	51.56	103.1	51.83	103.7	M
Barium									NR
Beryllium	10.0	10.51	105.1	50.0	46.38	92.8	45.65	91.3	M
Cadmium	10.0	10.45	104.5	50.0	51.13	102.3	50.60	101.2	M
Calcium									NR
Chromium	10.0	10.19	101.9	50.0	52.86	105.7	53.31	106.6	M
Cobalt									NR
Copper	10.0	9.68	96.8	50.0	54.69	109.4	55.38	110.8	M
Iron									NR
Lead	10.0	10.32	103.2	50.0	50.40	100.8	50.77	101.5	M
Magnesium									NR
Manganese									NR
Mercury	4.0	3.94	98.5	5.0	5.19	103.8	5.15	103.0	AV
Nickel	10.0	10.07	100.7	50.0	53.90	107.8	54.20	108.4	M
Potassium									NR
Selenium	10.0	10.40	104.0	50.0	53.66	107.3	53.73	107.5	M
Silver	10.0	10.22	102.2	50.0	48.27	96.5	48.60	97.2	M
Sodium									NR
Thallium	10.0	10.45	104.5	50.0	50.67	101.3	51.01	102.0	M
Vanadium									NR
Zinc	10.0	10.48	104.8	50.0	54.01	108.0	54.00	108.0	M
Molybdenu									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.: SAN047

Initial Calibration Source: ENVIR.RESOUR

Continuing Calibration Source: LEEMAN LABS_

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum_									NR
Antimony_				50.0	46.96	93.9			M_
Arsenic__				50.0	51.32	102.6			M_
Barium___									NR
Beryllium				50.0	46.44	92.9			M_
Cadmium__				50.0	50.45	100.9			M_
Calcium__									NR
Chromium_				50.0	53.37	106.7			M_
Cobalt___									NR
Copper___				50.0	55.12	110.2			M_
Iron_____									NR
Lead_____				50.0	50.18	100.4			M_
Magnesium									NR
Manganese									NR
Mercury__									NR
Nickel___				50.0	54.31	108.6			M_
Potassium									NR
Selenium_				50.0	52.01	104.0			M_
Silver___				50.0	48.73	97.5			M_
Sodium___									NR
Thallium_				50.0	50.66	101.3			M_
Vanadium_									NR
Zinc_____				50.0	53.90	107.8			M_
Molybdenu									NR
_____									___

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

3
BLANKS

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.: SAN047

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony	1.8	U	1.8	U	1.8	U	1.8	U	1.835	U	M
Arsenic	0.5	U	0.5	U	0.5	U	0.5	U	0.504	U	M
Barium											NR
Beryllium	0.7	U	0.7	U	0.7	U	0.7	U	0.663	U	M
Cadmium	0.2	U	0.2	U	0.2	U	0.2	U	0.158	U	M
Calcium											NR
Chromium	0.6	U	0.6	U	0.6	U	0.6	U	0.582	U	M
Cobalt											NR
Copper	0.6	U	0.6	U	0.6	U	0.6	U	0.566	U	M
Iron											NR
Lead	0.4	U	0.4	U	0.4	U	0.4	U	0.450	U	M
Magnesium											NR
Manganese											NR
Mercury	0.2	U	0.2	U	0.2	U			0.174	U	AV
Nickel	0.4	U	0.4	U	0.4	U	0.4	U	0.436	U	M
Potassium											NR
Selenium	2.4	U	2.4	U	2.4	U	2.4	U	2.445	U	M
Silver	0.3	U	0.3	U	0.3	U	0.3	U	0.325	U	M
Sodium											NR
Thallium	0.2	U	0.2	U	0.2	U	0.2	U	0.164	U	M
Vanadium											NR
Zinc	4.4	U	4.4	U	4.4	U	4.4	U	4.365	U	M
Molybdenu											NR

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5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.
SAN0471

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.: SAN047

Matrix (soil/water): WATER_ Level (low/med): LOW___

% Solids for Sample: __0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	71.8200		1.8350	U	60.00	119.7		M
Arsenic	75-125	181.5670		115.7520		60.00	109.7		M
Barium									NR
Beryllium									NR
Cadmium	75-125	66.3530		2.1460	B	60.00	107.0		M
Calcium									NR
Chromium	75-125	66.6210		2.8380	B	60.00	106.3		M
Cobalt									NR
Copper	75-125	79.6770		14.4590	B	60.00	108.7		M
Iron									NR
Lead	75-125	244.0420		184.2380		48.00	124.6		M
Magnesium									NR
Manganese									NR
Mercury	75-125	2.3140		0.5920		2.00	86.1		AV
Nickel	75-125	74.3890		9.3660	B	60.00	108.4		M
Potassium									NR
Selenium	75-125	73.5270	B	2.4450	U	60.00	122.5		M
Silver									NR
Sodium									NR
Thallium	75-125	60.9320		0.1640	U	60.00	101.6		M
Vanadium									NR
Zinc	75-125	289.5490		217.3700		60.00	120.3		M
Molybdenu									NR

Comments:

6
DUPLICATES

EPA SAMPLE NO.

SAN0471

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.: SAN047

Matrix (soil/water): WATER Level (low/med): _LOW__

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								NR
Antimony		1.8350	U	1.8350	U			M
Arsenic		115.7520		117.5020		1.5		M
Barium								NR
Beryllium		0.6630	U	0.6630	U			M
Cadmium		2.1460	B	2.1580	B	0.6		M
Calcium								NR
Chromium		2.8380	B	2.8160	B	0.8		M
Cobalt								NR
Copper		14.4590	B	14.8130	B	2.4		M
Iron								NR
Lead		184.2380		187.7940		1.9		M
Magnesium								NR
Manganese								NR
Mercury	0.2	0.5920		0.5010		16.7		AV
Nickel		9.3660	B	9.5070	B	1.5		M
Potassium								NR
Selenium		2.4450	U	2.4450	U			M
Silver		0.3250	U	0.3250	U			M
Sodium								NR
Thallium		0.1640	U	0.1640	U			M
Vanadium								NR
Zinc		217.3700		220.1900		1.3		M
Molybdenu								NR

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LABORATORY CONTROL SAMPLE

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.: SAN047

Solid LCS Source: _____

Aqueous LCS Source: E.R.A._____

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum									
Antimony	10.0	10.82	108.2						
Arsenic	10.0	10.22	102.2						
Barium									
Beryllium	10.0	9.25	92.5						
Cadmium	10.0	10.65	106.5						
Calcium									
Chromium	10.0	11.11	111.1						
Cobalt									
Copper	10.0	11.24	112.4						
Iron									
Lead	10.0	10.53	105.3						
Magnesium									
Manganese									
Mercury									
Nickel	10.0	11.13	111.3						
Potassium									
Selenium	10.0	10.96	109.6						
Silver	10.0	9.97	99.7						
Sodium									
Thallium	10.0	10.58	105.8						
Vanadium									
Zinc	10.0	11.51	115.1						
Molybdenu									

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LABORATORY CONTROL SAMPLE

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.: SAN047

Solid LCS Source: _____

Aqueous LCS Source: ENVIR. RESOU

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury	2.0	1.84	92.2						
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Molybdenu									

9

ICP SERIAL DILUTION

EPA SAMPLE NO.

SAN0471

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.: SAN047

Matrix (soil/water): WATER Level (low/med): LOW__

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum							NR
Antimony	1.83	U	9.17	U			P
Arsenic	115.75		115.65		0.1		P
Barium							NR
Beryllium	0.66	U	3.31	U			P
Cadmium	2.15	B	2.48	B	15.3		P
Calcium							NR
Chromium	2.84	B	11.03	B	288.4		P
Cobalt							NR
Copper	14.46	B	22.58	B	56.2		P
Iron							NR
Lead	184.24		204.26		10.9		P
Magnesium							NR
Manganese							NR
Mercury							NR
Nickel	9.37	B	16.74	B	78.7		P
Potassium							NR
Selenium	2.44	U	12.22	U			P
Silver	0.32	U	1.62	U			P
Sodium							NR
Thallium	0.16	U	0.82	U			P
Vanadium							NR
Zinc	217.37		251.65		15.8		P

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Instrument Detection Limits (Quarterly)

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.: SAN047

ICP ID Number: _____ Date: 01/10/97

Flame AA ID Number : PS200_____

Furnace AA ID Number : _____

Analyte	Wavelength (nm)	Background	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			6		NR
Arsenic			1		NR
Barium			5		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			20		NR
Iron			100		NR
Lead			0		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.65		0.2	0.2	AV
Nickel			40		NR
Potassium			5000		NR
Selenium			400		NR
Silver			50		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR

Comments:

10

Instrument Detection Limits (Quarterly)

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.: SAN047

ICP ID Number: ELAN_5000___ Date: 01/10/97

Flame AA ID Number : _____

Furnace AA ID Number : _____

Analyte	Wavelength (nm)	Background	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			6	1.8	P
Arsenic			1	0.5	P
Barium			5		NR
Beryllium			5	0.7	P
Cadmium			5	0.2	P
Calcium			5000		NR
Chromium			10	0.6	P
Cobalt			50		NR
Copper			20	0.6	P
Iron			100		NR
Lead			0	0.4	P
Magnesium			5000		NR
Manganese			15		NR
Mercury			0.2		NR
Nickel			40	0.4	P
Potassium			5000		NR
Selenium			400	2.4	P
Silver			50	0.3	P
Sodium			5000		NR
Thallium			10	0.2	P
Vanadium			50		NR
Zinc			20	4.4	P

Comments:

12
ICP LINEAR RANGES (QUARTERLY)

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.: SAN047

ICP ID Number: ELAN 5000___ Date: 03/10/97

Analyte	Integ. Time (sec.)	Concentration (ug/L)	M
Aluminum		500.0	P
Antimony		500.0	P
Arsenic		750.0	P
Barium		500.0	P
Beryllium		750.0	P
Cadmium		750.0	P
Calcium			NR
Chromium		750.0	P
Cobalt		500.0	P
Copper		750.0	P
Iron			NR
Lead		1000.0	P
Magnesium			NR
Manganese		750.0	P
Mercury			NR
Nickel		500.0	P
Potassium			NR
Selenium		500.0	P
Silver		750.0	P
Sodium			NR
Thallium		750.0	P
Vanadium		500.0	P
Zinc		750.0	P

Comments:

epe
ofpooooo

13
PREPARATION LOG

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.:_N/A___ SAS No.: 68601_ SDG No.:SAN047

Method: P_

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSW	11/06/97		100
SAN0471	11/06/97		100
SAN0471	11/06/97		100
SAN0471	11/06/97		100
SAN0471	11/06/97		100
SAN0472	11/06/97		100
SAN0473	11/06/97		100
SAN0474	11/06/97		100

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PREPARATION LOG

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.:_N/A___ SAS No.: 68601_ SDG No.:SAN047

Method: AV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSW	11/06/97		100
SAN0471	11/06/97		100
SAN0471	11/06/97		100
SAN0471	11/06/97		100
SAN0471	11/06/97		100
SAN0472	11/06/97		100
SAN0473	11/06/97		100
SAN0474	11/06/97		100

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ANALYSIS RUN LOG

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.:SAN047

Instrument ID Number: PS200_____ Method: AV

Start Date: 11/07/97 End Date: 11/07/97

EPA Sample No.	D/F	Time	% R	Analytes																													
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	MO
ICV	1.00	0935																X									
ICB	1.00	0945																X									
CCV	1.00	1206																X									
CCB	1.00	1209																X									
SAN0471_	1.00	1211																X									
SAN0471_	1.00	1213																X									
SAN0471_	1.00	1216																X									
SAN0471_	1.00	1219																X									
LCSW	1.00	1221																X									
ZZZZZZ	1.00	1224																									
SAN0472_	1.00	1226																X									
SAN0473_	1.00	1229																X									
SAN0474_	1.00	1231																X									
WATER PR	1.00	1233																X									
CCB	1.00	1236																X									
CCV	1.00	1238																X									

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ANALYSIS RUN LOG

Lab Name: SOUND_ANALYTICAL_SERVICES Contract: GSA_____

Lab Code: SAS___ Case No.: N/A___ SAS No.: 68601_ SDG No.:SAN047

Instrument ID Number: ELAN 5000____ Method: M_

Start Date: 11/06/97 End Date: 11/06/97

EPA Sample No.	D/F	Time	% R	Analytes																												
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	MO
ZZZZZZ	1.00	1615		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10ALL	1.00	1621		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
25ALL	1.00	1627		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
50ALL	1.00	1633		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
100ALL	1.00	1639		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
200ALL	1.00	1645		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
ICV	1.00	1703		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
ICB	1.00	1722		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
CCV	1.00	1945		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
CCB	1.00	1951		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
WATER PR	1.00	1956		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
SAN0471_	5.00	2002		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
SAN0471_	1.00	2008		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
SAN0471_	1.00	2014		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
SAN0471_	1.00	2020		-	X	X	-	-	X	-	X	-	X	-	X	-	-	-	X	-	X	-	-	X	-	X	-
SAN0471_	1.00	2026		-	X	X	-	-	X	-	X	-	X	-	X	-	-	-	X	-	X	-	-	X	-	X	-
SAN0471_	1.00	2032		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
LCSW	1.00	2038		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
CCV	1.00	2044		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
CCB	1.00	2050		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
ZZZZZZ	1.00	2056		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAN0472_	1.00	2101		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
SAN0473_	1.00	2107		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
SAN0474_	1.00	2113		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
ZZZZZZ	1.00	2119		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZZZZZZ	1.00	2125		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCV	1.00	2131		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
CCB	1.00	2137		-	X	X	-	X	X	-	X	-	X	-	X	-	-	-	X	-	X	X	-	X	-	X	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set:	11.06.97
Data Set Description:	
Parameter File:	PRIORITY-RPT
Sample ID:	1%ALL
Sample Description:	
Sample Type:	Blank
Sequence Number:	009
Blank:	Not Subtracted
Dilution Factor:	1
Number of Repeats:	3
Time:	16:15:10 Nov 6 1997
Signal Profile Processing:	Average
Spectral Peak Processing:	Average
Deadtime Correction:	35
Calibration File:	[Untitled]
Calibration:	External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	26	8.4148		
Sc 45	113797	5237.5771		
Cr 52	1725	9.3746		
Ni 60	114	9.2835		
Cu 65	287	15.9421		
Ge 72	26472	2461.6169		
Zn 68	244	8.4645		
As 75	52	8.8169		
Se 82	-5	1.7188		
Ag 109	127	31.5779		
Cd 114	87	1.9214		
In 115	201109	2.287E+04		
Sb 123	59	8.7633		
Tb 159	273694	2.778E+04		
Tl 205	69	5.3018		
Pb 208	435	8.1516		

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	<	2.315E-04	7.395E-05				
Sc 45		113797	5237.5771			ions/sec	
Cr 52		0.0152	8.238E-05				
Ni 60		1.000E-03	8.158E-05				
Cu 65		2.525E-03	1.401E-04				

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	26472	2461.6169			ions/sec	
Zn 68		9.202E-03	3.197E-04				
As 75		1.971E-03	3.331E-04				
Se 82		-1.799E-04	6.493E-05				
Ag 109		6.307E-04	1.570E-04				
Cd 114		4.344E-04	9.554E-06				
In 115	<	201109	2.287E+04			ions/sec	
Sb 123		2.936E-04	4.357E-05				
Tb 159	<	273694	2.778E+04			ions/sec	
Tl 205		2.537E-04	1.937E-05				
Pb 208		1.588E-03	2.978E-05				

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set:	11.06.97
Data Set Description:	
Parameter File:	PRIORITY-RPT
Sample ID:	10ALL
Sample Description:	
Sample Type:	Standard
Sequence Number:	010
Blank:	Subtracted (009)
Dilution Factor:	1
Number of Repeats:	3
Time:	16:21:09 Nov 6 1997
Signal Profile Processing:	Average
Spectral Peak Processing:	Average
Deadtime Correction:	35
Calibration File:	[Untitled]
Calibration:	External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	2537	62.7387	26	8.4148
Sc 45	117894	2533.6619	113797	5237.5771
Cr 52	20417	352.2731	1725	9.3746
Ni 60	4836	208.2435	114	9.2835
Cu 65	5529	51.3281	287	15.9421
Ge 72	27956	1217.0061	26472	2461.6169
Zn 68	2676	62.6262	244	8.4645
As 75	3560	75.7327	52	8.8169
Se 82	376	31.8387	-5	1.7188
Ag 109	17219	194.7671	127	31.5779
Cd 114	9385	116.5333	87	1.9214
In 115	213452	1.336E+04	201109	2.287E+04
Sb 123	7719	592.3301	59	8.7633
Tb 159	290727	1.375E+04	273694	2.778E+04
Tl 205	31465	196.3263	69	5.3018
Pb 208	42740	502.4894	435	8.1516

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	]	0.0213	5.373E-04	10.0000	0.2524	PPB	2.5241
Sc 45	<	117894	2533.6619			ions/sec	
Cr 52	]	0.1580	2.989E-03	10.0000	0.1892	PPB	1.8916
Ni 60	]	0.0400	1.768E-03	10.0000	0.4418	PPB	4.4184
Cu 65	]	0.0444	4.574E-04	10.0000	0.1031	PPB	1.0307

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	27956	1217.0061			ions/sec	
Zn 68		0.0865	2.263E-03	10.0000	0.2615	PPB	2.6152
As 75		0.1254	2.729E-03	10.0000	0.2177	PPB	2.1770
Se 82		0.0136	1.141E-03	10.0000	0.8361	PPB	8.3608
Ag 109		0.0800	9.259E-04	10.0000	0.1157	PPB	1.1568
Cd 114		0.0435	5.460E-04	10.0000	0.1254	PPB	1.2543
In 115	<	213452	1.336E+04			ions/sec	
Sb 123		0.0359	2.775E-03	10.0000	0.7738	PPB	7.7378
Tb 159	<	290727	1.375E+04			ions/sec	
Tl 205		0.1080	6.756E-04	10.0000	0.0626	PPB	0.6257
Pb 208		0.1454	1.729E-03	10.0000	0.1189	PPB	1.1887

		Entered Conc.
Be 9		10.0000
Sc 45	<	
Cr 52		10.0000
Ni 60		10.0000
Cu 65		10.0000
Ge 72	<	
Zn 68		10.0000
As 75		10.0000
Se 82		10.0000
Ag 109		10.0000
Cd 114		10.0000
In 115	<	
Sb 123		10.0000
Tb 159	<	
Tl 205		10.0000
Pb 208		10.0000

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set:	11.06.97
Data Set Description:	
Parameter File:	PRIORITY-RPT
Sample ID:	25ALL
Sample Description:	
Sample Type:	Standard
Sequence Number:	011
Blank:	Subtracted (009)
Dilution Factor:	1
Number of Repeats:	3
Time:	16:27:08 Nov 6 1997
Signal Profile Processing:	Average
Spectral Peak Processing:	Average
Deadtime Correction:	35
Calibration File:	[Untitled]
Calibration:	External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	6087	43.6055	26	8.4148
Sc 45	111543	1517.1259	113797	5237.5771
Cr 52	45935	206.4229	1725	9.3746
Ni 60	11316	178.4964	114	9.2835
Cu 65	12890	282.7246	287	15.9421
Ge 72	25895	374.9125	26472	2461.6169
Zn 68	6056	80.8031	244	8.4645
As 75	8311	87.3979	52	8.8169
Se 82	830	17.5069	-5	1.7188
Ag 109	39549	486.7917	127	31.5779
Cd 114	21493	181.3262	87	1.9214
In 115	193526	4614.3076	201109	2.287E+04
Sb 123	18357	968.8748	59	8.7633
Tb 159	267220	7577.5439	273694	2.778E+04
Tl 205	72696	421.3906	69	5.3018
Pb 208	97696	1064.1526	435	8.1516

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	⎤	0.0543	3.979E-04	25.0718	0.1836	PPB	0.7321
Sc 45	<	111543	1517.1259			ions/sec	
Cr 52		0.3967	1.852E-03	25.0139	0.1168	PPB	0.4670
Ni 60		0.1004	1.602E-03	25.0136	0.3990	PPB	1.5952
Cu 65	⎦	0.1130	2.539E-03	25.0643	0.5629	PPB	2.2457

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	25895	374.9125			ions/sec	
Zn 68		0.2247	3.137E-03	25.1286	0.3509	PPB	1.3962
As 75		0.3190	3.391E-03	25.0600	0.2664	PPB	1.0632
Se 82		0.0322	6.792E-04	24.8024	0.5224	PPB	2.1061
Ag 109		0.2037	2.520E-03	25.0616	0.3100	PPB	1.2371
Cd 114		0.1106	9.370E-04	25.0562	0.2122	PPB	0.8470
In 115	<	193526	4614.3076			ions/sec	
Sb 123		0.0946	5.007E-03	25.1797	1.3332	PPB	5.2946
Tb 159	<	267220	7577.5439			ions/sec	
Tl 205		0.2718	1.577E-03	25.0236	0.1452	PPB	0.5802
Pb 208		0.3640	3.982E-03	25.0044	0.2736	PPB	1.0940

		Entered Conc.
Be 9		25.0000
Sc 45	<	
Cr 52		25.0000
Ni 60		25.0000
Cu 65		25.0000
Ge 72	<	
Zn 68		25.0000
As 75		25.0000
Se 82		25.0000
Ag 109		25.0000
Cd 114		25.0000
In 115	<	
Sb 123		25.0000
Tb 159	<	
Tl 205		25.0000
Pb 208		25.0000

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: 50ALL
Sample Description:
Sample Type: Standard
Sequence Number: 012
Blank: Subtracted (009)
Dilution Factor: 1
Number of Repeats: 3
Time: 16:33:07 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	11528	345.1495	26	8.4148
Sc 45	106067	1923.7903	113797	5237.5771
Cr 52	84614	1392.7135	1725	9.3746
Ni 60	21387	426.9449	114	9.2835
Cu 65	24164	360.1652	287	15.9421
Ge 72	24829	1343.3646	26472	2461.6169
Zn 68	11727	106.6743	244	8.4645
As 75	15762	187.6251	52	8.8169
Se 82	1657	47.7174	-5	1.7188
Ag 109	76326	1122.2988	127	31.5779
Cd 114	40998	1821.2374	87	1.9214
In 115	190335	1.387E+04	201109	2.287E+04
Sb 123	35784	1397.8159	59	8.7633
Tb 159	260063	1.883E+04	273694	2.778E+04
Tl 205	138011	5739.7231	69	5.3018
Pb 208	186488	5060.0146	435	8.1516

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	]	0.1085	3.255E-03	50.0084	1.5009	PPB	3.0012
Sc 45	<	106067	1923.7903			ions/sec	
Cr 52	]	0.7826	0.0131	49.8526	0.8365	PPB	1.6779
Ni 60	]	0.2006	4.026E-03	49.9919	1.0032	PPB	2.0066
Cu 65	]	0.2253	3.399E-03	49.9898	0.7541	PPB	1.5085

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	24829	1343.3646			ions/sec	
Zn 68		0.4631	4.308E-03	50.3938	0.4688	PPB	0.9303
As 75		0.6329	7.564E-03	49.9368	0.5968	PPB	1.1952
Se 82		0.0669	1.923E-03	50.3238	1.4460	PPB	2.8733
Ag 109		0.4004	5.899E-03	49.8299	0.7341	PPB	1.4732
Cd 114		0.2150	9.569E-03	49.6990	2.2122	PPB	4.4513
In 115	<	190335	1.387E+04			ions/sec	
Sb 123		0.1877	7.344E-03	49.9964	1.9561	PPB	3.9124
Tb 159	<	260063	1.883E+04			ions/sec	
Tl 205		0.5304	0.0221	49.7335	2.0694	PPB	4.1609
Pb 208		0.7155	0.0195	49.8059	1.3544	PPB	2.7194

		Entered Conc.
Be 9		50.0000
Sc 45	<	
Cr 52		50.0000
Ni 60		50.0000
Cu 65		50.0000
Ge 72	<	
Zn 68		50.0000
As 75		50.0000
Se 82		50.0000
Ag 109		50.0000
Cd 114		50.0000
In 115	<	
Sb 123		50.0000
Tb 159	<	
Tl 205		50.0000
Pb 208		50.0000

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: 100ALL
Sample Description:
Sample Type: Standard
Sequence Number: 013
Blank: Subtracted (009)
Dilution Factor: 1
Number of Repeats: 3
Time: 16:39:06 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	23490	275.2390	26	8.4148
Sc 45	107085	984.9645	113797	5237.5771
Cr 52	167670	2921.3489	1725	9.3746
Ni 60	43264	768.5647	114	9.2835
Cu 65	48918	795.5612	287	15.9421
Ge 72	25143	415.0876	26472	2461.6169
Zn 68	22920	36.2088	244	8.4645
As 75	31657	336.8972	52	8.8169
Se 82	3307	45.0139	-5	1.7188
Ag 109	152568	1745.3234	127	31.5779
Cd 114	81597	372.1562	87	1.9214
In 115	194227	5967.3188	201109	2.287E+04
Sb 123	72830	2534.2234	59	8.7633
Tb 159	265084	3396.9958	273694	2.778E+04
Tl 205	276464	3894.5574	69	5.3018
Pb 208	375837	5089.9844	435	8.1516

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	]	0.2191	2.571E-03	100.2514	1.1764	PPB	1.1735
Sc 45	<	107085	984.9645			ions/sec	
Cr 52		1.5506	0.0273	99.6992	1.7541	PPB	1.7594
Ni 60		0.4030	7.178E-03	100.1011	1.7828	PPB	1.7810
Cu 65	]	0.4543	7.431E-03	100.1943	1.6388	PPB	1.6356

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	25143	415.0876			ions/sec	
Zn 68	]	0.9024	1.475E-03	99.5534	0.1627	PPB	0.1635
As 75	]	1.2571	0.0134	99.8022	1.0641	PPB	1.0662
Se 82	]	0.1317	1.791E-03	99.7613	1.3571	PPB	1.3603
Ag 109	]	0.7849	8.987E-03	99.4252	1.1385	PPB	1.1451
Cd 114	]	0.4197	1.916E-03	99.2588	0.4532	PPB	0.4566
In 115	<	194227	5967.3188			ions/sec	
Sb 123	]	0.3747	0.0130	99.9497	3.4806	PPB	3.4824
Tb 159	<	265084	3396.9958			ions/sec	
Tl 205	]	1.0427	0.0147	99.4450	1.4012	PPB	1.4090
Pb 208	]	1.4162	0.0192	99.6507	1.3511	PPB	1.3558

		Entered Conc.
Be 9	]	100.0000
Sc 45	<	
Cr 52	]	100.0000
Ni 60	]	100.0000
Cu 65	]	100.0000
Ge 72	<	
Zn 68	]	100.0000
As 75	]	100.0000
Se 82	]	100.0000
Ag 109	]	100.0000
Cd 114	]	100.0000
In 115	<	
Sb 123	]	100.0000
Tb 159	<	
Tl 205	]	100.0000
Pb 208	]	100.0000

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set:	11.06.97
Data Set Description:	
Parameter File:	PRIORITY-RPT
Sample ID:	200ALL
Sample Description:	
Sample Type:	Standard
Sequence Number:	014
Blank:	Subtracted (009)
Dilution Factor:	1
Number of Repeats:	3
Time:	16:45:05 Nov 6 1997
Signal Profile Processing:	Average
Spectral Peak Processing:	Average
Deadtime Correction:	35
Calibration File:	[Untitled]
Calibration:	External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	45706	142.4030	26	8.4148
Sc 45	104820	1252.6553	113797	5237.5771
Cr 52	325429	1576.1801	1725	9.3746
Ni 60	85479	66.0149	114	9.2835
Cu 65	96896	628.0399	287	15.9421
Ge 72	25356	402.0956	26472	2461.6169
Zn 68	45841	273.4756	244	8.4645
As 75	63367	141.8206	52	8.8169
Se 82	6757	32.7826	-5	1.7188
Ag 109	384757	4367.0278	127	31.5779
Cd 114	164506	336.5538	87	1.9214
In 115	197119	2182.1235	201109	2.287E+04
Sb 123	148318	3934.7849	59	8.7633
Tb 159	270172	3106.4297	273694	2.778E+04
Tl 205	550151	3874.8748	69	5.3018
Pb 208	752664	935.1802	435	8.1516

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	]	0.4358	1.361E-03	199.8474	0.6239	PPB	0.3122
Sc 45	<	104820	1252.6553			ions/sec	
Cr 52	]	3.0895	0.0150	199.6613	0.9718	PPB	0.4867
Ni 60	]	0.8145	6.351E-04	200.5676	0.1564	PPB	0.0780
Cu 65	]	0.9219	5.993E-03	200.8146	1.3055	PPB	0.6501

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	25356	402.0956			ions/sec	
Zn 68		1.7987	0.0108	199.6081	1.1974	PPB	0.5999
As 75		2.4971	5.603E-03	199.5610	0.4478	PPB	0.2244
Se 82		0.2667	1.295E-03	200.4930	0.9733	PPB	0.4855
Ag 109		1.9513	0.0222	209.9571	2.3839	PPB	1.1354
Cd 114		0.8341	1.707E-03	199.3165	0.4080	PPB	0.2047
In 115	<	197119	2182.1235			ions/sec	
Sb 123		0.7521	0.0200	200.1584	5.3122	PPB	2.6540
Tb 159	<	270172	3106.4297			ions/sec	
Tl 205		2.0360	0.0143	198.5234	1.3984	PPB	0.7044
Pb 208		2.7843	3.462E-03	198.9687	0.2474	PPB	0.1243

		Entered Conc.
Be 9		200.0000
Sc 45	<	
Cr 52		200.0000
Ni 60		200.0000
Cu 65		200.0000
Ge 72	<	
Zn 68		200.0000
As 75		200.0000
Se 82		200.0000
Ag 109		200.0000
Cd 114		200.0000
In 115	<	
Sb 123		200.0000
Tb 159	<	
Tl 205		200.0000
Pb 208		200.0000

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set:	11.06.97
Data Set Description:	
Parameter File:	PRIORITY-RPT
Sample ID:	MSICV
Sample Description:	
Sample Type:	Sample
Sequence Number:	017
Blank:	Subtracted (016)
Dilution Factor:	1
Number of Repeats:	3
Time:	17:03:01 Nov 6 1997
Signal Profile Processing:	Average
Spectral Peak Processing:	Average
Deadtime Correction:	35
Calibration File:	[Untitled]
Calibration:	External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	2304	13.6969	19	4.6832
Sc 45	99676	496.0124	97971	581.3169
Cr 52	16921	31.6252	1180	31.7734
Ni 60	4163	50.4320	84	10.3348
Cu 65	4555	53.0918	125	17.3024
Ge 72	22783	385.1367	22683	158.6500
Zn 68	2258	53.8551	105	7.2854
As 75	2899	81.9901	40	24.2420
Se 82	312	10.2572	-3	5.3122
Ag 109	13905	112.6557	134	42.3009
Cd 114	7526	77.5269	66	7.7858
In 115	170657	1316.6555	170918	2843.0242
Sb 123	7274	259.6862	221	44.8022
Tb 159	232846	2524.1724	232895	4270.5532
Tl 205	25035	105.7686	69	10.9555
Pb 208	33804	115.1220	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	]	0.0229	1.455E-04	10.5105	0.0667	PPB	0.6348
Sc 45	<	99676	496.0124			ions/sec	
Cr 52	]	0.1577	4.537E-04	10.1922	0.0293	PPB	0.2877
Ni 60	]	0.0409	5.168E-04	10.0737	0.1273	PPB	1.2634
Cu 65	]	0.0444	5.612E-04	9.6770	0.1222	PPB	1.2632

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	22783	385.1367			ions/sec	
Zn 68		0.0945	2.386E-03	10.4847	0.2647	PPB	2.5250
As 75		0.1255	3.754E-03	10.0302	0.3000	PPB	2.9911
Se 82		0.0138	5.075E-04	10.3986	0.3816	PPB	3.6693
Ag 109		0.0807	7.050E-04	10.2220	0.0893	PPB	0.8737
Cd 114		0.0437	4.566E-04	10.4460	0.1091	PPB	1.0444
In 115	<	170657	1316.6555			ions/sec	
Sb 123		0.0413	1.544E-03	10.9994	0.4109	PPB	3.7358
Tb 159	<	232846	2524.1724			ions/sec	
Tl 205		0.1072	4.567E-04	10.4545	0.0445	PPB	0.4259
Pb 208		0.1444	4.950E-04	10.3191	0.0354	PPB	0.3428

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: MSICB
Sample Description:
Sample Type: Sample
Sequence Number: 018
Blank: Subtracted (016)
Dilution Factor: 1
Number of Repeats: 3
Time: 17:22:22 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	19	1.3975	19	4.6832
Sc 45	94989	293.2944	97971	581.3169
Cr 52	1341	31.6516	1180	31.7734
Ni 60	78	8.0609	84	10.3348
Cu 65	120	15.6680	125	17.3024
Ge 72	21931	244.0525	22683	158.6500
Zn 68	109	11.2551	105	7.2854
As 75	27	9.5424	40	24.2420
Se 82	-5	7.7098	-3	5.3122
Ag 109	89	24.7192	134	42.3009
Cd 114	55	5.3625	66	7.7858
In 115	161756	3276.8977	170918	2843.0242
Sb 123	64	9.5404	221	44.8022
Tb 159	222187	1527.6891	232895	4270.5532
Tl 205	46	8.2844	69	10.9555
Pb 208	173	11.6755	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9		1.160E-05	5.001E-05	5.321E-03	0.0229	PPB	430.9965
Sc 45	<	94989	293.2944			ions/sec	
Cr 52		2.069E-03	4.650E-04	0.1337	0.0301	PPB	22.4728
Ni 60		-3.211E-05	1.354E-04	-7.907E-03	0.0333	PPB	421.6341
Cu 65		-1.245E-05	2.417E-04	-2.713E-03	0.0526	PPB	1940.3436

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QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	21931	244.0525			ions/sec	
Zn 68		3.517E-04	6.054E-04	0.0390	0.0672	PPB	172.1445
As 75		-5.135E-04	1.154E-03	-0.0410	0.0922	PPB	224.7093
Se 82		-1.028E-04	4.224E-04	-0.0773	0.3176	PPB	410.7379
Ag 109		-2.351E-04	2.909E-04	-0.0298	0.0368	PPB	123.7266
Cd 114		-4.527E-05	5.634E-05	-0.0108	0.0135	PPB	124.4516
In 115	<	161756	3276.8977			ions/sec	
Sb 123		-8.985E-04	2.687E-04	-0.2391	0.0715	PPB	29.9041
Tb 159	<	222187	1527.6891			ions/sec	
Tl 205		-9.007E-05	6.003E-05	-8.782E-03	5.853E-03	PPB	66.6435
Pb 208		1.124E-06	5.782E-05	8.035E-05	4.132E-03	PPB	5142.3682

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: MSCCV-1
Sample Description:
Sample Type: Sample
Sequence Number: 042
Blank: Subtracted (016)
Dilution Factor: 1
Number of Repeats: 3
Time: 19:45:08 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	7995	117.8956	19	4.6832
Sc 45	78899	890.0761	97971	581.3169
Cr 52	65487	299.2076	1180	31.7734
Ni 60	17336	120.9544	84	10.3348
Cu 65	19909	250.9613	125	17.3024
Ge 72	20524	208.3511	22683	158.6500
Zn 68	10084	168.3220	105	7.2854
As 75	13278	42.9281	40	24.2420
Se 82	1462	9.9728	-3	5.3122
Ag 109	70005	372.0610	134	42.3009
Cd 114	39297	372.9913	66	7.7858
In 115	183322	883.2986	170918	2843.0242
Sb 123	34499	1566.3099	221	44.8022
Tb 159	254673	1498.4165	232895	4270.5532
Tl 205	132421	1092.3082	69	10.9555
Pb 208	179800	1150.9091	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	]	0.1011	1.495E-03	46.3794	0.6856	PPB	1.4782
Sc 45	<	78899	890.0761			ions/sec	
Cr 52	]	0.8180	3.806E-03	52.8623	0.2460	PPB	0.4653
Ni 60	]	0.2189	1.537E-03	53.8962	0.3784	PPB	0.7021
Cu 65	]	0.2511	3.186E-03	54.6878	0.6940	PPB	1.2689

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	20524	208.3511			ions/sec	
Zn 68		0.4867	8.207E-03	54.0129	0.9108	PPB	1.6863
As 75		0.6452	2.349E-03	51.5627	0.1877	PPB	0.3640
Se 82		0.0714	5.394E-04	53.6626	0.4056	PPB	0.7557
Ag 109		0.3811	2.045E-03	48.2741	0.2590	PPB	0.5365
Cd 114		0.2140	2.035E-03	51.1311	0.4863	PPB	0.9511
In 115	<	183322	883.2986			ions/sec	
Sb 123		0.1869	8.548E-03	49.7373	2.2748	PPB	4.5737
Tb 159	<	254673	1498.4165			ions/sec	
Tl 205		0.5197	4.289E-03	50.6701	0.4182	PPB	0.8254
Pb 208		0.7052	4.519E-03	50.3966	0.3230	PPB	0.6408

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: MSCCB-1
Sample Description:
Sample Type: Sample
Sequence Number: 043
Blank: Subtracted (016)
Dilution Factor: 1
Number of Repeats: 3
Time: 19:51:03 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	25	5.3610	19	4.6832
Sc 45	82317	902.9208	97971	581.3169
Cr 52	1120	47.3467	1180	31.7734
Ni 60	71	6.5431	84	10.3348
Cu 65	101	15.3535	125	17.3024
Ge 72	21393	197.5274	22683	158.6500
Zn 68	193	15.3864	105	7.2854
As 75	37	5.6247	40	24.2420
Se 82	-2	4.5050	-3	5.3122
Ag 109	176	68.0957	134	42.3009
Cd 114	81	7.1785	66	7.7858
In 115	183661	1214.3712	170918	2843.0242
Sb 123	294	72.9947	221	44.8022
Tb 159	252369	1876.9130	232895	4270.5532
Tl 205	140	71.5194	69	10.9555
Pb 208	305	71.3831	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	┐	1.139E-04	8.079E-05	0.0522	0.0370	PPB	70.9340
Sc 45	<	82317	902.9208			ions/sec	
Cr 52	│	1.563E-03	6.603E-04	0.1010	0.0427	PPB	42.2382
Ni 60	│	3.890E-06	1.321E-04	9.580E-04	0.0325	PPB	3395.3181
Cu 65	┘	-5.212E-05	2.569E-04	-0.0114	0.0560	PPB	492.7852

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	21393	197.5274			ions/sec	
Zn 68		4.397E-03	7.877E-04	0.4880	0.0874	PPB	17.9131
As 75		-3.048E-05	1.101E-03	-2.436E-03	0.0880	PPB	3611.3943
Se 82		2.214E-05	3.149E-04	0.0166	0.2368	PPB	1422.2803
Ag 109		1.746E-04	4.458E-04	0.0221	0.0565	PPB	255.3252
Cd 114		5.470E-05	6.002E-05	0.0131	0.0143	PPB	109.7361
In 115	<	183661	1214.3712			ions/sec	
Sb 123		3.101E-04	4.761E-04	0.0825	0.1267	PPB	153.5455
Tb 159	<	252369	1876.9130			ions/sec	
Tl 205		2.603E-04	2.873E-04	0.0254	0.0280	PPB	110.3751
Pb 208		4.327E-04	2.839E-04	0.0309	0.0203	PPB	65.6096

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: WATER-BLANK-1
Sample Description:
Sample Type: Sample
Sequence Number: 044
Blank: Subtracted (016)
Dilution Factor: 1
Number of Repeats: 3
Time: 19:56:59 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	18	6.1234	19	4.6832
Sc 45	82186	1205.5841	97971	581.3169
Cr 52	1091	42.6030	1180	31.7734
Ni 60	81	9.2541	84	10.3348
Cu 65	125	23.1667	125	17.3024
Ge 72	21344	193.2067	22683	158.6500
Zn 68	231	17.4708	105	7.2854
As 75	42	15.0672	40	24.2420
Se 82	4	7.1046	-3	5.3122
Ag 109	85	12.4670	134	42.3009
Cd 114	58	0.8665	66	7.7858
In 115	178937	2987.8484	170918	2843.0242
Sb 123	93	9.1195	221	44.8022
Tb 159	245288	3577.5537	232895	4270.5532
Tl 205	52	7.1605	69	10.9555
Pb 208	235	11.0637	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9		3.357E-05	8.852E-05	0.0154	0.0406	PPB	263.7264
Sc 45	<	82186	1205.5841			ions/sec	
Cr 52		1.226E-03	6.115E-04	0.0792	0.0395	PPB	49.8755
Ni 60		1.240E-04	1.543E-04	0.0305	0.0380	PPB	124.3828
Cu 65		2.419E-04	3.326E-04	0.0527	0.0725	PPB	137.5131

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	21344	193.2067			ions/sec	
Zn 68	]	6.187E-03	8.793E-04	0.6866	0.0976	PPB	14.2121
As 75	]	2.315E-04	1.281E-03	0.0185	0.1024	PPB	553.3030
Se 82	]	3.061E-04	4.070E-04	0.2301	0.3060	PPB	132.9732
Ag 109	]	-3.116E-04	2.571E-04	-0.0395	0.0326	PPB	82.5072
Cd 114	]	-6.265E-05	4.581E-05	-0.0150	0.0109	PPB	73.1205
In 115	<	178937	2987.8484			ions/sec	
Sb 123	]	-7.736E-04	2.670E-04	-0.2059	0.0711	PPB	34.5176
Tb 159	<	245288	3577.5537			ions/sec	
Tl 205	]	-8.489E-05	5.536E-05	-8.277E-03	5.398E-03	PPB	65.2206
Pb 208	]	1.833E-04	5.115E-05	0.0131	3.655E-03	PPB	27.9011

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: 68601-2-1/5
Sample Description:
Sample Type: Sample
Sequence Number: 045
Blank: Subtracted (016)
Dilution Factor: 1
Number of Repeats: 3
Time: 20:02:56 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	29	1.5785	19	4.6832
Sc 45	73072	4790.7456	97971	581.3169
Cr 52	3375	345.6412	1180	31.7734
Ni 60	1056	92.6825	84	10.3348
Cu 65	1608	147.6687	125	17.3024
Ge 72	22790	161.3873	22683	158.6500
Zn 68	10441	147.5224	105	7.2854
As 75	6636	67.6934	40	24.2420
Se 82	2	9.2281	-3	5.3122
Ag 109	26	9.3944	134	42.3009
Cd 114	429	43.6516	66	7.7858
In 115	174224	3660.8906	170918	2843.0242
Sb 123	317	26.1658	221	44.8022
Tb 159	250561	1051.9152	232895	4270.5532
Tl 205	145	17.0794	69	10.9555
Pb 208	143432	962.8906	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	]	2.017E-04	5.246E-05	0.0925	0.0241	PPB	26.0103
Sc 45	<	73072	4790.7456			ions/sec	
Cr 52		0.0341	4.741E-03	2.2061	0.3064	PPB	13.8894
Ni 60		0.0136	1.273E-03	3.3485	0.3134	PPB	9.3600
Cu 65	]	0.0207	2.029E-03	4.5157	0.4419	PPB	9.7857

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	22790	161.3873			ions/sec	
Zn 68	]	0.4535	6.481E-03	50.3301	0.7193	PPB	1.4291
As 75	]	0.2894	3.157E-03	23.1297	0.2523	PPB	1.0907
Se 82	]	2.064E-04	4.678E-04	0.1552	0.3517	PPB	226.5859
Ag 109	]	-6.379E-04	2.533E-04	-0.0808	0.0321	PPB	39.7083
Cd 114	]	2.077E-03	2.547E-04	0.4963	0.0609	PPB	12.2616
In 115	<	174224	3660.8906			ions/sec	
Sb 123	]	5.259E-04	3.021E-04	0.1399	0.0804	PPB	57.4494
Tb 159	<	250561	1051.9152			ions/sec	
Tl 205	]	2.834E-04	8.282E-05	0.0276	8.075E-03	PPB	29.2237
Pb 208	]	0.5717	3.843E-03	40.8522	0.2746	PPB	0.6722

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: 68601-2
Sample Description:
Sample Type: Sample
Sequence Number: 046
Blank: Subtracted (016)
Dilution Factor: 1
Number of Repeats: 3
Time: 20:08:53 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	50	2.6886	19	4.6832
Sc 45	77308	3645.3684	97971	581.3169
Cr 52	4326	201.2697	1180	31.7734
Ni 60	3006	118.2287	84	10.3348
Cu 65	5230	319.7492	125	17.3024
Ge 72	21726	293.4203	22683	158.6500
Zn 68	42655	880.2592	105	7.2854
As 75	31506	442.8868	40	24.2420
Se 82	7	2.5732	-3	5.3122
Ag 109	37	1.8031	134	42.3009
Cd 114	1781	32.3712	66	7.7858
In 115	190217	608.7787	170918	2843.0242
Sb 123	1253	42.8916	221	44.8022
Tb 159	268554	729.5406	232895	4270.5532
Tl 205	134	13.0450	69	10.9555
Pb 208	692580	467.2193	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	⎫	4.541E-04	5.911E-05	0.2082	0.0271	PPB	13.0180
Sc 45	<	77308	3645.3684			ions/sec	
Cr 52	⎪	0.0439	2.624E-03	2.8376	0.1696	PPB	5.9752
Ni 60	⎪	0.0380	1.533E-03	9.3657	0.3775	PPB	4.0306
Cu 65	⎭	0.0664	4.140E-03	14.4593	0.9018	PPB	6.2367

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	21726	293.4203			ions/sec	
Zn 68		1.9587	0.0405	217.3700	4.4965	PPB	2.0686
As 75		1.4484	0.0204	115.7521	1.6314	PPB	1.4094
Se 82		4.420E-04	2.624E-04	0.3323	0.1973	PPB	59.3816
Ag 109		-5.901E-04	2.477E-04	-0.0748	0.0314	PPB	41.9712
Cd 114		8.980E-03	1.762E-04	2.1459	0.0421	PPB	1.9618
In 115	<	190217	608.7787			ions/sec	
Sb 123		5.295E-03	3.458E-04	1.4090	0.0920	PPB	6.5306
Tb 159	<	268554	729.5406			ions/sec	
Tl 205		2.041E-04	6.762E-05	0.0199	6.593E-03	PPB	33.1241
Pb 208		2.5781	1.740E-03	184.2382	0.1243	PPB	0.0675

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set:	11.06.97
Data Set Description:	
Parameter File:	PRIORITY-RPT
Sample ID:	68601-2D
Sample Description:	
Sample Type:	Sample
Sequence Number:	047
Blank:	Subtracted (016)
Dilution Factor:	1
Number of Repeats:	3
Time:	20:14:45 Nov 6 1997
Signal Profile Processing:	Average
Spectral Peak Processing:	Average
Deadtime Correction:	35
Calibration File:	[Untitled]
Calibration:	External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	50	3.4949	19	4.6832
Sc 45	76513	4542.2334	97971	581.3169
Cr 52	4256	324.5818	1180	31.7734
Ni 60	3020	184.6844	84	10.3348
Cu 65	5301	363.0503	125	17.3024
Ge 72	21533	177.2580	22683	158.6500
Zn 68	42823	146.8089	105	7.2854
As 75	31697	178.2619	40	24.2420
Se 82	6	3.9724	-3	5.3122
Ag 109	36	6.6104	134	42.3009
Cd 114	1792	17.7213	66	7.7858
In 115	190325	866.2385	170918	2843.0242
Sb 123	1239	76.9299	221	44.8022
Tb 159	270177	1707.1080	232895	4270.5532
Tl 205	132	18.1862	69	10.9555
Pb 208	710209	4247.3442	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	⎫	4.603E-04	6.612E-05	0.2111	0.0303	PPB	14.3653
Sc 45	<	76513	4542.2334			ions/sec	
Cr 52	⎪	0.0436	4.255E-03	2.8165	0.2750	PPB	9.7625
Ni 60	⎪	0.0386	2.416E-03	9.5072	0.5950	PPB	6.2581
Cu 65	⎭	0.0680	4.748E-03	14.8131	1.0343	PPB	6.9825

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	21533	177.2580			ions/sec	
Zn 68		1.9841	6.826E-03	220.1905	0.7575	PPB	0.3440
As 75		1.4703	8.347E-03	117.5021	0.6671	PPB	0.5677
Se 82		4.076E-04	2.981E-04	0.3065	0.2242	PPB	73.1424
Ag 109		-5.974E-04	2.499E-04	-0.0757	0.0317	PPB	41.8319
Cd 114		9.032E-03	1.037E-04	2.1582	0.0248	PPB	1.1477
In 115	<	190325	866.2385			ions/sec	
Sb 123		5.216E-03	4.818E-04	1.3880	0.1282	PPB	9.2368
Tb 159	<	270177	1707.1080			ions/sec	
Tl 205		1.921E-04	8.212E-05	0.0187	8.007E-03	PPB	42.7598
Pb 208		2.6279	0.0157	187.7937	1.1234	PPB	0.5982

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: 68601-2S
Sample Description:
Sample Type: Sample
Sequence Number: 048
Blank: Subtracted (016)
Dilution Factor: 1
Number of Repeats: 3
Time: 20:20:37 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	9448	584.3526	19	4.6832
Sc 45	75319	3833.2375	97971	581.3169
Cr 52	78551	4312.9292	1180	31.7734
Ni 60	22817	1284.6133	84	10.3348
Cu 65	27646	1259.5137	125	17.3024
Ge 72	20598	211.5034	22683	158.6500
Zn 68	53838	1061.7404	105	7.2854
As 75	46833	565.8250	40	24.2420
Se 82	2012	24.8974	-3	5.3122
Ag 109	38117	209.4197	134	42.3009
Cd 114	51618	708.6521	66	7.7858
In 115	185632	921.8938	170918	2843.0242
Sb 123	50338	110.1614	221	44.8022
Tb 159	262204	284.5302	232895	4270.5532
Tl 205	163933	2230.9353	69	10.9555
Pb 208	895634	5856.2466	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	]	0.1252	7.759E-03	57.4349	3.5578	PPB	6.1945
Sc 45	<	75319	3833.2375			ions/sec	
Cr 52		1.0309	0.0573	66.6211	3.7007	PPB	5.5549
Ni 60		0.3021	0.0171	74.3886	4.2001	PPB	5.6461
Cu 65	]	0.3658	0.0167	79.6772	3.6429	PPB	4.5721

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QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	20598	211.5034			ions/sec	
Zn 68		2.6091	0.0515	289.5492	5.7204	PPB	1.9756
As 75		2.2719	0.0275	181.5668	2.1970	PPB	1.2100
Se 82		0.0978	1.231E-03	73.5268	0.9257	PPB	1.2590
Ag 109		0.2046	1.155E-03	25.9115	0.1463	PPB	0.5646
Cd 114		0.2777	3.818E-03	66.3531	0.9123	PPB	1.3749
In 115	<	185632	921.8938			ions/sec	
Sb 123		0.2699	6.488E-04	71.8200	0.1726	PPB	0.2404
Tb 159	<	262204	284.5302			ions/sec	
Tl 205		0.6249	8.509E-03	60.9320	0.8296	PPB	1.3616
Pb 208		3.4150	0.0223	244.0422	1.5961	PPB	0.6540

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: 68601-2S
Sample Description:
Sample Type: Sample
Sequence Number: 049
Blank: Subtracted (016)
Dilution Factor: 1
Number of Repeats: 3
Time: 20:26:29 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	9013	462.8064	19	4.6832
Sc 45	51085	2503.5039	97971	581.3169
Cr 52	72881	3934.3359	1180	31.7734
Ni 60	22653	1030.0415	84	10.3348
Cu 65	27409	1564.6113	125	17.3024
Ge 72	20505	278.3877	22683	158.6500
Zn 68	54555	1033.2316	105	7.2854
As 75	47241	791.4924	40	24.2420
Se 82	1802	49.9802	-3	5.3122
Ag 109	15599	382.7420	134	42.3009
Cd 114	50626	396.5405	66	7.7858
In 115	177643	2330.8350	170918	2843.0242
Sb 123	34991	605.5182	221	44.8022
Tb 159	246795	2539.9846	232895	4270.5532
Tl 205	151439	482.5800	69	10.9555
Pb 208	898922	5674.3813	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	]	0.1762	9.060E-03	80.8145	4.1544	PPB	5.1407
Sc 45	<	51085	2503.5039			ions/sec	
Cr 52	]	1.4146	0.0770	91.4208	4.9772	PPB	5.4443
Ni 60	]	0.4426	0.0202	108.9832	4.9653	PPB	4.5560
Cu 65	]	0.5352	0.0306	116.5942	6.6718	PPB	5.7222

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	20505	278.3877			ions/sec	
Zn 68		2.6559	0.0504	294.7477	5.5921	PPB	1.8973
As 75		2.3022	0.0386	183.9823	3.0860	PPB	1.6773
Se 82		0.0880	2.449E-03	66.1724	1.8411	PPB	2.7823
Ag 109		0.0870	2.169E-03	11.0243	0.2747	PPB	2.4920
Cd 114		0.2846	2.233E-03	68.0071	0.5335	PPB	0.7845
In 115	<	177643	2330.8350			ions/sec	
Sb 123		0.1957	3.419E-03	52.0748	0.9098	PPB	1.7471
Tb 159	<	246795	2539.9846			ions/sec	
Tl 205		0.6133	1.956E-03	59.8020	0.1907	PPB	0.3189
Pb 208		3.6416	0.0230	260.2344	1.6431	PPB	0.6314

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: 68601-2PS
Sample Description:
Sample Type: Sample
Sequence Number: 050
Blank: Subtracted (016)
Dilution Factor: 1
Number of Repeats: 3
Time: 20:32:21 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	9159	559.6458	19	4.6832
Sc 45	69391	3763.0044	97971	581.3169
Cr 52	77325	5289.0054	1180	31.7734
Ni 60	22886	1695.1123	84	10.3348
Cu 65	27952	1881.4888	125	17.3024
Ge 72	19524	140.5462	22683	158.6500
Zn 68	53448	476.6183	105	7.2854
As 75	47340	265.4899	40	24.2420
Se 82	2044	48.8977	-3	5.3122
Ag 109	39440	95.8828	134	42.3009
Cd 114	52003	341.4524	66	7.7858
In 115	175189	1405.9924	170918	2843.0242
Sb 123	50357	178.8896	221	44.8022
Tb 159	250238	1832.3125	232895	4270.5532
Tl 205	175436	1356.3422	69	10.9555
Pb 208	908015	4381.1548	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	]	0.1318	8.065E-03	60.4364	3.6984	PPB	6.1196
Sc 45	<	69391	3763.0044			ions/sec	
Cr 52	]	1.1023	0.0762	71.2371	4.9259	PPB	6.9148
Ni 60	]	0.3290	0.0244	81.0064	6.0156	PPB	7.4260
Cu 65	]	0.4015	0.0271	87.4686	5.9065	PPB	6.7527

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	19524	140.5462			ions/sec	
Zn 68	]	2.7329	0.0244	303.2895	2.7094	PPB	0.8933
As 75	]	2.4230	0.0136	193.6395	1.0901	PPB	0.5629
Se 82	]	0.1048	2.515E-03	78.8071	1.8913	PPB	2.3999
Ag 109	]	0.2243	6.007E-04	28.4187	0.0761	PPB	0.2677
Cd 114	]	0.2965	1.950E-03	70.8400	0.4659	PPB	0.6576
In 115	<	175189	1405.9924			ions/sec	
Sb 123	]	0.2862	1.054E-03	76.1512	0.2806	PPB	0.3684
Tb 159	<	250238	1832.3125			ions/sec	
Tl 205	]	0.7008	5.420E-03	68.3293	0.5285	PPB	0.7735
Pb 208	]	3.6278	0.0175	259.2504	1.2511	PPB	0.4826

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: MSWATER-ERA-1
Sample Description:
Sample Type: Sample
Sequence Number: 051
Blank: Subtracted (016)
Dilution Factor: 1
Number of Repeats: 3
Time: 20:38:13 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	1603	30.3937	19	4.6832
Sc 45	78709	1058.4882	97971	581.3169
Cr 52	14482	306.5144	1180	31.7734
Ni 60	3626	88.2613	84	10.3348
Cu 65	4164	59.8149	125	17.3024
Ge 72	20897	200.9950	22683	158.6500
Zn 68	2265	41.7233	105	7.2854
As 75	2710	73.0600	40	24.2420
Se 82	302	9.9815	-3	5.3122
Ag 109	14967	160.2150	134	42.3009
Cd 114	8467	87.2616	66	7.7858
In 115	188363	2449.1885	170918	2843.0242
Sb 123	7901	265.2452	221	44.8022
Tb 159	262762	1979.3495	232895	4270.5532
Tl 205	28602	302.6083	69	10.9555
Pb 208	38910	521.2130	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	]	0.0202	3.891E-04	9.2530	0.1784	PPB	1.9283
Sc 45	<	78709	1058.4882			ions/sec	
Cr 52		0.1719	3.908E-03	11.1124	0.2525	PPB	2.2726
Ni 60		0.0452	1.126E-03	11.1333	0.2774	PPB	2.4912
Cu 65	]	0.0516	7.802E-04	11.2454	0.1700	PPB	1.5113

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	20897	200.9950			ions/sec	
Zn 68		0.1037	2.022E-03	11.5126	0.2244	PPB	1.9494
As 75		0.1279	3.656E-03	10.2227	0.2922	PPB	2.8580
Se 82		0.0146	5.320E-04	10.9649	0.4000	PPB	3.6478
Ag 109		0.0787	8.858E-04	9.9659	0.1122	PPB	1.1260
Cd 114		0.0446	4.655E-04	10.6499	0.1112	PPB	1.0445
In 115	<	188363	2449.1885			ions/sec	
Sb 123		0.0407	1.432E-03	10.8194	0.3812	PPB	3.5231
Tb 159	<	262762	1979.3495			ions/sec	
Tl 205		0.1086	1.153E-03	10.5848	0.1124	PPB	1.0618
Pb 208		0.1473	1.984E-03	10.5265	0.1418	PPB	1.3467

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set:	11.06.97
Data Set Description:	
Parameter File:	PRIORITY-RPT
Sample ID:	MSCCV-2
Sample Description:	
Sample Type:	Sample
Sequence Number:	052
Blank:	Subtracted (016)
Dilution Factor:	1
Number of Repeats:	3
Time:	20:44:09 Nov 6 1997
Signal Profile Processing:	Average
Spectral Peak Processing:	Average
Deadtime Correction:	35
Calibration File:	[Untitled]
Calibration:	External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	8023	60.5136	19	4.6832
Sc 45	80431	1179.3597	97971	581.3169
Cr 52	67313	1132.6393	1180	31.7734
Ni 60	17772	272.4293	84	10.3348
Cu 65	20551	424.8315	125	17.3024
Ge 72	21225	323.1681	22683	158.6500
Zn 68	10426	71.5090	105	7.2854
As 75	13802	36.9336	40	24.2420
Se 82	1514	12.3362	-3	5.3122
Ag 109	73035	683.3134	134	42.3009
Cd 114	40301	396.3940	66	7.7858
In 115	189964	2111.5613	170918	2843.0242
Sb 123	34228	2145.9558	221	44.8022
Tb 159	262728	1642.6902	232895	4270.5532
Tl 205	137539	697.5524	69	10.9555
Pb 208	186879	993.9339	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	]	0.0096	7.539E-04	45.6522	0.3457	PPB	0.7573
Sc 45	<	80431	1179.3597			ions/sec	
Cr 52	]	0.8249	0.0141	53.3073	0.9103	PPB	1.7077
Ni 60	]	0.2201	3.389E-03	54.2013	0.8345	PPB	1.5396
Cu 65	]	0.2542	5.285E-03	55.3815	1.1512	PPB	2.0787

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	21225	323.1681			ions/sec	
Zn 68		0.4866	3.384E-03	53.9977	0.3756	PPB	0.6956
As 75		0.6485	2.042E-03	51.8296	0.1632	PPB	0.3149
Se 82		0.0715	6.266E-04	53.7310	0.4711	PPB	0.8769
Ag 109		0.3837	3.606E-03	48.6028	0.4567	PPB	0.9397
Cd 114		0.2118	2.087E-03	50.6030	0.4987	PPB	0.9856
In 115	<	189964	2111.5613			ions/sec	
Sb 123		0.1789	0.0113	47.6055	3.0071	PPB	6.3167
Tb 159	<	262728	1642.6902			ions/sec	
Tl 205		0.5232	2.655E-03	51.0152	0.2589	PPB	0.5075
Pb 208		0.7105	3.783E-03	50.7753	0.2704	PPB	0.5325

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: MSCCB-2
Sample Description:
Sample Type: Sample
Sequence Number: 053
Blank: Subtracted (016)
Dilution Factor: 1
Number of Repeats: 3
Time: 20:50:04 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	28	11.8770	19	4.6832
Sc 45	80693	713.1395	97971	581.3169
Cr 52	1127	89.1977	1180	31.7734
Ni 60	72	10.2956	84	10.3348
Cu 65	106	12.1901	125	17.3024
Ge 72	21354	298.5663	22683	158.6500
Zn 68	180	21.2869	105	7.2854
As 75	55	2.9211	40	24.2420
Se 82	-4	2.9504	-3	5.3122
Ag 109	318	75.6223	134	42.3009
Cd 114	77	25.8863	66	7.7858
In 115	186718	1042.6530	170918	2843.0242
Sb 123	399	126.9914	221	44.8022
Tb 159	258325	2335.6853	232895	4270.5532
Tl 205	152	77.7164	69	10.9555
Pb 208	385	88.5785	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	]	1.515E-04	1.548E-04	0.0695	0.0710	PPB	102.1501
Sc 45	<	80693	713.1395			ions/sec	
Cr 52		1.926E-03	1.152E-03	0.1244	0.0744	PPB	59.8246
Ni 60		3.484E-05	1.656E-04	8.580E-03	0.0408	PPB	475.1286
Cu 65	]	3.039E-05	2.324E-04	6.621E-03	0.0506	PPB	764.6427

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	21354	298.5663			ions/sec	
Zn 68	]	3.816E-03	1.047E-03	0.4235	0.1162	PPB	27.4470
As 75	]	8.460E-04	1.077E-03	0.0676	0.0861	PPB	127.3607
Se 82	]	-8.524E-05	2.719E-04	-0.0641	0.2044	PPB	319.0175
Ag 109	]	9.211E-04	4.746E-04	0.1167	0.0601	PPB	51.5304
Cd 114	]	2.730E-05	1.459E-04	6.523E-03	0.0349	PPB	534.5670
In 115	<	186718	1042.6530			ions/sec	
Sb 123	]	8.425E-04	7.289E-04	0.2242	0.1940	PPB	86.5137
Tb 159	<	258325	2335.6853			ions/sec	
Tl 205	]	2.939E-04	3.045E-04	0.0287	0.0297	PPB	103.6077
Pb 208	]	7.121E-04	3.437E-04	0.0509	0.0246	PPB	48.2730

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set:	11.06.97
Data Set Description:	
Parameter File:	PRIORITY-RPT
Sample ID:	WATER-BLANK-1
Sample Description:	
Sample Type:	Sample
Sequence Number:	054
Blank:	Subtracted (016)
Dilution Factor:	1
Number of Repeats:	3
Time:	20:56:00 Nov 6 1997
Signal Profile Processing:	Average
Spectral Peak Processing:	Average
Deadtime Correction:	35
Calibration File:	[Untitled]
Calibration:	External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	19	1.3462	19	4.6832
Sc 45	82591	690.3267	97971	581.3169
Cr 52	1070	39.6153	1180	31.7734
Ni 60	59	4.2673	84	10.3348
Cu 65	38	4.8844	125	17.3024
Ge 72	21625	452.1938	22683	158.6500
Zn 68	162	11.2161	105	7.2854
As 75	36	12.7644	40	24.2420
Se 82	0	9.8371	-3	5.3122
Ag 109	152	30.2599	134	42.3009
Cd 114	51	16.4493	66	7.7858
In 115	187555	3067.5508	170918	2843.0242
Sb 123	135	14.3947	221	44.8022
Tb 159	258272	5860.3237	232895	4270.5532
Tl 205	54	9.9567	69	10.9555
Pb 208	208	25.6304	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	┐	4.532E-05	5.050E-05	0.0208	0.0232	PPB	111.4348
Sc 45	<	82591	690.3267			ions/sec	
Cr 52		9.116E-04	5.790E-04	0.0589	0.0374	PPB	63.5153
Ni 60		-1.472E-04	1.175E-04	-0.0362	0.0289	PPB	79.7944
Cu 65	┘	-8.173E-04	1.862E-04	-0.1780	0.0406	PPB	22.7874

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	21625	452.1938			ions/sec	
Zn 68	]	2.844E-03	6.101E-04	0.3156	0.0677	PPB	21.4486
As 75	]	-7.439E-05	1.221E-03	-5.945E-03	0.0976	PPB	1641.1443
Se 82	]	1.048E-04	5.116E-04	0.0788	0.3847	PPB	488.3782
Ag 109	]	2.553E-05	2.954E-04	3.234E-03	0.0374	PPB	1157.3201
Cd 114	]	-1.108E-04	9.883E-05	-0.0265	0.0236	PPB	89.2145
In 115	<	187555	3067.5508			ions/sec	
Sb 123	]	-5.748E-04	2.731E-04	-0.1530	0.0727	PPB	47.5136
Tb 159	<	258272	5860.3237			ions/sec	
Tl 205	]	-8.584E-05	6.082E-05	-8.370E-03	5.930E-03	PPB	70.8502
Pb 208	]	3.016E-05	1.021E-04	2.155E-03	7.298E-03	PPB	338.6669

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: 68601-3
Sample Description:
Sample Type: Sample
Sequence Number: 055
Blank: Subtracted (016)
Dilution Factor: 1
Number of Repeats: 3
Time: 21:01:57 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	51	15.1530	19	4.6832
Sc 45	74864	5297.1772	97971	581.3169
Cr 52	3500	828.8263	1180	31.7734
Ni 60	2559	181.4702	84	10.3348
Cu 65	4087	400.8143	125	17.3024
Ge 72	21290	242.4898	22683	158.6500
Zn 68	41064	424.2664	105	7.2854
As 75	29917	122.8420	40	24.2420
Se 82	6	0.6045	-3	5.3122
Ag 109	23	2.0115	134	42.3009
Cd 114	1215	8.0733	66	7.7858
In 115	187695	2838.5420	170918	2843.0242
Sb 123	1340	49.8445	221	44.8022
Tb 159	265410	1708.2528	232895	4270.5532
Tl 205	110	20.7565	69	10.9555
Pb 208	573279	7763.6426	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	⌐	4.971E-04	2.080E-04	0.2279	0.0954	PPB	41.8404
Sc 45	<	74864	5297.1772			ions/sec	
Cr 52		0.0347	0.0111	2.2429	0.7158	PPB	31.9141
Ni 60		0.0333	2.426E-03	8.2066	0.5975	PPB	7.2804
Cu 65	⌙	0.0533	5.357E-03	11.6143	1.1669	PPB	10.0470

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	21290	242.4898			ions/sec	
Zn 68	]	1.9242	0.0199	213.5385	2.2118	PPB	1.0358
As 75	]	1.4035	5.868E-03	112.1626	0.4690	PPB	0.4181
Se 82	]	4.058E-04	2.359E-04	0.3051	0.1774	PPB	58.1373
Ag 109	]	-6.599E-04	2.477E-04	-0.0836	0.0314	PPB	37.5386
Cd 114	]	6.087E-03	6.265E-05	1.4546	0.0150	PPB	1.0292
In 115	<	187695	2838.5420			ions/sec	
Sb 123	]	5.848E-03	3.731E-04	1.5562	0.0993	PPB	6.3808
Tb 159	<	265410	1708.2528			ions/sec	
Tl 205	]	1.180E-04	9.126E-05	0.0115	8.899E-03	PPB	77.3737
Pb 208	]	2.1592	0.0293	154.2999	2.0904	PPB	1.3547

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: 68601-4
Sample Description:
Sample Type: Sample
Sequence Number: 056
Blank: Subtracted (016)
Dilution Factor: 1
Number of Repeats: 3
Time: 21:07:50 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	16	2.9405	19	4.6832
Sc 45	80052	3713.2646	97971	581.3169
Cr 52	853	66.1965	1180	31.7734
Ni 60	241	3.2301	84	10.3348
Cu 65	182	25.2677	125	17.3024
Ge 72	21846	177.2353	22683	158.6500
Zn 68	538	24.1513	105	7.2854
As 75	86	20.4765	40	24.2420
Se 82	-6	1.7495	-3	5.3122
Ag 109	66	11.5477	134	42.3009
Cd 114	62	9.6385	66	7.7858
In 115	189600	1813.1322	170918	2843.0242
Sb 123	65	7.2335	221	44.8022
Tb 159	260142	4858.4453	232895	4270.5532
Tl 205	57	10.9177	69	10.9555
Pb 208	1493	229.5353	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	⎫	1.065E-05	6.028E-05	4.883E-03	0.0276	PPB	566.1458
Sc 45	<	80052	3713.2646			ions/sec	
Cr 52	⎪	-1.385E-03	8.882E-04	-0.0895	0.0574	PPB	64.1195
Ni 60	⎪	2.149E-03	1.129E-04	0.5292	0.0278	PPB	5.2551
Cu 65	⎭	1.001E-03	3.617E-04	0.2180	0.0788	PPB	36.1438

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	21846	177.2353			ions/sec	
Zn 68		0.0200	1.151E-03	2.2182	0.1278	PPB	5.7598
As 75		2.188E-03	1.422E-03	0.1749	0.1136	PPB	64.9577
Se 82		-1.614E-04	2.475E-04	-0.1213	0.1861	PPB	153.3549
Ag 109		-4.373E-04	2.549E-04	-0.0554	0.0323	PPB	58.2884
Cd 114		-5.493E-05	6.826E-05	-0.0131	0.0163	PPB	124.2643
In 115	<	189600	1813.1322			ions/sec	
Sb 123		-9.508E-04	2.649E-04	-0.2530	0.0705	PPB	27.8609
Tb 159	<	260142	4858.4453			ions/sec	
Tl 205		-7.856E-05	6.304E-05	-7.660E-03	6.147E-03	PPB	80.2464
Pb 208		4.962E-03	8.827E-04	0.3546	0.0631	PPB	17.7889

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set:	11.06.97
Data Set Description:	
Parameter File:	PRIORITY-RPT
Sample ID:	68601-5
Sample Description:	
Sample Type:	Sample
Sequence Number:	057
Blank:	Subtracted (016)
Dilution Factor:	1
Number of Repeats:	3
Time:	21:13:47 Nov 6 1997
Signal Profile Processing:	Average
Spectral Peak Processing:	Average
Deadtime Correction:	35
Calibration File:	[Untitled]
Calibration:	External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	19	6.2070	19	4.6832
Sc 45	79214	2508.3831	97971	581.3169
Cr 52	1400	107.6683	1180	31.7734
Ni 60	554	44.4409	84	10.3348
Cu 65	296	4.9068	125	17.3024
Ge 72	21473	240.6484	22683	158.6500
Zn 68	16338	296.6030	105	7.2854
As 75	812	4.5328	40	24.2420
Se 82	4	3.6685	-3	5.3122
Ag 109	39	15.9825	134	42.3009
Cd 114	136	27.0830	66	7.7858
In 115	183925	1071.7273	170918	2843.0242
Sb 123	564	11.3756	221	44.8022
Tb 159	261227	3879.1348	232895	4270.5532
Tl 205	70	8.2930	69	10.9555
Pb 208	9404	121.9507	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9		5.115E-05	9.179E-05	0.0235	0.0421	PPB	179.4305
Sc 45	<	79214	2508.3831			ions/sec	
Cr 52		5.630E-03	1.397E-03	0.3639	0.0903	PPB	24.8194
Ni 60		6.136E-03	5.709E-04	1.5109	0.1406	PPB	9.3037
Cu 65		2.454E-03	1.872E-04	0.5345	0.0408	PPB	7.6271

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	21473	240.6484			ions/sec	
Zn 68		0.7563	0.0138	83.9264	1.5333	PPB	1.8270
As 75		0.0361	1.089E-03	2.8841	0.0871	PPB	3.0187
Se 82		3.096E-04	2.899E-04	0.2328	0.2180	PPB	93.6257
Ag 109		-5.715E-04	2.623E-04	-0.0724	0.0332	PPB	45.8960
Cd 114		3.540E-04	1.541E-04	0.0846	0.0368	PPB	43.5416
In 115	<	183925	1071.7273			ions/sec	
Sb 123		1.773E-03	2.693E-04	0.4717	0.0717	PPB	15.1944
Tb 159	<	261227	3879.1348			ions/sec	
Tl 205		-2.764E-05	5.675E-05	-2.695E-03	5.533E-03	PPB	205.3508
Pb 208		0.0352	4.675E-04	2.5170	0.0334	PPB	1.3272

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: BLKSPK
Sample Description:
Sample Type: Sample
Sequence Number: 058
Blank: Subtracted (016)
Dilution Factor: 1
Number of Repeats: 3
Time: 21:19:44 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	9265	160.6843	19	4.6832
Sc 45	78765	1310.5620	97971	581.3169
Cr 52	78866	1521.1461	1180	31.7734
Ni 60	21083	485.7360	84	10.3348
Cu 65	24110	376.4046	125	17.3024
Ge 72	20726	100.7567	22683	158.6500
Zn 68	12103	34.5613	105	7.2854
As 75	15493	56.7266	40	24.2420
Se 82	1682	27.3546	-3	5.3122
Ag 109	56371	232.9764	134	42.3009
Cd 114	46929	382.2660	66	7.7858
In 115	179911	2072.4001	170918	2843.0242
Sb 123	45967	587.0416	221	44.8022
Tb 159	252317	3339.9060	232895	4270.5532
Tl 205	159176	1942.0803	69	10.9555
Pb 208	211980	1714.2667	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	]	0.1174	2.041E-03	53.8524	0.9358	PPB	1.7376
Sc 45	<	78765	1310.5620			ions/sec	
Cr 52		0.9892	0.0193	63.9309	1.2483	PPB	1.9525
Ni 60		0.2668	6.168E-03	65.7035	1.5188	PPB	2.3116
Cu 65	]	0.3048	4.782E-03	66.4004	1.0417	PPB	1.5688

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<┐	20726	100.7567			ions/sec	
Zn 68	]	0.5793	1.698E-03	64.2900	0.1885	PPB	0.2931
As 75	]	0.7457	2.938E-03	59.5980	0.2348	PPB	0.3940
Se 82	┘	0.0813	1.340E-03	61.1113	1.0078	PPB	1.6492
Ag 109	┐	0.3125	1.318E-03	39.5912	0.1670	PPB	0.4218
Cd 114	]	0.2605	2.125E-03	62.2391	0.5078	PPB	0.8159
In 115	<]	179911	2072.4001			ions/sec	
Sb 123	┘	0.2542	3.273E-03	67.6497	0.8711	PPB	1.2877
Tb 159	<┐	252317	3339.9060			ions/sec	
Tl 205	]	0.6306	7.697E-03	61.4824	0.7505	PPB	1.2207
Pb 208	┘	0.8394	6.794E-03	59.9818	0.4855	PPB	0.8094

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: BLKSPKDUP
Sample Description:
Sample Type: Sample
Sequence Number: 059
Blank: Subtracted (016)
Dilution Factor: 1
Number of Repeats: 3
Time: 21:25:41 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	9324	105.7330	19	4.6832
Sc 45	78603	1055.1688	97971	581.3169
Cr 52	77909	728.6591	1180	31.7734
Ni 60	20932	278.1617	84	10.3348
Cu 65	23626	388.6219	125	17.3024
Ge 72	20543	93.4858	22683	158.6500
Zn 68	11990	142.4230	105	7.2854
As 75	15375	96.4633	40	24.2420
Se 82	1668	27.2581	-3	5.3122
Ag 109	55607	375.0032	134	42.3009
Cd 114	46869	303.5052	66	7.7858
In 115	179160	1517.1158	170918	2843.0242
Sb 123	46030	102.8540	221	44.8022
Tb 159	248790	1082.7971	232895	4270.5532
Tl 205	156090	354.8052	69	10.9555
Pb 208	209007	885.9106	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	]	0.1184	1.346E-03	54.3102	0.6172	PPB	1.1365
Sc 45	<	78603	1055.1688			ions/sec	
Cr 52		0.9791	9.276E-03	63.2777	0.5995	PPB	0.9474
Ni 60		0.2654	3.540E-03	65.3673	0.8718	PPB	1.3337
Cu 65	]	0.2993	4.947E-03	65.1983	1.0777	PPB	1.6529

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	20543	93.4858			ions/sec	
Zn 68		0.5790	6.940E-03	64.2593	0.7702	PPB	1.1986
As 75		0.7467	4.816E-03	59.6705	0.3849	PPB	0.6450
Se 82		0.0813	1.347E-03	61.1472	1.0130	PPB	1.6567
Ag 109		0.3096	2.108E-03	39.2172	0.2670	PPB	0.6808
Cd 114		0.2612	1.695E-03	62.4194	0.4049	PPB	0.6488
In 115	<	179160	1517.1158			ions/sec	
Sb 123		0.2556	6.311E-04	68.0277	0.1679	PPB	0.2469
Tb 159	<	248790	1082.7971			ions/sec	
Tl 205		0.6271	1.427E-03	61.1451	0.1391	PPB	0.2275
Pb 208		0.8393	3.561E-03	59.9789	0.2545	PPB	0.4243

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set: 11.06.97
Data Set Description:
Parameter File: PRIORITY-RPT

Sample ID: MSCCV-3
Sample Description:
Sample Type: Sample
Sequence Number: 060
Blank: Subtracted (016)
Dilution Factor: 1
Number of Repeats: 3
Time: 21:31:37 Nov 6 1997
Signal Profile Processing: Average
Spectral Peak Processing: Average
Deadtime Correction: 35

Calibration File: [Untitled]
Calibration: External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	8079	111.0729	19	4.6832
Sc 45	79628	1699.3909	97971	581.3169
Cr 52	66722	1044.2960	1180	31.7734
Ni 60	17629	325.8677	84	10.3348
Cu 65	20252	376.4008	125	17.3024
Ge 72	20904	173.4754	22683	158.6500
Zn 68	10250	89.7408	105	7.2854
As 75	13459	40.8917	40	24.2420
Se 82	1443	49.5415	-3	5.3122
Ag 109	71152	924.9488	134	42.3009
Cd 114	39038	227.0584	66	7.7858
In 115	184570	1343.5266	170918	2843.0242
Sb 123	32809	1735.1527	221	44.8022
Tb 159	255274	1784.2754	232895	4270.5532
Tl 205	132710	852.4149	69	10.9555
Pb 208	179448	865.3408	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9		0.1013	1.396E-03	46.4413	0.6400	PPB	1.3781
Sc 45	<	79628	1699.3909			ions/sec	
Cr 52		0.8259	0.0131	53.3731	0.8478	PPB	1.5885
Ni 60		0.2205	4.094E-03	54.3070	1.0081	PPB	1.8563
Cu 65		0.2531	4.730E-03	55.1238	1.0304	PPB	1.8693

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	20904	173.4754			ions/sec	
Zn 68		0.4857	4.305E-03	53.9027	0.4778	PPB	0.8863
As 75		0.6421	2.229E-03	51.3171	0.1781	PPB	0.3471
Se 82		0.0692	2.382E-03	52.0126	1.7906	PPB	3.4426
Ag 109		0.3847	5.017E-03	48.7339	0.6356	PPB	1.3042
Cd 114		0.2111	1.231E-03	50.4496	0.2942	PPB	0.5831
In 115	<	184570	1343.5266			ions/sec	
Sb 123		0.1765	9.405E-03	46.9616	2.5028	PPB	5.3294
Tb 159	<	255274	1784.2754			ions/sec	
Tl 205		0.5196	3.340E-03	50.6610	0.3256	PPB	0.6427
Pb 208		0.7022	3.390E-03	50.1792	0.2422	PPB	0.4828

QUANTITATIVE ANALYSIS: SUMMARY REPORT

Data Set:	11.06.97
Data Set Description:	
Parameter File:	PRIORITY-RPT
Sample ID:	MSCCB-3
Sample Description:	
Sample Type:	Sample
Sequence Number:	061
Blank:	Subtracted (016)
Dilution Factor:	1
Number of Repeats:	3
Time:	21:37:32 Nov 6 1997
Signal Profile Processing:	Average
Spectral Peak Processing:	Average
Deadtime Correction:	35
Calibration File:	[Untitled]
Calibration:	External Standard

	Sample Intensity	Std. Dev.	Blank Intensity	Std. Dev.
Be 9	26	4.4701	19	4.6832
Sc 45	79979	626.4551	97971	581.3169
Cr 52	1054	33.8748	1180	31.7734
Ni 60	76	1.9259	84	10.3348
Cu 65	106	13.2408	125	17.3024
Ge 72	21087	151.7383	22683	158.6500
Zn 68	193	6.6427	105	7.2854
As 75	49	15.5131	40	24.2420
Se 82	1	1.3159	-3	5.3122
Ag 109	269	68.2824	134	42.3009
Cd 114	86	25.1926	66	7.7858
In 115	180638	1625.6617	170918	2843.0242
Sb 123	416	81.8347	221	44.8022
Tb 159	251691	2733.0203	232895	4270.5532
Tl 205	168	80.0307	69	10.9555
Pb 208	314	79.2757	181	5.6165

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Be 9	]	1.401E-04	7.354E-05	0.0642	0.0337	PPB	52.5003
Sc 45	<	79979	626.4551			ions/sec	
Cr 52	]	1.134E-03	5.335E-04	0.0733	0.0345	PPB	47.0445
Ni 60	]	9.487E-05	1.082E-04	0.0234	0.0266	PPB	114.0497
Cu 65	]	5.102E-05	2.421E-04	0.0111	0.0527	PPB	474.4591

QUANTITATIVE ANALYSIS: SUMMARY REPORT

		Net Ratio/ Intensity	Std. Dev.	Conc.	Std. Dev.		% RSD
Ge 72	<	21087	151.7383			ions/sec	
Zn 68		4.512E-03	4.499E-04	0.5008	0.0499	PPB	9.9698
As 75		5.920E-04	1.297E-03	0.0473	0.1037	PPB	219.1764
Se 82		1.669E-04	2.424E-04	0.1255	0.1822	PPB	145.1877
Ag 109		7.021E-04	4.518E-04	0.0889	0.0572	PPB	64.3507
Cd 114		9.309E-05	1.467E-04	0.0222	0.0351	PPB	157.6125
In 115	<	180638	1625.6617			ions/sec	
Sb 123		1.009E-03	5.234E-04	0.2685	0.1393	PPB	51.8796
Tb 159	<	251691	2733.0203			ions/sec	
Tl 205		3.697E-04	3.214E-04	0.0361	0.0313	PPB	86.9347
Pb 208		4.689E-04	3.159E-04	0.0335	0.0226	PPB	67.3631

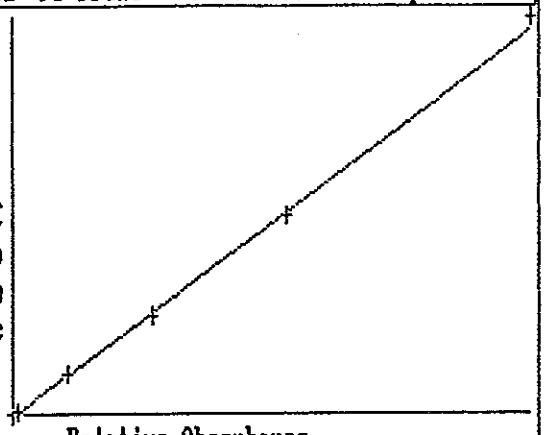
Protocol: HIGH-CAL
Rev: 3.000 Time: 09:32:34 07 Nov 1997
Folder: #102497 Seq: 710 Print: On
User: Batch: Id: Std6Rep3 Cup: 1 29 Gas: 0.30 LPM
State: Idle Macro CAL245 51: F3 Print Xmit: Off Autosampler: On

CALIBRATION: Line Calibration

Line: Hg

	Conc.	Calc.	Dev.	Accepted linear
S1	.0000	-.0299	-.0299	Quadratic
S2	.1000	.0977	-.0023	WtdLinear
S3	2.000	2.018	.0182	
S4	5.000	5.189	.1891	Accept
S5	10.00	10.13	.1269	
S6	20.00	19.32	-.6777	StdAdd

A .0000000 r .999643
B 2.58187e-5 C -8.03659e-2



	Mean	%RSD			
S1	1956	25.87	2449	1981	1438
S2	6897	2.47	6704	7024	6964
S3	81307	0.41	80942	81588	81393
S4	284158	0.89	285669	282142	284665
S5	395467	0.92	391722	395665	399016
S6	751730	0.58	754612	753892	746687

New calibration coefficients stored

Line Conc. Units SD/RSD 1 2 3 4 5

*** Check Standard: 4 Ck4 Seq: 710 09:35:28 07 Nov 1997 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		98.46	3.938	4.000	PPB	.0000

*** Check Standard: 3 Ck3 Seq: 711 09:38:15 07 Nov 1997 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		97.46	1.949	2.000	PPB	.0000

*** Check Standard: 2 Ck2 Seq: 712 09:40:48 07 Nov 1997 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		100.7	5.034	5.000	PPB	.0000

*** Check Standard: 1 Ck1 Seq: 713 09:43:35 07 Nov 1997 HG

Line	Flag	Found	Range(+/-)	Units	SD/RSD
Hg		-.0985	.9000	PPB	.0000

*** Check Standard: 1 Ck1 Seq: 714 09:45:56 07 Nov 1997 HG

Line	Flag	Found	Range(+/-)	Units	SD/RSD
Hg		-.0605	.9000	PPB	.0000

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Check Standard: 2 Ck2 Seq: 715 11:41:55 07 Nov 1997 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		98.35	4.917	5.000	PPB	.0000

*** Check Standard: 1 Ck1 Seq: 716 11:44:42 07 Nov 1997 HG

Line	Flag	Found	Range(+/-)	Units	SD/RSD
Hg		-.1506	.9000	PPB	.0000

*** Sample ID: METHOD BLK Seq: 717 11:47:02 07 Nov 1997 HG

Hg	-.1617	PPB	.0000	-.1618

*** Sample ID: 68590-1 Seq: 718 11:49:21 07 Nov 1997 HG

Hg	-.0782	PPB	.0000	-.0782

*** Sample ID: 68590-1D Seq: 719 11:51:41 07 Nov 1997 HG

Hg	-.0782	PPB	.0000	-.0782

*** Sample ID: 68590-1S Seq: 720 11:54:01 07 Nov 1997 HG

Hg	1.509	PPB	.0000	1.509

*** Sample ID: 68590-1SD Seq: 721 11:56:32 07 Nov 1997 HG

Hg	1.512	PPB	.0000	1.512

*** Sample ID: BLKSPK Seq: 722 11:59:01 07 Nov 1997 HG

Hg	1.917	PPB	.0000	1.917

*** Sample ID: BLKSPKDUP Seq: 723 12:01:33 07 Nov 1997 HG

Hg	1.911	PPB	.0000	1.911

*** Sample ID: METHOD BLK Seq: 724 12:04:05 07 Nov 1997 HG

Hg	-.1349	PPB	.0000	-.1349

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Check Standard: 2 Ck2 Seq: 725 12:06:26 07 Nov 1997 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		103.8	5.190	5.000	PPB	.0000

*** Check Standard: 1 Ck1 Seq: 726 12:09:13 07 Nov 1997 HG

Line	Flag	Found	Range(+/-)	Units	SD/RSD
Hg		-.0879	.9000	PPB	.0000

*** Sample ID: 68601-2 Seq: 727 12:11:33 07 Nov 1997 HG

Hg .5919 PPB .0000 .5919

*** Sample ID: 68601-2D Seq: 728 12:13:57 07 Nov 1997 HG

Hg .5009 PPB .0000 .5009

*** Sample ID: 68601-2S Seq: 729 12:16:20 07 Nov 1997 HG

Hg 2.314 PPB .0000 2.314

*** Sample ID: 68601-2SD Seq: 730 12:19:04 07 Nov 1997 HG

Hg 2.320 PPB .0000 2.320

*** Sample ID: WATER ERA Seq: 731 12:21:36 07 Nov 1997 HG

Hg 1.844 PPB .0000 1.844

*** Sample ID: BLKSPK Seq: 732 12:24:13 07 Nov 1997 HG

Hg 1.952 PPB .0000 1.952

*** Sample ID: 68601-3 Seq: 733 12:26:45 07 Nov 1997 HG

Hg .0457 PPB .0000 .0458

*** Sample ID: 68601-4 Seq: 734 12:29:05 07 Nov 1997 HG

Hg -.0671 PPB .0000 -.0671

*** Sample ID: 68601-5 Seq: 735 12:31:24 07 Nov 1997 HG

Hg -.0485 PPB .0000 -.0485

*** Sample ID: METHOD BLK Seq: 736 12:33:43 07 Nov 1997 HG

Hg -.0867 PPB .0000 -.0867

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Check Standard: 1 Ck1 Seq: 737 12:36:03 07 Nov 1997 HG

Line	Flag	Found	Range(+/-)	Units	SD/RSD
Hg		-.0386	.9000	PPB	.0000

*** Check Standard: 2 Ck2 Seq: 738 12:38:24 07 Nov 1997 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		102.9	5.147	5.000	PPB	.0000

TOTAL SUSPENDED SOLIDS DATA PACKAGE

ınd Analytical Services, Inc.

QUALITY CONTROL REPORT
ANALYTE: TOTAL SUSPENDED SOLIDS, METHOD 160.2
UNITS: mg/L

QC BATCH NO.: 300

DATE: 11/7/92

METHOD BLANKS

RESULT	PQL
ND	2

QC CHECK SAMPLES

RESULT	TRUE VALUE	%D
208	200	4

DUPLICATE SAMPLES

SAMPLE NO.	SAMPLE RESULT	DUPLICATE RESULT	RPD
68601-2	140	150	6.9

QUALITY CONTROL REPORT
ANALYTE: TOTAL SUSPENDED SOLIDS, METHOD 160.2
UNITS: mg/L

QC BATCH NO.: _____

DATE: _____

METHOD BLANKS

RESULT	PQL

QC CHECK SAMPLES

RESULT	TRUE VALUE	%D

DUPLICATE SAMPLES

SAMPLE NO	SAMPLE RESULT	DUPLICATE RESULT	RPD

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MEMORANDUM

DATE: November 28, 1997

TO: Fred Luck, Project Manager

FROM: Michael Webb, Chemical Data Quality Manager

SUBJECT: Contract DACA67-95-G-0001-38
Wenatchee Tree Fruit Research Center Remediation
Summary Chemical Data Quality Control Report:
Final Confirmation Sampling November 4, 1997
Cascade Analytical Report #1111

Purpose:

This assessment outlines data quality issues that affect data usability and provides guidance in using these data for the intended purpose.

Analytical Methods:

- Modified Method 8141 for Carbamate Pesticides

Data Use Intended:

- Final Confirmation Samples: To establish that the remediation lowered the concentrations below the clean-up standard.

Summary of Qualified and Rejected Data

- No soil data were rejected or qualified due to quality control problems.
- "U" qualifiers were not used for undetected results, rather "<" was placed in front of the quantitative data field containing the value of the detection limit.

Summary of Method 8141 Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled November 4, 1997: FC9B2N0471, FC8A4N0472, FC7A2N0473, FC7A2N0474 (field duplicate), FC6C2N0475, FC5C4N0476, FC4B1N0477, FC3A5N0479, FC2A2N04710, FC1A1N04711, FCEBN04714 (equipment blank).
- Sample Handling, Holding Time and Chain of Custody - **Acceptable.**
- Performance Evaluation (PE) Results - **Not evaluated for this parameter.**
- Analytical Sensitivity - **Acceptable.**
- Accuracy -

  Calibration Verification- **Acceptable.**
  Surrogates - **Acceptable.**
  Matrix Spikes - **Acceptable.**
  Laboratory Control Samples (LCS) - **Acceptable.**
  Field Blanks - **Acceptable.**

- Laboratory Precision - **Acceptable.**

- Field Precision - **Acceptable.**

Summary of Data Comparability, Representativeness, and Completeness

- **Field Sampling Issues** - No problems were encountered.
- **Data Completeness** - The data completeness was 100% for this data set.

Overall Conclusions

These data are acceptable for use for the intended purposes. The QC results meet the accuracy, precision, and completeness DQOs for the project.

CASCADE ANALYTICAL, INC.

3019 G.S. Center Road
Wenatchee, WA 98801

Tel: (509) 662-1888
1-800-545-4206
Fax: (509) 662-8183

November 17, 1997

Batch #: 1111

Mike Webb
Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- ANALYTICAL NARRATIVE ---

Dear Mike:

The following results are from the soil samples submitted on November 6, 1997.

Due to detector stability problems continuing calibrations failed during the first attempts to analyze the samples. After a second failure with continuing calibration, GC maintenance was performed. The NPD detectors were dissembled, cleaned and the beads were recoated. The injector was cleaned, which included removal of the liner, and silation of the injection port.

During the final analysis of the samples the temperature program was changed to shorten the analytical run. Previous injections of the sample confirmed that there were no interfering peaks and no detectable residues of carbaryl or carbofuran.

There were no QA failures noted with this analysis. Results of second column conformation were within forty percent of the reported result.

Sample extraction was done in three sets. With each extraction set an extraction blank was analyzed.

Sincerely,

David W. Lane
Technical Director

CASCADE ANALYTICAL, INC.

3019 G.S. Center Road
Wenatchee, WA 98801

Tel: (509) 662-1888
1-800-545-4206
Fax: (509) 662-8183

Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- PESTICIDE RESIDUE REPORT ---

Lab Number 97-E014267
Sample ID FC9B2N0471

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				3540A	11/06/97	
Carbaryl	< 0.532	mg/Kg	0.532	8141M	11/13/97	
Carbofuran	< 0.532	mg/Kg	0.532	8141M	11/13/97	
% Solids	93.9	%		SM 3540B	11/06/97	

Surrogate Recoveries

		QC Limits
Bolstar	103 % Rec	60 - 140 %

Approved By: _____

000002 of 26

CASCADE ANALYTICAL, INC.

3019 G.S. Center Road
Wenatchee, WA 98801

Tel: (509) 662-1888
1-800-545-4206
Fax: (509) 662-8183

Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- PESTICIDE RESIDUE REPORT ---

Lab Number 97-E014268
Sample ID FC8A4N0472

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				3540A	11/06/97	
Carbaryl	< 0.541	mg/Kg	0.541	8141M	11/13/97	
Carbofuran	< 0.541	mg/Kg	0.541	8141M	11/13/97	
% Solids	92.5	%		SM 3540B	11/06/97	

Surrogate Recoveries

		QC Limits
Bolstar	104 % Rec	60 - 140 %

Approved By: _____

000003 of 26

CASCADE ANALYTICAL, INC.

3019 G.S. Center Road
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Tel: (509) 662-1888
1-800-545-4206
Fax: (509) 662-8183

Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- PESTICIDE RESIDUE REPORT ---

Lab Number 97-E014269
Sample ID FC7A2N0473

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				3540A	11/06/97	
Carbaryl	< 0.524	mg/Kg	0.524	8141M	11/13/97	
Carbofuran	< 0.524	mg/Kg	0.524	8141M	11/13/97	
% Solids	95.5	%		SM 3540B	11/06/97	

Surrogate Recoveries

		QC Limits
Bolstar	98.1 % Rec	60 - 140 %

Approved By: _____

000001 of 26

CASCADE ANALYTICAL, INC.
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Tel: (509) 662-1888
1-800-545-4206
Fax: (509) 662-8183

Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- PESTICIDE RESIDUE REPORT ---

Lab Number 97-E014270
Sample ID FC7A2N0474

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				3540A	11/06/97	
Carbaryl	< 0.525	mg/Kg	0.525	8141M	11/13/97	
Carbofuran	< 0.525	mg/Kg	0.525	8141M	11/13/97	
% Solids	95.3	%		SM 3540B	11/06/97	

Surrogate Recoveries

		QC Limits
Bolstar	97.8 % Rec	60 - 140

Approved By: _____

000095 of 26

CASCADE ANALYTICAL, INC.

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Wenatchee, WA 98801

Tel: (509) 662-1888
1-800-545-4206
Fax: (509) 662-8183

Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- PESTICIDE RESIDUE REPORT ---

Lab Number 97-E014271
Sample ID FC6C2N0475

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				3540A	11/06/97	
Carbaryl	< 0.548	mg/Kg	0.548	8141M	11/13/97	
Carbofuran	< 0.548	mg/Kg	0.548	8141M	11/13/97	
% Solids	91.2	%		SM 3540B	11/06/97	

Surrogate Recoveries

		QC Limits
Bolstar	100 % Rec	60 - 140 %

Approved By:

000006 of 26

Cascade Analytical uses procedures established by EPA, AOAC, APHA, ASTM and AWWA. Cascade Analytical makes no warranty of any kind the client assumes all risk and liability from the use of these results. Cascade Analytical, Inc.'s liability to the client as a result of use of Cascade's test results shall be limited to a sum equal to the fees paid by the client to Cascade Analytical, Inc. for Analysis.

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Tel: (509) 662-1888
1-800-545-4206
Fax: (509) 662-8183

Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- PESTICIDE RESIDUE REPORT ---

Lab Number 97-E014272
Sample ID FC5C4N0476

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				3540A	11/07/97	
Carbaryl	< 0.557	mg/Kg	0.557	8141M	11/13/97	
Carbofuran	< 0.557	mg/Kg	0.557	8141M	11/13/97	
% Solids	89.8	%		SM 3540B	11/06/97	

Surrogate Recoveries

		QC Limits
Bolstar	101 % Rec	60 - 140 %

Approved By:

000007 of 26

Cascade Analytical uses procedures established by EPA, AOAC, APHA, ASTM and AWWA. Cascade Analytical makes no warranty of any kind the client assumes all risk and liability from the use of these results. Cascade Analytical, Inc.'s liability to the client as a result of use of Cascade's test results shall be limited to a sum equal to the fees paid by the client to Cascade Analytical, Inc. for Analysis.

CASCADE ANALYTICAL, INC.

3019 G.S. Center Road
Wenatchee, WA 98801

Tel: (509) 662-1888
1-800-545-4206
Fax: (509) 662-8183

Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- PESTICIDE RESIDUE REPORT ---

Lab Number 97-E014273
Sample ID FC4B1N0477

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				3540A	11/07/97	
Carbaryl	< 0.539	mg/Kg	0.539	8141M	11/13/97	
Carbofuran	< 0.539	mg/Kg	0.539	8141M	11/13/97	
% Solids	92.7	%		SM 3540B	11/06/97	

Surrogate Recoveries

		QC Limits
Bolstar	99.2 % Rec	60 - 140 %

Approved By:

000003 of 26

CASCADE ANALYTICAL, INC.

3019 G.S. Center Road
Wenatchee, WA 98801

Tel: (509) 662-1888
1-800-545-4206
Fax: (509) 662-8183

Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- PESTICIDE RESIDUE REPORT ---

Lab Number	Sample ID
97-E014274	FC3A5N0479

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				3540A	11/07/97	
Carbaryl	< 0.566	mg/Kg	0.566	8141M	11/13/97	
Carbofuran	< 0.566	mg/Kg	0.566	8141M	11/13/97	
% Solids	88.4	%		SM 3540B	11/06/97	

Surrogate Recoveries

		QC Limits
Bolstar	96.8 % Rec	60 - 140 %

Approved By: _____

000003 of 26

Cascade Analytical uses procedures established by EPA, AOAC, APHA, ASTM and AWWA. Cascade Analytical makes no warranty of any kind the client assumes all risk and liability from the use of these results. Cascade Analytical, Inc.'s liability to the client as a result of use of Cascade's test results shall be limited to a sum equal to the fees paid by the client to Cascade Analytical, Inc. for Analysis.

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Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- PESTICIDE RESIDUE REPORT ---

Lab Number 97-E014275
Sample ID FC2A2N04710

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				3540A	11/07/97	
Carbaryl	< 0.513	mg/Kg	0.513	8141M	11/13/97	
Carbofuran	< 0.513	mg/Kg	0.513	8141M	11/13/97	
% Solids	97.4	%		SM 3540B	11/06/97	

Surrogate Recoveries

		QC Limits
Bolstar	96.0 % Rec	60 - 140 %

Approved By:

000010 of 26

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Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- PESTICIDE RESIDUE REPORT ---

Lab Number 97-E014276
Sample ID FC1A1N04711

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				3540A	11/07/97	
Carbaryl	< 0.531	mg/Kg	0.531	8141M	11/13/97	
Carbofuran	< 0.531	mg/Kg	0.531	8141M	11/13/97	
% Solids	94.2	%		SM 3540B	11/06/97	

Surrogate Recoveries

		QC Limits
Bolstar	99.3 % Rec	60 - 140 %

Approved By: _____

000011 of 26

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Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- BLANK REPORT ---

Lab Number Sample ID
Blank #1

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				3540A	11/06/97	
Carbaryl	< 0.5	mg/Kg	0.500	8141M	11/13/97	
Carbofuran	< 0.5	mg/Kg	0.500	8141M	11/13/97	

Surrogate Recoveries

		QC Limits
Bolstar	97.1 % Rec	60 - 140 %

Approved By: [signature]

000012 of 26

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Fax: (509) 662-8183

Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- BLANK REPORT ---

Lab Number Sample ID
Blank #2

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				3540A	11/07/97	
Carbaryl	< 0.5	mg/Kg	0.500	8141M	11/13/97	
Carbofuran	< 0.5	mg/Kg	0.500	8141M	11/13/97	

Surrogate Recoveries

		QC Limits
Bolstar	97.7 % Rec	60 - 140 %

Approved By: David W. Baer

CASCADE ANALYTICAL, INC.

3019 G.S. Center Road
Wenatchee, WA 98801

Tel: (509) 662-1888
1-800-545-4206
Fax: (509) 662-8183

Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- BLANK REPORT ---

Lab Number Sample ID
Blank #3

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				3540A	11/10/97	
Carbaryl	< 0.5	mg/Kg	0.500	8141M	11/13/97	
Carbofuran	< 0.5	mg/Kg	0.500	8141M	11/13/97	

Surrogate Recoveries

		QC Limits
Bolstar	99.2 % Rec	60 - 140 %

Approved By:

CASCADE ANALYTICAL, INC.
3019 G.S. Center Road
Wenatchee, WA 98801
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1-800-545-4206
Fax: (509) 662-8183

Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- DUPLICATE REPORT ---

Lab Number	Sample ID
97-E014268	FC84N0472

Test Requested	Sample Results	Duplicate Results	Units	RPD	Data Flags
% Solids	92.5	92.4	%	-0.11	

Approved By: _____

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1-800-545-4206
Fax: (509) 662-8183

Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- MATRIX SPIKE/MATRIX SPIKE DUPLICATE REPORT ---

Lab Number: 97-E014268
Sample ID: FC84N0472

Test Requested	Sample Results (mg/Kg)	Spike Amount (mg/Kg)	MS Result (mg/Kg)	MS % Rec	MSD Result (mg/Kg)	MSD% Rec	RPD	Data Flags
Carbaryl	< 0.541	2.70	2.63	97.41	2.75	101.9	4.46	
Carbofuran	< 0.541	2.70	2.40	88.89	2.40	88.89	0.00	

Surrogate Recoveries

			QC Limits
MS	Bolstar	102.0 % Rec	60 - 140 %
MSD1	Bolstar	100.0 % Rec	

Approved By: [signature]

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CASCADE ANALYTICAL, INC.

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Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- BLANK SPIKE REPORT ---

Lab Number Sample ID
Blank Spike

Test Requested	Blank Results (mg/Kg)	Spike Amount (mg/Kg)	Blank Spike Result (mg/Kg)	Blank Spike % Rec	Data Flags
Carbaryl	< 0.5	2.50	2.51	100.4	
Carbofuran	< 0.5	2.50	2.20	88.0	

Surrogate Recoveries

		QC Limits
Bolstar	98.2 % Rec	60 - 140 %

Approved By: _____

CASCADE ANALYTICAL, INC.

3019 G.S. Center Road
Wenatchee, WA 98801

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1-800-545-4206
Fax: (509) 662-8183

Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- CONTINUING CALIBRATION REPORT ---

Calibration Check	Carbaryl ppm	Percent Recovery	Carbofuran ppm	Percent Recovery	Bolstar ppm	Percent Recovery	Flag
Target Conc	2.5		2.5		0.5		
Initial	2.597	104	2.435	97.4	0.493	99.8	
Check 1	2.566	103	2.361	94.4	0.517	103	
Check 2	2.428	97.2	2.226	89.0	0.500	100.0	
Check 4	2.273	90.9	2.180	87.2	0.490	98.0	

Approved By: _____

CASCADE ANALYTICAL, INC.

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Wenatchee, WA 98801

Tel: (509) 662-1888
1-800-545-4206
Fax: (509) 662-8183

Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- RESULTS SUMMARY TABLE ---

Sample ID	Carbaryl (mg/Kg)	Carbofuran (mg/Kg)	Boistar Recovery	Date Analyzed
Blank	< 0.5	< 0.5	97.1	11/13/97
97-E014267	< 0.532	< 0.532	103	11/13/97
97-E014268	< 0.541	< 0.541	104	11/13/97
97-E014269	< 0.524	< 0.524	98.1	11/13/97
97-E014270	< 0.525	< 0.525	97.8	11/13/97
97-E014271	< 0.548	< 0.548	100	11/13/97
Blank	< 0.5	< 0.5	97.7	11/13/97
97-E014272	< 0.557	< 0.557	101	11/13/97
97-E014273	< 0.539	< 0.539	99.2	11/13/97
97-E014274	< 0.566	< 0.566	96.8	11/13/97
97-E014275	< 0.513	< 0.513	96	11/13/97
97-E014276	< 0.531	< 0.531	99.3	11/13/97
Blank	< 0.5	< 0.5	99.2	11/13/97
97-E014268 sp1	2.63	2.40	97.41	11/13/97
97-E014268 sp2	2.75	2.40	100	11/13/97
Blank Spike	2.51	2.20	98.2	11/13/97

Approved By: _____

CASCADE ANALYTICAL, INC.

3019 G.S. Center Road
Wenatchee, WA 98801

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Fax: (509) 662-8183

November 17, 1997

Batch #: 1111

Mike Webb
Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- ANALYTICAL NARRATIVE ---

Dear Mike:

The following results are from the water sample submitted on November 6, 1997. Quality assurance for this sample included, blank, blank spike and blank spike duplicate.

There were no QA failures noted with this analysis. Results of second column conformation were within forty percent of the reported results.

Sincerely,

David W. Lane
Technical Director

000020 of 26

CASCADE ANALYTICAL, INC.
3019 G.S. Center Road
Wenatchee, WA 98801
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Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- PESTICIDE RESIDUE REPORT ---

Lab Number 97-E014277
Sample ID FCEBN04714
Sample Comment: Water

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				SM3510	11/07/97	
Carbaryl	< 5.7	ug/L	5.7	8141M	11/07/97	
Carbofuran	< 5.7	ug/L	5.7	8141M	11/07/97	

Surrogate Recoveries

		QC Limits
Bolstar	88.4 % Rec	60 - 140 %

Approved By: Dave Colson

000021 of 26

CASCADE ANALYTICAL, INC.

3019 G.S. Center Road
Wenatchee, WA 98801

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1-800-545-4206
Fax: (509) 662-8183

Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- BLANK REPORT ---

Lab Number Sample ID
Blank

Test Requested	Results	Units	MDL	Method	Date Analyzed	Data Flags
Date Extracted				SM3510	11/07/97	
Carbaryl	< 5.7	ug/L	5.7	8141M	11/07/97	
Carbofuran	< 5.7	ug/L	5.7	8141M	11/07/97	

Surrogate Recoveries

		QC Limits
Bolstar	87.3 % Rec	60 - 140 %

Approved By: [signature]

000022 of 26

CASCADE ANALYTICAL, INC.
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Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- BLANK SPIKE/BLANK SPIKE DUPLICATE REPORT ---

Test Requested	Sample Results (ug/L)	Spike Amount (ug/L)	MS Result (ug/L)	MS % Rec	MSD Result (ug/L)	MSD% Rec	RPD	Data Flags
Carbaryl	< 5.7	25.0	24.0	96.0	24.0	96.0	0.00	
Carbofuran	< 5.7	25.0	23.0	92.0	23.0	92.0	0.00	

Surrogate Recoveries

			QC Limits
MS	Bolstar	91.3 % Rec	60 - 140 %
MSD	Bolstar	90.1 % Rec	

Approved By: _____

000023 of 26

CASCADE ANALYTICAL, INC.

3019 G.S. Center Road
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Batch #: 1111
Account #: 02999
Sampler:
Date Received: 11/06/97
Date of Report: 11/17/97
Date Sampled: 11/04/97

Gary Struthers Assoc. Inc.
3150 Richards Rd Suite 100
Bellevue, WA 98005

--- CONTINUING CALIBRATION REPORT ---

Calibration Check	Carbaryl ppm	Percent Recovery	Carbofuran ppm	Percent Recovery	Bolstar ppm	Percent Recovery	Flag
Initial	2.423	96.9	2.505	100.2	0.492	98.4	
Check 1	2.822	113	2.818	113	0.549	110	

Approved By: Dave Wilson

3019 G.S. Center Road
Wenatchee, WA 98801
Tel: (509) 662-1888
1-800-545-4206
Fax: (509) 662-8183

CASCADE ANALYTICAL, INC.

Cooler Receipt Form

Date Received: 11/6/97
Project Title : WTFREE Project # _____
Project Contact : Mike Webb
Received for Lab by: Suzy Brown Suzy Brown
printed name *signature*

Condition & Comment-

Temperature upon receipt: 1.4° T° cooler 3.3°C T° trip blank
* *Attach copy of Chain of Custody to this form.*
* *Circle all that apply*

1. Custody seals on outside of cooler (Yes) No
   Condition of seals: Intact Signed Dated
2. Custody papers taped to cooler lid : (Inside) Outside
3. Custody papers properly completed-
   Assignment clear or as agreed upon by client and lab (Yes) No
   Completed in ink, single line cross-outs Yes No
   Signed by client (Yes) No
4. Shippers packing slip attached to this form (Yes) No
5. Describe packing material briefly: Ice

6. Was sufficient ice / coolant used? (Yes) No
7. Were all bottles sealed in separate plastic bags? (Yes) No
8. Did all bottles/containers arrive in good condition? (Yes) No

Describe exceptions: _____

9. Were all labels complete? (ID, preservative, date etc.) (Yes) No
10. Did all bottle labels agree with custody papers? (Yes) No

Describe exceptions: _____

11. Were correct bottles used for the test indicated? (Yes) No
12. VOA vials checked for absence of air bubbles and noted if found? (N/A) Yes No
13. Sufficient amount of sample for analysis in each bottle? (Yes) No
14. Were correct preservatives used? (N/A) Yes No
15. Corrective action taken, if necessary: _____

a. Name of person contacted: _____
b. Date contacted: _____

000025 of 26

~~000024~~

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. East
Tacoma, Washington 9 4
(253) 922-2310 • FAX (253) 922-5047

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

CLIENT: GAIA, STRUCTURES ASSOC.
PROJECT NAME: WTFREC
CONTACT: MIKE WEBB
PHONE NO: 425-519-0300 X217

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	CARBONATES	BAG # N11
	FC9B2N0471	11/4/97	1340	Soil	1			97E -		14367									✓	
	FC8A4N0472		1330		1			97E -		14366									✓	
	FC7A2N0473		1400		1			97E -		14369									✓	
	FC7A2N0474		1410		1			97E -		14370									✓	
	FC6C2N0475		1420		1			97E -		14371									✓	
	FC5C4N0476		1430		1			97E -		14372									✓	
	FC4B1N0477		1440		1			97E -		14373									✓	
	FC3A5N0479		1500		1			97E -		14374									✓	
	FC2A2N04710		1515		1			97E -		14375									✓	
	FC1A1N04711		1520	↓	1			97E -		14376									✓	
	FCEBN04714	✓	1550	WATER	2			97E -		14377									✓	
	TEMP. BLANK	3.3°C																		
	Cooler Top	1.4°C																		

	Signature	Printed Name	Firm	Time / Date
	RELEASED TO FEDX WITH CUSTODY SEALS			
Relinquished By	Michael Webb	Michael Webb	GAI Inc.	1645 11/5/97
Received By	Suzy Brown	Suzy Brown	CHI	10:30 11/6/97
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:
SAMPLED BY MIKE WEBB
These samples will be disposed of 45 days after receipt.
Check this box to have samples returned ☐.
LAB CONTACT: DAVID
USACE PROJECT - ANALYZE AS PER QAPP
72 HR. TAT
SHIPPED VIA FED X.

MEMORANDUM

DATE: November 28, 1997

TO: Fred Luck, Project Manager

FROM: Michael Webb, Chemical Data Quality Manager

SUBJECT: Contract DACA67-95-G-0001-38
Wenatchee Tree Fruit Research Center Remediation
Summary Chemical Data Quality Control Report:
Final Confirmation Sampling November 4, 1997
North Coast Laboratories Report #9711105

Analytical Methods:

- Chevron Method RM-8-10 for soil.
- EPA Method 549.1 for the equipment blank water sample.

Data Use Intended:

- Final Confirmation Samples: To establish that the remediation lowered the concentrations below the clean-up standard.

Summary of Qualified and Rejected Data

- Results for re-analysis on 11/12/97 were acceptable. Results of analysis on 11/8/97 were rejected due to low recovery of the Laboratory Control Sample and flagged with an "R" qualifier.
- "U" qualifiers were not used for undetected results, rather "ND" was placed in the quantitative data field containing the value of the detection limit.

Summary of Methods RM-8-10 and 549.1 Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled November 4, 1997: FC9B2N0471, FC8A4N0472, FC7A2N0473, FC7A2N0474 (field duplicate), FC6C2N0475, FC5C4N0476, FC4B1N0477, FC3A5N0479, FC2A2N04710, FC1A1N04711, FCEBN04714 (equipment blank).
- Sample Handling, Holding Time and Chain of Custody - **Acceptable.**
- Performance Evaluation (PE) Results - **Not evaluated for this parameter.**
- Analytical Sensitivity - **Acceptable.**
- Accuracy -

  Calibration (Initial and Continuing) - **Acceptable (soil and water).**
  Surrogates - **Not Applicable.**
  Matrix Spikes - **Acceptable (soil and water).** The re-extracted soil sample batch analyzed 11/12/97 contained an acceptable matrix spike sample.
  Laboratory Control Samples (LCS) - **Acceptable (soil and water).** The initial soil extraction batch was rejected due to a low LCS result. The results for samples re-extracted on 11/11/97 and analyzed on 11/12/97 were accepted.

Laboratory Blanks - **Acceptable (soil and water).**
Field Blanks - **Acceptable.**

- Laboratory Precision - **Acceptable (soil and water).** The accepted extraction batch contained a single matrix spike. Precision was supported by the acceptable precision for the extraction batch rejected due to the low LCS.
- Field Precision - **Acceptable.**

Summary of Data Comparability, Representativeness, and Completeness

- **Field Sampling Issues** - No problems were encountered.
- **Data Completeness** - The data completeness was 100% for this data set.

Overall Conclusions

These data are acceptable for use for the intended purposes. The QC results meet the accuracy, precision, and completeness DQOs for the project, except as noted.

NORTH COAST LABORATORIES LTD.
5680 WEST END ROAD • ARCATA • CA 95521
(707) 822-4649 • FAX (707) 822-6831

INVOICE

DATE 11/19/97
INVOICE # 60062356

INVOICE TO Garry Struthers Associates
3150 Richards Rd., Ste 100
Bellevue, WA 98005-4446

REMIT TO North Coast Laboratories, Ltd
5680 West End Road
Arcata, California 95521

ATTEN

ATTEN Accounts Receivable

WORK ID WTFRFC

TERMS NET 30

REPORT TO Garry Struthers Associates
3150 Richards Rd., Ste 100
Bellevue, WA 98005-4446

WORK ORDER 97-11-105
P.O. #

RECEIVED 11/06/97
REPORTED 11/19/97

ATTEN Mike Webb

	DESCRIPTION	REMARK	PRICE	QTY	DISCOUNT	AMOUNT
.ACTIONS	Paraquat-Data Package		298.35	1		298.35
	Paraquat-Data Package		298.35	1		298.35
	Paraquat-Data Package		298.35	1		298.35
	Paraquat-Data Package		298.35	1		298.35
	Paraquat-Data Package		298.35	1		298.35
	Paraquat-Data Package		298.35	1		298.35
	Paraquat-Data Package		298.35	1		298.35
	Paraquat-Data Package		298.35	1		298.35
	Paraquat-Data Package		298.35	1		298.35
	Paraquat-Data Package		298.35	1		298.35
JOBS	Paraquat by EPA 549-Water		130.00	1		130.00

SUBTOTAL $3,113.50
TOTAL INVOICE AMOUNT $3,113.50

SERVICE CHARGE ON PAST DUE ACCOUNTS: 1/5% per month - 18% per annum

NORTH COAST LABORATORIES LTD.

November 17, 1997

Garry Struthers Associates, Inc.
3150 Richards Road, Suite 100
Bellevue, WA 98005-4446

Attn: Mike Webb

NCL Work Order#: 9711105

Dear Mr. Webb:

Enclosed is the data package for ten soil samples and one water sample received at North Coast Laboratories on November 06, 1997. The soil samples were analyzed for paraquat by Chevron RM 8-10. The water sample was analyzed for paraquat by EPA 549.1.

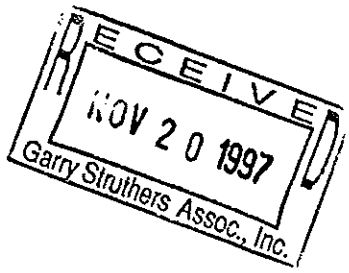
Attached to this letter is a Case Narrative for the analysis. The remainder of the package consists of a Sample Inventory; Analytical, Quality Control, Calibrations; Extraction Pages, Standard Preparation Logs; Analytical Raw Data; Internal Tracking Documents; and Chain of Custody Forms.

Please call if you have any questions regarding this report.

Sincerely,

Michelle Dostal

Michelle Dostal
Project Manager/
QA Officer



The following NCL personnel attest to the authenticity of the reported data:

Roxanne Golich
Lab Supervisor

Michelle Dostal
QA Officer

Jesse G. Chaney, Jr.
Laboratory Director

5680 West End Road • Arcata California 95521 • 707-822-4649 • FAX 707-822-6831

I. SAMPLE INVENTORY FOR PARAQUAT SOIL

II. CASE NARRATIVE FOR PARAQUAT SOIL

A. Sample Receipt

B. Extraction for Chevron RM 8-10

C. Data Qualifiers

D. Calibration for Chevron RM 8-10

E. Analysis for Chevron RM 8-10

F. Quality Control for Chevron RM 8-10

G. Confirmation of Positive Results

Mike,

Just pull out the incorrect pages and insert these corrected pages into the data package.

Sorry! Michelle

III. ANALYTICAL RESULTS FOR PARAQUAT SOIL

A. Results Data Sheets for Paraquat

B. Results Data Sheets for Paraquat Re-analysis on 11/12/97

IV. INITIAL AND CONTINUING CALIBRATION FOR PARAQUAT SOIL

A. Initial Calibration

B. Initial Calibration for Paraquat Re-analysis on 11/12/97

C. Second Source Standard

D. Second Source Standard for Paraquat Re-analysis on 11/12/97

E. Continuing Calibration

F. Continuing Calibration for Paraquat Re-analysis on 11/12/97

V. QUALITY CONTROL FOR PARAQUAT SOIL

A. Blank Results

B. Blank Results for Paraquat Re-analysis on 11/12/97

C. Laboratory Control Sample (LCS) Results

D. Laboratory Control Sample (LCS) Results for Paraquat Re-analysis on 11/12/97

STANDARD PREPARATION LOGS CHEVRON RM 8-10

STANDARD PREPARATION LOGS EPA 549.1

EXTRACTION NOTEBOOK PAGE: CHEVRON RM 8-10

EXTRACTION NOTEBOOK PAGE: EPA 549.1

ANALYTICAL RAW DATA (NOTEBOOK PAGE) CHEVRON 8-10

ANALYTICAL RAW DATA (CHROMATOGRAMS) EPA 549.1

ANALYTICAL REPORT

INTERNAL TRACKING DOCUMENTATION

CHAIN OF CUSTODY

I. SAMPLE INVENTORY FOR PARAQUAT SOIL

SAMPLE ID	NCL ID
FC9B2N0471	9711105-01A
FC8A4N0472	9711105-02A
FC7A2N0473	9711105-03A
FC7A2N0474	9711105-04A
FC6C2N01475	9711105-05A
FC5C4N0476	9711105-06A
FC41N0477	9711105-07A
FC3A5N0479	9711105-08A
FC2A2N04710	9711105-09A
FC1A1N04711	9711105-010A
Method Blank	9711105-012A
Lab.Control Sample	9711105-013A
FC3A5N0479 + Matrix Spike	9711105-014A
FC3A5N0479 + Matrix Spike Dupl.	9711105-015A

II. CASE NARRATIVE FOR PARAQUAT SOIL

LABORATORY: NORTH COAST LABORATORIES, LTD.
CLIENT: GARRY STRUTHERS ASSOCIATES, INC.

A. Sample Receipt

1. Sample Receipt Information

	CLIENT ID	DATE/TIME SAMPLED	DATE/TIME RECEIVED	SAMPLE TEMPERATURE
9711105-01A	FC9B2N0471	11/04/97 1340	11/06/97 1030	2°C(Cooler Blk.)
9711105-02A	FC8A4N0472	11/04/97 1330	11/06/97 1030	2°C(Cooler Blk.)
9711105-03A	FC7A2N0473	11/04/97 1400	11/06/97 1030	2°C(Cooler Blk.)
9711105-04A	FC7A2N0474	11/04/97 1410	11/06/97 1030	2°C(Cooler Blk.)
9711105-05A	FC6C2N01475	11/04/97 1420	11/06/97 1030	2°C(Cooler Blk.)
9711105-06A	FC5C4N0476	11/04/97 1430	11/06/97 1030	2°C(Cooler Blk.)
9711105-07A	FC41N0477	11/04/97 1440	11/06/97 1030	2°C(Cooler Blk.)
9711105-08A	FC3A5N0479	11/04/97 1500	11/06/97 1030	2°C(Cooler Blk.)
9711105-09A	FC2A2N04710	11/04/97 1515	11/06/97 1030	2°C(Cooler Blk.)
9711105-010A	FC1A1N04711	11/04/97 1520	11/06/97 1030	2°C(Cooler Blk.)
9711105-012A	Method Blank	NA	NA	NA
9711105-013A	Lab.Control Sample	NA	NA	NA
9711105-014A	FC3A5N0479 + Matrix Spike	11/04/97 1500	11/06/97 1030	2°C(Cooler Blk.)
9711105-015A	FC3A5N0479 + MS Dupe	11/04/97 1500	11/06/97 1030	2°C(Cooler Blk.)

2. Documentation Exceptions:
No exceptions were encountered.

3. Sample Receipt Exceptions:
No exceptions were encountered.

B. Extraction for Chevron RM 8-10

1. Extraction Dates

NCL ID	DATE/TIME SAMPLED	DATE/TIME RECEIVED	DATE/TIME EXTRACTED
9711105-01A	11/04/97 1340	11/06/97 1030	11/07/97 08:00
9711105-02A	11/04/97 1330	11/06/97 1030	11/07/97 08:00
9711105-03A	11/04/97 1400	11/06/97 1030	11/07/97 08:00
9711105-04A	11/04/97 1410	11/06/97 1030	11/07/97 08:00
9711105-05A	11/04/97 1420	11/06/97 1030	11/07/97 08:00
9711105-06A	11/04/97 1430	11/06/97 1030	11/07/97 08:00
9711105-07A	11/04/97 1440	11/06/97 1030	11/07/97 08:00
9711105-08A	11/04/97 1500	11/06/97 1030	11/07/97 08:00
9711105-09A	11/04/97 1515	11/06/97 1030	11/07/97 08:00
9711105-10A	11/04/97 1520	11/06/97 1030	11/07/97 08:00
9711105-012A	NA	NA	11/07/97 08:00
9711105-013A	NA	NA	11/07/97 08:00
9711105-014A	11/04/97 1500	11/06/97 1030	11/07/97 08:00
9711105-015A	11/04/97 1500	11/06/97 1030	11/07/97 08:00
9711105-01A (re-extr.)	11/04/97 1340	11/06/97 1030	11/11/97 09:20
9711105-02A (re-extr.)	11/04/97 1330	11/06/97 1030	11/11/97 09:20
9711105-03A (re-extr.)	11/04/97 1400	11/06/97 1030	11/11/97 09:20
9711105-04A (re-extr.)	11/04/97 1410	11/06/97 1030	11/11/97 09:20
9711105-05A (re-extr.)	11/04/97 1420	11/06/97 1030	11/11/97 09:20
9711105-06A (re-extr.)	11/04/97 1430	11/06/97 1030	11/11/97 09:20
9711105-07A (re-extr.)	11/04/97 1440	11/06/97 1030	11/11/97 09:20
9711105-08A (re-extr.)	11/04/97 1500	11/06/97 1030	11/11/97 09:20
9711105-09A (re-extr.)	11/04/97 1515	11/06/97 1030	11/11/97 09:20
9711105-10A (re-extr.)	11/04/97 1520	11/06/97 1030	11/11/97 09:20
9700105-12A (re-extr.)	NA	11/06/97 1030	11/11/97 09:20
9711105-13A (re-extr.)	NA	NA	11/11/97 09:20
9711105-14A (re-extr.)	11/04/97 1500	NA	11/11/97 09:20
9711105-15A (re-extr.)	11/04/97 1500	11/06/97 1030	11/11/97 09:20

2. Holding Time Exceptions:
No exceptions were encountered.

3. Extraction Exceptions:
The laboratory control sample recovery was low (65.0%). The matrix spike and matrix spike duplicate recoveries were within acceptance limits, with recoveries of 63.4 and 70.2%, respectively. All the samples and their associated quality control were re-extracted on November 11, 1997 and re-analyzed on November 12, 1997 with acceptable results.

As a result of the re-extraction, there was not sufficient sample to perform the percent moisture analyses for samples 9711105-07A and 08A. The results for these samples were none detected.

C. Data Qualifiers

ND: Indicates the compound was analyzed for but not detected. The number is the reporting limit for the sample.

J: This flag indicates that the value falls between the MDL and the reporting limit and that it is an estimate only.

B: This flag indicates that the analyte was found in the blank, as well as in the sample.

E: Identifies compounds whose concentrations exceed the calibration range of the instrument for a specific analysis.

RA: Identifies all compounds analyzed at a secondary dilution.

r: See Case Narrative for exception

RE: Indicates analysis performed on a re-extracted sample.

T: Indicates analysis performed on the primary column and the preferred value if not "V" flagged on the secondary column.

V: Indicates compound result is preferred and is from the secondary column analysis.

L: Indicates compounds that are not separable using the specified method.

D. Calibration for Chevron RM 8-10

1. Type:
The initial calibration for Chevron RM 8-10 consisted of a straight line fit using three standard concentrations. A r^2 value of 0.995 or greater was established to assess the fit of the curve.

2. Calibration Exceptions:
No exceptions were encountered.

E. Analysis for Chevron RM 8-10

1. Holding Times:
All holding times were met.

2. Analytical Exceptions:
There was a trace amount (less than the reporting limit) of paraquat present in sample 9711105-06A.

F. Quality Control for Chevron RM 8-10

1. Method Blank:

2. Surrogate Recoveries:
No surrogates are associated with this method at this time.

3. Laboratory Control Sample (LCS):
The LCS recovery was below the lower acceptance limit of 75% with a value of 65%. For this reason, the samples were re-extracted on November 11, 1997 and re-analyzed on November 12, 1997 (see extraction exceptions in section II B). The re-extracted and re-analyzed LCS recovery was acceptable with a result of 85.8%.

4. Matrix Spike Results:
No exceptions were encountered.

G. Confirmation of Positive Results
There is no method for confirming positive paraquat results using Chevron RM 8-10. Confirmation by LC/MS is recommended.

III. ANALYTICAL RESULTS FOR PARAQUAT SOIL

A. Results Data Sheets for Paraquat

NCL Sample ID:9711105-01A Date/Time Analyzed: 11/08/97 13:05

% Moisture: 5.85 %

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	2.9	3.2	R MW. 11/28/97

NCL Sample ID:9711105-02A Date/Time Analyzed: 11/08/97 13:05

% Moisture: 7.55%

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	ND 1.0	ND 1.1	ND R MW

NCL Sample ID:9711105-03A Date/Time Analyzed: 11/08/97 13:05

% Moisture: 4.30%

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	ND 1.0	ND 1.0	ND R MW.

NCL Sample ID:9711105-04A Date/Time Analyzed: 11/08/97 13:05

% Moisture: 4.65%

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	ND 1.0	ND 1.0	ND R MW.

NCL Sample ID:9711105-05A Date/Time Analyzed: 11/08/97 13:05

% Moisture: 9.40%

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	5.9	6.5	R MW

NCL Sample ID:9711105-06A Date/Time Analyzed: 11/08/97 13:05

% Moisture: 10.2%

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	1.0	1.1	R MW.

NCL Sample ID:9711105-07A Date/Time Analyzed: 11/08/97 13:05

% Moisture: NA

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	ND 1.0	NA	ND, r R MW

NCL Sample ID:9711105-08A Date/Time Analyzed: 11/08/97 13:05

% Moisture: NA

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	ND 1.0	NA	ND, r R MW

NCL Sample ID:9711105-09A Date/Time Analyzed: 11/08/97 13:05

% Moisture: 2.60%

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	ND 1.0	ND1.0	ND R MW

NCL Sample ID:9711105-10A Date/Time Analyzed: 11/08/97 13:05

% Moisture: 5.70 %

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	ND 1.0	ND 1.1	ND R.

B. Results Data Sheets for Paraquat Re-analysis on 11/12/97

NCL Sample ID:9711105-01A Date/Time Analyzed: 11/12/97 13:15

% Moisture: 5.85%

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	2.0	2.2	RE, r

NCL Sample ID:9711105-02A Date/Time Analyzed: 11/12/97 13:15

% Moisture: 7.55%

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	ND 1.0	ND 1.1	RE, r

NCL Sample ID:9711105-03A Date/Time Analyzed: 11/12/97 13:15

% Moisture: 4.30%

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	ND 1.0	ND 1.0	RE, r

NCL Sample ID:9711105-04A Date/Time Analyzed: 11/12/97 13:15

% Moisture: 4.65 %

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	ND 1.0	ND 1.0	RE, r

NCL Sample ID:9711105-05A Date/Time Analyzed: 11/12/97 13:15

% Moisture: 9.40%

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	8.2	9.1	RE, r, RA

NCL Sample ID:9711105-06A Date/Time Analyzed: 11/12/97 13:15

% Moisture: 10.2%

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	ND 1.0	ND 1.1	RE, r

NCL Sample ID:9711105-07A Date/Time Analyzed: 11/12/97 13:15

% Moisture: NA

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	ND 1.0	NA	RE, r

NCL Sample ID:9711105-08A Date/Time Analyzed: 11/12/97 13:15

% Moisture: NA

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	ND 1.0	NA	RE, r

NCL Sample ID:9711105-09A Date/Time Analyzed: 11/12/97 13:15

% Moisture: 2.60%

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	ND 1.0	ND 1.0	RE, r

NCL Sample ID:9711105-10A Date/Time Analyzed: 11/12/97 13:15

% Moisture: 5.70%

COMPOUND	CAS NO.	WET WT. CONCENTRATION (µg/g)	DRY WT. CONCENTRATION (µg/g)	QUALIFIER
Paraquat	1910-42-5	ND 1.0	ND 1.1	RE, r

IV. INITIAL AND CONTINUING CALIBRATION FOR PARAQUAT SOIL

A. Initial Calibration

1. Paraquat

Initial Calibration:

Date/Time: 11/08/97 13:05 Calibration Std#1: 1.0 PPM
Date/Time: 11/08/97 13:05 Calibration Std#2: 5.0 PPM
Date/Time: 11/08/97 13:05 Calibration Std#3: 7.5 PPM

ANALYTE	r^2	RT OF MID LEVEL STD.	RT WINDOW FROM	RT WINDOW TO	TYPE OF FIT	WINDOW SIZE
Paraquat	0.9953	N/A	N/A	N/A	L	N/A

L = Linear
Q = Quadratic

B. Initial Calibration for Paraquat Re-analysis on 11/12/97

1. Paraquat

Initial Calibration:

Date/Time: 11/12/97 13:15 Calibration Std#1: 1.0 PPM
Date/Time: 11/12/97 13:15 Calibration Std#2: 5.0 PPM
Date/Time: 11/12/97 13:15 Calibration Std#3: 7.5 PPM

ANALYTE	r^2	RT OF MID LEVEL STD.	RT WINDOW FROM	RT WINDOW TO	TYPE OF FIT	WINDOW SIZE
Paraquat	0.995	N/A	N/A	N/A	L	N/A

L = Linear
Q = Quadratic

C. Second Source Standard

1. Paraquat

Second Source Standard: Date/Time:11/08/97 13:05						
ANALYTE	RT OF STD.	RT WINDOW FROM	RT WINDOW TO	NOM CONC. (µg/g)	CALC.CONC (µg/g)	% REC.
Paraquat	N/A	N/A	N/A	5.0	4.68	93.6

Second Source Standard Acceptance Limits: 85 - 115% Recovery

D. Second Source Standard for Paraquat Re-analysis on 11/12/97

1. Paraquat

Second Source Standard: Date/Time:11/12/97 13:15						
ANALYTE	RT OF STD.	RT WINDOW FROM	RT WINDOW TO	NOM CONC. (µg/g)	CALC.CONC (µg/g)	% REC.
Paraquat	N/A	N/A	N/A	5.0	4.75	95.0

Second Source Standard Acceptance Limits: 85 - 115% Recovery

E. Continuing Calibration

1. Paraquat

Continuing Calibration Verification Standard(CCVS): Date/Time: 11/08/97 13:05						
ANALYTE	RT OF CCVS	RT WINDOW FROM	RT WINDOW TO	NOM CONC. (µg/g)	CALC.CONC (µg/g)	% REC.
Paraquat	N/A	N/A	N/A	5.0	5.25	105

CCVS Acceptance Limits: 80 - 120% Recovery

F. Continuing Calibration for Paraquat Re-analysis on 11/12/97

1. Paraquat

Continuing Calibration Verification Standard(CCVS): Date/Time: 11/12/97 13:15						
ANALYTE	RT OF CCVS	RT WINDOW FROM	RT WINDOW TO	NOM CONC. (µg/g)	CALC.CONC (µg/g)	% REC.
Paraquat	N/A	N/A	N/A	5.0	4.15	83.0

CCVS Acceptance Limits: 80 - 120% Recovery

V. QUALITY CONTROL FOR PARAQUAT SOIL

A. Blank Results

1. Paraquat

Method Blank: Matrix: Soil Date/Time Extracted: 11/07/97 08:00 Date/Time Analyzed: 11/08/97 13:05		
COMPOUND	CAS NO.	CONCENTRATION(µg/g)
Paraquat	1910-42-5	ND 1.0

Acceptance Criteria for Method Blank:
Each method analyte must be below its reporting limit(RL).

B. Blank Results for Paraquat Re-analysis on 11/12/97

1. Paraquat

Method Blank: Matrix: Soil Date/Time Extracted: 11/11/97 09:20 Date/Time Analyzed: 11/12/97 13:15		
COMPOUND	CAS NO.	CONCENTRATION(µg/g)
Paraquat	1910-42-5	ND 1.0

Acceptance Criteria for Method Blank:
Each method analyte must be below its reporting limit(RL).

C. Laboratory Control Sample (LCS) Results

1. Paraquat

Laboratory Control Sample: Date/Time Extracted: 11/07/97 08:00 Date/Time Analyzed: 11/08/97 13:05					
ANALYTE	SPIKE ADDED (µg/g)	SAMPLE CONCENTRATION (µg/g)	LCS CONCENTRATION (µg/g)	LCS % RECOVERY	QC LIMITS REC.
Paraquat	5.0	ND 1.0	3.25	65.0	75-130

Acceptance Criteria for Laboratory Control Sample:
Percent recovery must be within specified control limits for each analyte.

D. Laboratory Control Sample (LCS) Results for Paraquat Re-analysis on 11/12/97

1. Paraquat

Laboratory Control Sample: Date/Time Extracted: 11/11/97 09:20 Date/Time Analyzed: 11/12/97 13:15					
ANALYTE	SPIKE ADDED (µg/g)	SAMPLE CONCENTRATION (µg/g)	LCS CONCENTRATION (µg/g)	LCS % RECOVERY	QC LIMITS REC.
Paraquat	5.0	ND 1.0	4.29	85.8	75-130

Acceptance Criteria for Laboratory Control Sample:
Percent recovery must be within specified control limits for each analyte.

E. Matrix Spike (MS) Results

1. Paraquat

Matrix Spike: Date/Time Extracted: 11/07/97 08:00 Date/Time Analyzed: 11/08/97 13:05					
ANALYTE	SPIKE ADDED (µg/g)	SAMPLE CONCENTRATION (µg/g)	MS CONCENTRATION (µg/g)	MS % RECOVERY	QC LIMITS REC.
Paraquat	5.0	ND	3.17	63.4	60-140

Acceptance Criteria for Matrix Spike:
Percent recovery must be within specified control limits for each analyte.

F. Matrix Spike (MS) Results for Paraquat Re-analysis on 11/12/97

1. Paraquat

Matrix Spike: Date/Time Extracted: 11/11/97 09:20 Date/Time Analyzed: 11/12/97 13:15					
ANALYTE	SPIKE ADDED (µg/g)	SAMPLE CONCENTRATION (µg/g)	MS CONCENTRATION (µg/g)	MS % RECOVERY	QC LIMITS REC.
Paraquat	5.0	ND	4.22	84.4	60-140

Acceptance Criteria for Matrix Spike:
Percent recovery must be within specified control limits for each analyte.

G. Matrix Spike Duplicate(MSD) Results

1. Paraquat

Matrix Spike Duplicate: Date/Time Extracted: 11/07/97 08:00 Date/Time Analyzed: 11/08/97 13:05						
ANALYTE	SPIKE ADDED (µg/g)	MSD CONCENTRATION (µg/g)	MSD % RECOVERY	RPD	QC LIMITS REC.	RPD LIMITS
Paraquat	5.0	3.51	70.2	10.2	60-140	≤30

Acceptance Criteria for Matrix Spike Duplicate:
Percent recovery and relative percent difference (RPD) must be within specified control limits for each analyte.

H. Matrix Spike Duplicate(MSD) Results for Paraquat Re-analysis on 11/12/97

1. Paraquat

Matrix Spike Duplicate: Date/Time Extracted: 11/11/97 09:20 Date/Time Analyzed: 11/12/97 13:15						
ANALYTE	SPIKE ADDED (µg/g)	MSD CONCENTRATION (µg/g)	MSD % RECOVERY	RPD	QC LIMITS REC.	RPD LIMITS
Paraquat	5.0	4.00	80.0	5.35	60-140	≤30

Acceptance Criteria for Matrix Spike Duplicate:
Percent recovery and relative percent difference (RPD) must be within specified control limits for each analyte.

I. SAMPLE INVENTORY FOR PARAQUAT WATER

SAMPLE ID	NCL ID
FCEBN04714	9711105-011A
Method Blank	9711105-016A
Lab.Control Sample	9711105-017A
FCEBN04714+ Matrix Spike	9711105-018A
FCEBN04714+ Matrix Spike Dupl.	9711105-019A

II. CASE NARRATIVE FOR PARAQUAT WATER

LABORATORY: NORTH COAST LABORATORIES, LTD.
CLIENT: GARRY STRUTHERS ASSOCIATES, INC.

A. Sample Receipt

1. Sample Receipt Information

	CLIENT ID	DATE/TIME SAMPLED	DATE/TIME RECEIVED	SAMPLE TEMPERATURE
9711105-011A	FCEBN04714	11/04/97 1550	11/06/97 1030	2°C(Cooler Blk.)
9711105-016A	Method Blank	NA	NA	NA
9711105-017A	Lab.Control Sample	NA	NA	NA
9711105-018A	FCEBN04714 + Matrix Spike	11/04/97 1550	11/06/97 1030	2°C(Cooler Blk.)
9711105-019A	FCEBN04714 + MS Dupe	11/04/97 1550	11/06/97 1030	2°C(Cooler Blk.)

2. Documentation Exceptions:
No exceptions were encountered.

3. Sample Receipt Exceptions:
No exceptions were encountered.

B. Extraction for EPA 549.1

1. Extraction Dates

NCL ID	DATE/TIME SAMPLED	DATE/TIME RECEIVED	DATE/TIME EXTRACTED
9711105-011A	11/04/97 1550	11/06/97 1030	11/06/97 1210
9711105-016A	NA	NA	11/06/97 1210
9711105-017A	NA	NA	11/06/97 1210
9711105-018A	11/04/97 1550	11/06/97 1030	11/06/97 1210
9711105-019A	11/04/97 1550	11/06/97 1030	11/06/97 1210

2. Holding Time Exceptions:
No exceptions were encountered.

3. Extraction Exceptions:
No exceptions were encountered.

C. Data Qualifiers

ND: Indicates the compound was analyzed for but not detected. The number is the reporting limit for the sample.

J: This flag indicates that the value falls between the MDL and the reporting limit and that it is an estimate only.

B: This flag indicates that the analyte was found in the blank, as well as in the sample.

E: Identifies compounds whose concentrations exceed the calibration range of the instrument for a specific analysis.

RA: Identifies all compounds analyzed at a secondary dilution.

r: See Case Narrative for exception

RE: Indicates analysis performed on a re-extracted sample.

T: Indicates analysis performed on the primary column and the preferred value if not "V" flagged on the secondary column.

V: Indicates compound result is preferred and is from the secondary column analysis.

L: Indicates compounds that are not separable using the specified method.

D. Calibration for EPA 549.1

1. Type:
The initial calibration for paraquat by EPA 549.1 consisted of a straight line fit using three standard concentrations. A r^2 value of 0.995 or greater was established to assess the fit of the curve.

2. Calibration Exceptions:
No exceptions were encountered.

E. Analysis for EPA 549.1

1. Holding Times:
All holding times were met.

2. Analytical Exceptions:
No exceptions were encountered.

F. Quality Control for 549.1

1. Method Blank:
The analyte was below the reporting limits.

2. Surrogate Recoveries:
No surrogates are associated with this method at this time.

3. Laboratory Control Sample (LCS):
The LCS was within acceptance limits.

4. Matrix Spike Results:
The matrix spike and matrix spike duplicate were within acceptance limits.

G. Confirmation of Positive Results
No positive results were reported.

III. ELECTRONIC FILE IDENTIFICATION CODES FOR PARAQUAT WATER

SAMPLE DESCRIPTION	ELECTRONIC FILE ID
FCEBN04714	F:PARCT 9
Method Blank	F:PARCT 5
Lab.Control Sample	F:PARCT 6
FCEBN04714 + Matrix Spike	F:PARCT 7
FCEBN04714 + MS Dupe	F:PARCT 8

IV. ANALYTICAL RESULTS FOR PARAQUAT WATER

A. Results Data Sheets for Paraquat

NCL Sample ID:9711105-11A Date/Time Analyzed: 11/07/97 06:10:34

COMPOUND	CAS NO.	CONCENTRATION(µg/L)	QUALIFIER
Paraquat	1910-42-5	ND 0.40	ND

V. INITIAL AND CONTINUING CALIBRATION FOR PARAQUAT WATER

A. Initial Calibration

1. Paraquat

Initial Calibration:
Date/Time: 11/07/97 05:24:48 Calibration Std#1: 1.0XRL
Date/Time: 11/07/97 05:28:16 Calibration Std#2: 5.0XRL
Date/Time: 11/07/97 05:36:57 Calibration Std#3: 10XRL

ANALYTE	r^2	RT OF MID LEVEL STD.	RT WINDOW FROM	RT WINDOW TO	TYPE OF FIT	WINDOW SIZE
Paraquat	0.9979	2.058	1.907	2.209	L	0.302

L = Linear
Q = Quadratic

B. Second Source Standard

1. Paraquat

Second Source Standard:
Date/Time:11/07/97 05:50:21

ANALYTE	RT OF STD.	RT WINDOW FROM	RT WINDOW TO	NOM CONC. (µg/L)	CALC.CONC (µg/L)	% REC.
Paraquat	2.067	1.907	2.209	2.0	1.9476	97.4

Second Source Standard Acceptance Limits: 85 - 115% Recovery

C. Continuing Calibration

Continuing Calibration Verification Standard(CCVS):
Date/Time:11/07/97 06:14:36

ANALYTE	RT OF CCVS	RT WINDOW FROM	RT WINDOW TO	NOM CONC. (µg/L)	CALC.CONC (µg/L)	% REC.
Paraquat	2.050	1.907	2.209	2.0	1.9343	96.7

CCVS Acceptance Limits: 80 - 120% Recovery

VI. QUALITY CONTROL FOR PARAQUAT WATER

A. Blank Results

1. Paraquat

Method Blank: Matrix: Water Date/Time Extracted: 11/06/97 12:10 Date/Time Analyzed: 11/07/97 05:55:15		
COMPOUND	CAS NO.	CONCENTRATION(µg/L)
Paraquat	1910-42-5	ND 0.40

Acceptance Criteria for Method Blank:
Each method analyte must be below its reporting limit(RL).

B. Laboratory Control Sample (LCS) Results

1. Paraquat

Laboratory Control Sample: Date/Time Extracted: 11/06/97 12:10 Date/Time Analyzed: 11/07/97 05:58:35					
ANALYTE	SPIKE ADDED (µg/L)	SAMPLE CONCENTRATION (µg/L)	LCS CONCENTRATION (µg/L)	LCS % RECOVERY	QC LIMITS REC.
Paraquat	2.0	ND 0.40	1.7873	89.4	75-130

Acceptance Criteria for Laboratory Control Sample:
Percent recovery must be within specified control limits for each analyte.

C. Matrix Spike (MS) Results

1. Paraquat

Matrix Spike: Date/Time Extracted: 11/06/97 12:10 Date/Time Analyzed: 11/07/97 06:02:14					
ANALYTE	SPIKE ADDED (µg/L)	SAMPLE CONCENTRATION (µg/L)	MS CONCENTRATION (µg/L)	MS % RECOVERY	QC LIMITS REC.
Paraquat	2.0	ND 0.40	1.6379	81.9	60-140

Acceptance Criteria for Matrix Spike:
Percent recovery must be within specified control limits for each analyte.

D. Matrix Spike Duplicate(MSD) Results

1. Paraquat

Matrix Spike Duplicate: Date/Time Extracted: 11/06/97 12:10 Date/Time Analyzed: 11/07/97 06:07:15						
ANALYTE	SPIKE ADDED (µg/L)	MSD CONCENTRATION (µg/L)	MSD % RECOVERY	RPD	QC LIMITS REC.	RPD LIMITS
Paraquat	2.0	1.6760	83.8	2.30	60-140	≤30

Acceptance Criteria for Matrix Spike Duplicate:
Percent recovery and relative percent difference (RPD) must be within specified control limits for each analyte.

STANDARD PREPARATION LOGS CHEVRON RM 8-10

GC Primary Organic Working Standard Log (Part 1)

Analyst	Date	Method/ Analyte	# Components	Stock Lot #	Amount of Stock	Conc. of Stock	Standard Weight	Int. Sample Amount
MH	11/15/97	2,6-DBP	3 of 3	OL-052997-1	10 uLX	10 ng/uL =	100 ng ÷	10 g,(mL) =
MH	11/06/97	Endothal	1 of 2	OL-070397-4	90 uLX	1000 ng/uL =	90000 ng ÷	100 g,(mL) =
↓	1/1	2,3-D	2 of 2	OL-070397-1	100 uLX	1000 ng/uL =	100 000 ng ÷	g,(mL) =
↓	1/1	Endothal	1 of 2	OL-022797-1	90 uLX	1000 ng/uL =	90000 ng ÷	g,(mL) =
↓	↓/1	2,3-D	2 of 2	OL-070397-1	100 uLX	1000 ng/uL =	100000 ng ÷	↓ g,(mL) =
MDM	11/08/97	PCP By SISW LOT 1	1 of 2	OL-013197-6	10 uLX	10 ng/uL =	100 ng ÷	500 g,(mL) =
↓	1/1	TCP ~~EST~~ LOT 1 Jonelle 11/3/97 (004)	2 of 2	OL-013197-8	100 uLX	10 ng/uL =	1000 ng ÷	↓ g,(mL) =
↓	1/1	PCP LOT 2	1 of 2	OL-013197-7	10 uLX	10 ng/uL =	100 ng ÷	500 g,(mL) =
↓	1/↓1	TCP LOT 2	2 of 2	OL-013197-9	100 uLX	10 ng/uL =	1000 ng ÷	↓ g,(mL) =
AB	11/18/97	Paraquat	1 of 1	OL0821197.4	20 uLX	100 ng/uL =	2000 ng ÷	20 (g),(mL) = 11/18/97
↓	1/1	Paraquat	1 of 1	OL0818197.01	10 uLX	1000 ng/uL =	10000 ng ÷	200 (g),mL = 11/18/97
↓	1/1	Paraquat	1 of 1	↓	15 uLX	1000 ng/uL =	15000 ng ÷	20 (g),mL =
↓	1/1	Paraquat LOT 4	1 of 1	OL090897.4	10 uLX	1000 ng/uL =	10000 ng ÷	20 (g),mL =
AB	11/18/97	Paraquat	1 of 1	OL0818197.P1	2 uLX	1000 ng/uL =	2000 ng ÷	20 (g),mL =
↓	1/1	Paraquat	1 of 1	↓	10 uLX	↓ ng/uL =	10000 ng ÷	20 (g),mL =
↓	1/1	Paraquat	1 of 1	↓	15 uLX	ng/uL =	15000 ng ÷	20 (g),mL =
↓	1/↓1	Paraquat LOT 4	1 of 1	OL090897.4	10 uLX	ng/uL =	10000 ng ÷	20 (g),mL =
KS	11/11/97	Endothal LOT 1	1 of 2	OL-070397-4	90 uLX	1000 ng/uL =	90000 ng ÷	100 g,(mL) =
↓	1/1	2,3-D	2 of 2	OL-070397-1	100 uLX	↓ ng/uL =	100000 ng ÷	↓ g,(mL) =
↓	1/1	Endothal LOT 2	1 of 2	OL-022797-1	90 uLX	ng/uL =	90000 ng ÷	g,(mL) =
↓	↓/1	2,3-D	2 of 2	OL-070397-1	100 uLX	↓ ng/uL =	100000 ng ÷	↓ g,(mL) =

GC Primary Organic Working Standard Log (Part 2)

		Dilution		Final Ext. Vol.		Final Std. Vol.		Working Standard Conc.		Final Solvent	Solvent Lot#	NCL WO Std. ID #
10	ng/g,mL X	1	X	5	mL÷	5	mL =	10	ng/g,mL	Hexane	BP450	WO- 110597-2
900	ng/g,mL X	1	X	1	mL÷	1	mL =	900	ng/g,mL	$MeCl_2$	BJ BP031 (was 110697)	WO- 110697-1
1000	ng/g,mL X	1	X	1	mL÷	1	mL =	1000	ng/g,mL	↓	↓	WO- ↓
900	ng/g,mL X	1	X	1	mL÷	1	mL =	900	ng/g,mL			WO- 110697-2
1000	ng/g,mL X	1	X	1	mL÷	1	mL =	1000	ng/g,mL			WO- ↓
0.2	ng/g,mL X	10	X	4.0	mL÷	8.0	mL =	1	ng/g,mL	HEXANE	BJ# B-450	WO- 110897-1
2	ng/g,mL X	↓	X	↓	mL÷	↓	mL =	10	ng/g,mL			WO- ↓
0.2	ng/g,mL X	10	X	4.0	mL÷	8.0	mL =	1	ng/g,mL			WO- 110897-2
2	ng/g,mL X	↓	X	↓	mL÷	↓	mL =	10	ng/g,mL			WO- ↓
100	ng/g,mL X	1	X	25	mL÷	2.5	mL =	1000	ng/g,mL	BLANK EXTRACT	Batch 971024.0	WO- 110897.3
500	ng/g,mL X	1	X	25	mL÷	2.5	mL =	5000	ng/g,mL			WO- 110892.4
750	ng/g,mL X	1	X	25	mL÷	2.5	mL =	7500	ng/g,mL			WO- 110897.5
500	ng/g,mL X	1	X	25	mL÷	2.5	mL =	5000	ng/g,mL			WO- 110897.6
100	ng/g,mL X	1	X	25	mL÷	2.5	mL =	1000	ng/g,mL	Sat NH_4Cl	OL052097	WO- 110897.7
500	ng/g,mL X	1	X	25	mL÷	2.5	mL =	5000	ng/g,mL			WO- 110897.8
750	ng/g,mL X	1	X	25	mL÷	2.5	mL =	7500	ng/g,mL			WO- 110897.9
100	ng/g,mL X	1	X	25	mL÷	2.5	mL =	5000	ng/g,mL			WO- 110897.10
900	ng/g,mL X	1	X	1	mL÷	1	mL =	900	ng/g,mL	$MeCl_2$	BP031	WO- 111197-1
1000	ng/g,mL X	1	X	1	mL÷	1	mL =	1000	ng/g,mL			WO- ↓
900	ng/g,mL X	1	X	1	mL÷	1	mL =	900	ng/g,mL			WO- 111197-2
1000	ng/g,mL X	1	X	1	mL÷	1	mL =	1000	ng/g,mL			WO- ↓

GC Primary Organic Working Standard Log (Part 1)

Analyst	Date	Method/ Analyte	# Components	Stock Lot #	Amount of Stock	Conc. of Stock	Standard Weight	Int. Sample Amount
KS	11/11/97	EDB/DBCP	1 of 1	OL-111197-9	3.5 uLX	0.1 ng/uL = 0.35 ng	÷ 35 g,(mL) =	
↓	1/1	↓	1 of 1	OL-111197-8	7.0 uLX	1.0 ng/uL = 7.0 ng	÷ 35 g,(mL) =	
↓	1/1	↓	1 of 1	OL-111197-8	14.0 uLX	1.0 ng/uL = 14.0 ng	÷ 35 g(mL) =	
↓	1/1	↓	1 of 1	OL-111197-10	7.0 uLX	1.0 ng/uL = 7.0 ng	÷ 35 g,(mL) =	
MH	11/12/97	paraquat	1 of 1	OL-111197-02	20 uLX	100 ng/uL = 2000 ng	÷ 20 (g),mL =	
↓	1/1	↓	1 of 1	OL-111197-01	10 uLX	1000 ng/uL = 10000 ng	÷ 20 (g),mL =	
↓	1/1	↓	1 of 1	OL-111197-01	15 uLX	1000 ng/uL = 15000 ng	÷ 20 (g),mL =	
DSF	11/12/97	Diesel, Lot 1	1 of 3	OL-110697-1	400 uLX	5000 ng/uL = 2×10^6 ng	÷ 400 g,(mL) =	
	1/1	C-11	2 of 3	OL-110697-3	1000 uLX	200 ng/uL = 2×10^5 ng	÷ 400 g,(mL) =	
	1/1	C_{23}	3 of 3	OL-101797-1	1000 uLX	200 ng/uL = 2×10^5 ng	÷ 400 g,(mL) =	
KS	11/12/97	Toxaphene	1 of 1		12.5 uLX	7 ng/uL = 87.5 ng	÷ 35 g,(mL) =	
↓	1/1	Chlordane	1 of 1		17.5 uLX	1 ng/uL = 17.5 ng	÷ 35 g,(mL) =	
MDM	11/13/97	TOXAPHENE	1 of 2	OL-111397-1	100 uLX	10,000 ng/uL = 10^6 ng	÷ 10 (g),mL =	
↓	1/↓	CHLORINED	2 of 2	OL-091897-1	40 uLX	1,000 ng/uL = 40000 ng	÷ ↓ (g),mL =	
MDM	11/14/97	515W LOT 1	1 of 2	OL-072397-1	20 uLX	VARIOUS ng/uL = VARIOUS ng	÷ 500 g,(mL) =	
↓	1/1	2,3-D	2 of 2	OL-100297-2	20 uLX	100 ng/uL = 2000 ng	÷ ↓ g,(mL) =	
↓	1/1	515W LOT 2	1 of 2	OL-080497-8	20 uLX	VARIOUS ng/uL = VARIOUS ng	÷ 500 g,(mL) =	
↓	1/↓	2,3-D	2 of 2	OL-100297-2	20 uLX	100 ng/uL = 2000 ng	÷ ↓ g,(mL) =	
MH	11/17/97	paraquat	1 of 1	OL-111097-01	20 uLX	100 ng/uL = 2000 ng	÷ 20 (g),mL =	
↓	1/1	↓	↓ of ↓	OL-111097-01	40 uLX	100 ng/uL = 4000 ng	÷ 20 (g),mL =	
↓	1/1	↓	↓ of ↓	~~OL-111097-01~~ OL-111797-01	10 uLX	1000 ng/uL = 10000 ng	÷ 20 (g),mL =	

GC Primary Organic Working Standard Log (Part 2)

		Dilution		Final Ext. Vol.		Final Std. Vol.		Working Standard Conc.		Final Solvent	Solvent Lot #	NCL WO Std. ID #
0.01	ng/g,mL X	1	X	2	mL÷	2	mL =	2	ng/g,mL	Capillan Hexane	B#407	WO- 111197-3
0.2	ng/g,mL X	1	X	2	mL÷	2	mL =	2	ng/g,mL	↓	↓	WO- 111197-4
0.4	ng/g,mL X	1	X	2	mL÷	2	mL =	2	ng/g,mL	↓	↓	WO- 111197-5
0.2	ng/g,mL X	1	X	2	mL÷	2	mL =	2	ng/g,mL	↓	↓	WO- 111197-6
100	ng/g,mL X	1	X	25	mL÷	2.5	mL =	1000	ng/g,mL	Sat'd NH4Cl	01-111197-01	WO- 111297-01
500	ng/g,mL X	1	X	25	mL÷	2.5	mL =	5000	ng/g,mL	↓	↓	WO- 111297-02
750	ng/g,mL X	1	X	25	mL÷	2.5	mL =	7500	ng/g,mL	↓	↓	WO- 111297-03
5000	ng/g,mL X	1	X	1	mL÷	10	mL =	500	ng/g,mL	HEXANE	B&J# BL450	WO- 111297-4
500	ng/g,mL X	1	X	1	mL÷	10	mL =	50	ng/g,mL	↓	↓	WO-
50	ng/g,mL X	1	X	1	mL÷	10	mL =	50	ng/g,mL	↓	↓	WO- ↓ ↓
2.5	ng/g,mL X	1	X	2	mL÷	2	mL =	2.5	ng/g,mL	Hexane		WO- 111297-5
0.5	ng/g,mL X	1	X	2	mL÷	2	mL =	0.5	ng/g,mL	↓		WO- 111297-6
100,000	ng/g,mL X	1	X	10.0	mL÷	10.0	mL =	100,000	ng/g,mL	HEXANE	B&J # BL450	WO- 111397-1
4000	ng/g,mL X	↓	X	↓	mL÷	↓	mL =	4,000	ng/g,mL	↓	↓	WO- ↓
VARIOUS	ng/g,mL X	10	X	4.0	mL÷	8.0	mL =	10XDL	ng/g,mL	HEXANE	JT BAKER # L29301	WO- 111497-1
4	ng/g,mL X	↓	X	↓	mL÷	↓	mL =	20	ng/g,mL			WO- ↓
VARIOUS	ng/g,mL X	10	X	4.0	mL÷	8.0	mL =	10XDL	ng/g,mL			WO- 111497-2
4	ng/g,mL X	↓	X	↓	mL÷	↓	mL =	20	ng/g,mL			WO- ↓
100	ng/g,mL X	1	X	25	mL÷	2.5	mL =	1000	ng/g,mL	01-111197-01	Sat'd NH4Cl	WO- 111797-01
200	ng/g,mL X	1	X	25	mL÷	2.5	mL =	2000	ng/g,mL			WO- 111797-02
500	ng/g,mL X	1	X	25	mL÷	2.5	mL =	5000	ng/g,mL			WO- 111797-03

NORTH COAST LABORATORIES LTD. ORGANIC STOCK STANDARD LOG

Init.	Date	Method/ Analyte	#Compon.	Supplier	Lot #	Amount Standard	Conc. Standard	Wt. of Std.	Std. Final Vol.	Std. Final Conc.	Std. Lot #	Solvent/ Lot #	Exp. Date
MH	8/12/97	3-Hydroxy Carbofuran	5 of 10	NCL	OL-081297-2	0.06 g/mL X	1000 µg/mL,g =	60 µg +	10 mL =	6 PPM	OL 08/12/97-8	Acidified CH_3CN OL-LC-081297-1	10/97
	/ /	Oxamyl	6 of 10	NCL	OL-081297-5	0.10 g/mL X	1000 µg/mL,g =	100 µg ÷	10 mL =	10 PPM	OL / /		
	/ /	Propoxure	7 of 10	NCL	OL-013097-6	0.10 g/mL X	1000 µg/mL,g =	100 µg ÷	10 mL =	10 PPM	OL / /		
	/ /	Methiocarb	8 of 10	NCL	OL-081297-7	0.10 g/mL X	1000 µg/mL,g =	100 µg +	10 mL =	10 PPM	OL / /		
	/ /	Carbaryl	9 of 10	NCL	OL-013097-6	0.10 g/mL X	1000 µg/mL,g =	100 µg ÷	10 mL =	10 PPM	OL / /		
	/ /	Carbofuran	10 of 10	NCL	OL-013097-5	0.10 g/mL X	1000 µg/mL,g =	100 µg +	10 mL =	10 PPM	OL / /		
MH	8/13/97	glyphosate	1 of 1	NCL	OL-073197-1	0.50 g/mL X	1000 µg/mL,g =	500 µg +	5 mL =	100 PPM	OL 08/13/97-1	HPLC H_2O EM 37062	7/98
KS	8/13/97	undecane	1 of 1	NCL	OL-061697-6	1.0 g/mL X	5000 µg/mL,g = (Solvent corr 8-13-97)	5000 µg ÷	25 mL =	200 PPM	OL 08/13/97-2	Hexane BJ B0185	6/98
DSF	8/14/97	Diesel	1 of 1	Client WO# 9708158	Sample# 9708158-09A	0.0117 g/mL X	10^6 µg/mL,g =	11700 µg +	2.34 mL =	5000 PPM	OL 08/14/97-1	Hexane BJ# B0185	8/14/98
DSF	8/14/97	C_{23}	1 of 1	NCL	OL-012297-4	1.0 g/mL X	5000 µg/mL,g =	5000 µg +	25 mL =	200 PPM	OL 08/14/97-2	Hexane BJ B0185	8/14/98
DSF	8/14/97	Diesel	1 of 1	McKinleyville Shell	Lot G-14-90-2	.0483 g/mL X	10^6 µg/mL,g =	48300 µg +	~~9.66~~ 9.66 (Error in calc 9/14/97) mL =	5000 PPM	OL 08/14/97-3	Hexane BJ# B0185	8/14/98
AB	8/15/97	Glyphosate	1 of 1	NCL	OL-051997-1	0.5 g/mL X	1000 µg/mL,g =	500 µg ÷	5 mL =	100 PPM	OL 08/15/97-1	HPLC H2O EM 37062	7/31/98
MH	8/18/97	paraquat	1 of 1	ChemService	174-57A	0.0096 g/mL X	9.9×10^5 µg/mL,g =	~~9504~~ µg (9504) +	5.3696 mL =	1000 PPM	OL 08/15/97-1	HPLC H_2O EM 37062	8/98

(corr MH 8/18/97)

J:\WPROC\MISC\FORMS\ORGSSLOG

NORTH COAST LABORATORIES LT ORGANIC STOCK STANDARD LOG

0136

Init.	Date	Method/ Analyte	#Compon.	Supplier	Lot #	Amount Standard	Conc. Standard	Wt. of Std.	Std. Final Vol.	Std. Final Conc.	Std. Lot #	Solvent/ Lot #	Exp. Date
MH	9/2/97	8080mix	1 of 1	Supelco	LA-660004	0.50 g/mL	2000 µg/mL	100 µg	10 mL	16 PPM	OL090297-01	MeOH Lot: BP6633	9/98
AB	9/3/97	Glyphosate lot 1	1 of 1	NCL	0L073197.1	0.05 g/mL	1000 µg/mL	50 µg	5 mL	10 PPM	OL090397-1	HPLC H2O EM 37149	7/98
↓	/ /	Glyphosate lot 2	1 of 1	↓	OL080797.2	0.05 g/mL	1000 µg/mL	50 µg	5 mL	10 PPM	OL090397-2	↓	8/98
DH	9/4/97	Triclopyr	1 of 1	Axact	CHY0712	0.0100 g/mL	9.95x10^5 µg/mL	9950 µg	9.95 mL	1000 PPM	OL090497-1	MeOH BP633	7/98
KS	9/4/97	2,6-DCP	1 of 1	Aldrich	08709ZJ	0.0100 g/mL	9.9x10^5 µg/mL	9900 µg	9.9 mL	1000 PPM	OL090497-2	MeOH BP633	9/98
SKD	9/8/97	METALAXYL	1 of 1	AXACT	30823	.0162 g/mL	9.824x10^5 µg/mL	10016.4 µg	10.016 4 mL	1000 PPM	OL090897-1	CH3CN B-S# BP2224	9/98
↓	/ /	METALAXYL	1 of 1	NCL	OL-090897-1	1.0 g/mL	10^3 µg/mL	10^3 µg	10 mL	100 PPM	OL090897-2	CH3CN B-S# BP2224	9/98
KS	9/8/97	terbacil	1 of 1	NCL	OL-012297-4	1.0 mL	5000 µg/mL	5000 µg	25 mL	200 PPM	OL090897-3	Hexane Baker L29301	1/98
MH	9/8/97	paraquat LOT 2	1 of 1	Axact	# 40607	0.0122 g/mL	9.9x10^5 µg/mL	12078 µg	6.824 mL *	1000 PPM	OL090897-4	HPLC H2O EM 370662	9/98
DSF	9/8/97	Diesel	1 of 1	McKinleyville Shell	6-14-90-2	0.0400 g/mL	10^6 µg/mL	40000 µg	8 mL	5000 PPM	OL090897-5	HEXANE Baker # L29301	9/98
SKD	9/9/97	IPRODIONE	1 of 1	AXACT	30527	.0098 g/mL	9.98x10^5 µg/mL	9780.4 µg	9.7804 mL	1000 PPM	OL090997-1	CH3CN B-S BP2224	12/97
↓	/ /	IPRODIONE	1 of 1	NCL	OL-090997-1	1.0 g/mL	10^3 µg/mL	10^3 µg	10 mL	100 PPM	OL090997-2	↓	↓
SKD	9/9/97	IPRODIONE	1 of 1	CHEM SERVICE	167-73	.0098 g/mL	9.8x10^5 µg/mL	9604 µg	9.604 mL	1000 PPM	OL090997-3	CH3CN B-S BP2224	9/98

* Correction factor for paraquat std: 1.770 amt of solvent = (0.0122g)(9.8x10^5 µg/g) / (1000ppm)(1.770) = 6.824 mL

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NORTH COAST LABORATORIES LTD. ORGANIC STOCK STANDARD LOG

3045

Init.	Date	Method/ Analyte	#Compon.	Supplier	Lot #	Amount Standard	Conc. Standard	Wt. of Std.	Std. Final Vol.	Std. Final Conc.	Std. Lot #	Solvent/ Lot #	Exp. Date
KS	11/4/97	Dieldrin	1 of 1	Chem Service	190-97A	0.0084 g	x 9.8x10^5 µg/mL,g =	8232 µg	÷ 8.23 mL =	1000 PPM	OL 11/04/97-2	MeOH BJ BP633	11/98
DSF	11/6/97	Diesel	1 of 1	SHELL - McKinleyville	C-14-90-2	0.0376 g	x 1x10^6 µg/g =	37600 µg	÷ 7.52 mL =	5000 PPM	OL 11/6/97-1	HEX B+J# BL450	11/98
DSF	11/6/97	Motor oil	1 of 1	Pennzoil 10W-30	8-5-91-1	0.0437 g	x 1x10^6 µg/g =	43700 µg	÷ 8.74 mL =	5000 PPM	OL 11/6/97-2	HEX B+J# BL450	11/98
DSF	11/6/97	N-Undecane	1 of 1	NCL	OL-061697-6	1.0 mL	x 5000 µg/mL =	5000 µg	+ 25 mL =	200 PPM	OL 11/06/97-3	HEX B+J# BL450	11/98
MH	11/10/97	paraquat LOT 2	1 of 1	Axact Net	# 40607	0.0054 g	x 9.9x10^5 µg/g =	5346 µg	+ 3.020* mL =	1000 PPM	OL 11/10/97-01	HPLC H₂O (EM) # 37220	9/98
MH	11/11/97	paraquat LOT 1	1 of 1	Chem Service	174-57A	0.0094 g	x 9.9x10^5 µg/g =	9306 µg	÷ 5.258** mL =	1000 PPM	OL 11/11/97-01	HPLC H₂O # EM 37220	11/98
MH	11/11/97	paraquat LOT 1	1 of 1	NCL	OL-111197-1	1.0 mL	x 1000 µg/mL =	1000 µg	+ 10 mL =	100 PPM	OL 11/11/97-02	HPLC H₂O # EM 37220	11/98
AB	11/11/97	Carbaryl	1 of 1	Axact	CH 40331	0.0107 g	x 9.96x10^5 µg/g =	10657.2 µg	÷ 10.6572 mL =	1000 PPM	OL 11/11/97-3	CH₃CN B+J B9132	4/98
↓	↓	Carbofuran	1 of 1	Axact	30406	0.0099 g	x 9.99x10^5 µg/g =	9890.1 µg	÷ 9.8901 mL =	1000 PPM	OL 11/11/97-4	↓	12/97
↓	↓	Methiocarb (Mercaptodimethur)	1 of 1	Axact	CH31203	0.0107 g	x 9.98x10^5 µg/g =	10678.6 µg	÷ 10.6786 mL =	1000 PPM	OL 11/11/97-5	↓	12/97
AB	11/11/97	Aldicarb	1 of 10	NCL	OLOB1297-1	0.06 mL	x 1000 µg/mL =	60 µg	+ 10 mL =	6 PPM	OL 11/11/97-6	Acid. fied CH₃CN of CCOB1297-1	12/97
↓	↓	Aldicarb sulfoxide	2 of 10	↓	OLOB1297-3	0.06 mL	x 1000 µg/mL =	60 µg	+ ↓ mL =	6 PPM	OL__/__/__	↓	↓
↓	↓	Aldicarb sulfone	3 of 10	↓	OLOB1297-3	0.08 mL	x 1000 µg/mL =	80 µg	÷ ↓ mL =	8 PPM	OL__/__/__	↓	↓

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* paraquat correction factor = 1.770 ∴ AMT OF SOLVENT = $\frac{(0.0054g)(9.9\times10^5 \mu g/g)}{(1000)(1.770)}$ = 3.020 mL

** amt of solvent = (0.0094g)(9.9x10^5 µg/g) ... = 5.258 mL

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STANDARD PREPARATION LOGS EPA 549.1

North Coast La[illegible]ories, LTD

LC Primary Organic Working Standard Log (Part 1)

Analyst	Date	Method/ Analyte	# Components	Stock Lot #	Amount of Stock	Conc. of Stock	Standard Weight	Int. Sample Amount
SKD	11/15/97	ROTENONE	1 of 3	OL-102197-1	12.5 uLX	1000 ng/uL = 12500	ng÷	500 g,mL =
	1 1	SIMAZINE	2 of 3	OL-103097-2	12.5 uLX	1000 ng/uL = 12500	ng÷	500 g,mL =
	1 1	ATRAZINE	3 of 3	OL-102597-1	25 uLX	1000 ng/uL = 25000	ng÷	500 g,mL =
	1 1	ROTENONE	1 of 3	OL-102197-1	25 uLX	1000 ng/uL = 25000	ng÷	500 g,mL =
	1 1	SIMAZINE	2 of 3	OL-103097-2	25 uLX	1000 ng/uL = 25000	ng÷	500 g,mL =
	1 1	ATRAZINE	3 of 3	OL-102597-1	25 uLX	1000 ng/uL = 25000	ng÷	500 g,mL =
	1 1	ROTENONE	1 of 3	OL-103097-1	25 uLX	1000 ng/uL = 25000	ng÷	500 g,mL =
	1 1	SIMAZINE	2 of 3	OL-103097-2	25 uLX	1000 ng/uL = 25000	ng÷	500 g,mL =
	1 1	ATRAZINE	3 of 3	OL-102597-1	25 uLX	1000 ng/uL = 25000	ng÷	500 g,mL =
	1 1	ROTENONE	1 of 3	OL-102197-1	50 uLX	1000 ng/uL = 50000	ng÷	500 g,mL =
	1 1	SIMAZINE	2 of 3	OL-103097-2	50 uLX	1000 ng/uL = 50000	ng÷	500 g,mL =
	1 1	ATRAZINE	3 of 3	OL-102597-1	25 uLX	1000 ng/uL = 25000	ng÷	500 g,mL =
AB	11/17/97	Paraquat	1 of 1	OL082697-2	2 uLX	10 ng/uL = 20	ng÷	250 g,mL =
	1 1	Paraquat	1 of 1	[illegible]	10 uLX	10 ng/uL = 100	ng÷	250 g,mL =
	1 1	Paraquat L2	1 of 1		20 uLX	10 ng/uL = 200	ng÷	250 g,mL =
	1 1	Paraquat L2	1 of 1	OL082697-1	10 uLX	10 ng/uL = 100	ng÷	250 g,mL =
	1 1	Diquat	1 of 1	OL072197-3	2 uLX	10 ng/uL = 20	ng÷	250 g,mL =
	1 1	Diquat	1 of 1		10 uLX	10 ng/uL = 100	ng÷	250 g,mL =
	1 1	Diquat L1	1 of 1		20 uLX	10 ng/uL = 200	ng÷	250 g,mL =
	1 1	Diquat L2	1 of 1	OL072197-4	10 uLX	10 ng/uL = 100	ng÷	250 g,mL =
	1 1		of		uLX	ng/uL =	ng÷	g,mL =

LC Primary Organic Working Standard Log (Part 2)

		Dilution		Final Ext. Vol.		Final Std. Vol.		Working Standard Conc.		Final Solvent	Solvent Lot #	NCL WO Std. ID #
25	ng/g,mL X	1	X	1	mL÷	1	mL =	25	ng/g,mL	CH_3CN	BJ # BB425	WO- 110597-3-LC
25	ng/g,mL X	1	X	1	mL÷	1	mL =	25	ng/g,mL			WO-
50	ng/g,mL X	1	X	1	mL÷	1	mL =	50	ng/g,mL			WO-
50	ng/g,mL X	1	X	1	mL÷	1	mL =	50	ng/g,mL			WO- 110597-4-LC
50	ng/g,mL X	1	X	1	mL÷	1	mL =	50	ng/g,mL			WO-
50	ng/g,mL X	1	X	1	mL÷	1	mL =	50	ng/g,mL			WO-
50	ng/g,mL X	1	X	1	mL÷	1	mL =	50	ng/g,mL			WO- 110597-5-LC
50	ng/g,mL X	1	X	1	mL÷	1	mL =	50	ng/g,mL			WO-
50	ng/g,mL X	1	X	1	mL÷	1	mL =	50	ng/g,mL			WO-
50	ng/g,mL X	1	X	1	mL÷	1	mL =	50	ng/g,mL			WO- 110597-6-LC
100	ng/g,mL X	1	X	1	mL÷	1	mL =	100	ng/g,mL			WO-
100	ng/g,mL X	1	X	1	mL÷	1	mL =	100	ng/g,mL			WO-
50	ng/g,mL X	1	X	1	mL÷	1	mL =	50	ng/g,mL	BLANK ELEMENT	Batch # 971106.1	WO- 110797-1-LC
0.08	ng/g,mL X	1	X	5	mL÷	1	mL =	0.4	ng/g,mL			WO- 110797-2-LC
0.4	ng/g,mL X	1	X	5	mL÷	1	mL =	2.0	ng/g,mL			WO- 110797-3-LC
0.8	ng/g,mL X	1	X	5	mL÷	1	mL =	4.0	ng/g,mL			WO- 110797-4-LC
0.4	ng/g,mL X	1	X	5	mL÷	1	mL =	2.0	ng/g,mL			WO- 110797-5-LC
0.08	ng/g,mL X	1	X	5	mL÷	1	mL =	0.4	ng/g,mL			WO- 110797-6-LC
0.4	ng/g,mL X	1	X	5	mL÷	1	mL =	2.0	ng/g,mL			WO- 110797-7-LC
0.8	ng/g,mL X	1	X	5	mL÷	1	mL =	4.0	ng/g,mL			WO- 110797-8-LC
0.4	ng/g,mL X	1	X	5	mL÷	1	mL =	2.0	ng/g,mL			WO-
	ng/g,mL X		X		mL÷		mL =		ng/g,mL			

NORTH COAST LABORATORIES I — ORGANIC STOCK STANDARD LOG

0033

Init.	Date	Method/ Analyte	#Compon.	Supplier	Lot #	Amount Standard	Conc. Standard	Wt. of Std.	Std. Final Vol.	Std. Final Conc.	Std. Lot #	Solvent/ Lot #	Exp. Date
MH	8/12/97	3-Hydroxy Carbofuran	5 of 10	NCL	OL-081297-2	0.06 g/mL	1000 µg/mL =	60 µg	10 mL =	6 PPM	OL 08/12/97-8	Acidified CH_3CN OL-LC-081297-1	10/97
	/ /	Oxamyl	6 of 10	NCL	OL-081297-5	0.10 g/mL	1000 µg/mL =	100 µg	10 mL =	10 PPM	OL / /		
	/ /	Propoxur	7 of 10	NCL	OL-013097-6	0.10 g/mL	1000 µg/mL =	100 µg	10 mL =	10 PPM	OL / /		
	/ /	Methiocarb	8 of 10	NCL	OL-081297-7	0.10 g/mL	1000 µg/mL =	100 µg	10 mL =	10 PPM	OL / /		
	/ /	Carbaryl	9 of 10	NCL	OL-013097-6	0.10 g/mL	1000 µg/mL =	100 µg	10 mL =	10 PPM	OL / /		
	/ /	Carbofuran	10 of 10	NCL	OL-013097-5	0.10 g/mL	1000 µg/mL =	100 µg	10 mL =	10 PPM	OL / /		
MH	8/13/97	glyphosate	1 of 1	NCL	OL-073197-1	0.50 g/mL	1000 µg/mL =	500 µg	5 mL =	100 PPM	OL 08/13/97-1	HPLC H_2O EM 390162	7/98
KS	8/13/97	undecane	1 of 1	NCL	OL-081197-6	1.0 g/mL	5000 µg/mL =	5000 µg	25 mL =	200 PPM	OL 08/13/97-2	Hexane B:J B0185	6/98
DSF	8/14/97	Diesel	1 of 1	client WO# 9708158	Sample# 9708158-09A	0.0117 g/mL	10^6 µg/mL =	11700 µg	2.34 mL =	5000 PPM	OL 08/14/97-1	Hexane BTJ# B0185	8/14/98
DSF	8/14/97	C_{23}	1 of 1	NCL	OL-012297-4	1.0 g/mL	5000 µg/mL =	5000 µg	25 mL =	200 PPM	OL 08/14/97-2	Hexane BTJ B0185	8/14/98
DSF	8/14/97	Diesel	1 of 1	Mckinleyville Shell	Lot G-14-90-2	.0483 g/mL	10^6 µg/mL =	48300 µg	9.66 mL =	5000 PPM	OL 08/14/97-3	Hexane BTJ# B0185	8/14/98
AB	8/15/97	Glyphosate	1 of 1	NCL	OL-073197-1	0.5 g/mL	1000 µg/mL =	500 µg	5 mL =	100 PPM	OL 08/15/97-1	HPLC H_2O EM 390162	7/31/98
MH	8/18/97	paraquat	1 of 1	ChemService	174-57A	0.004 g/mL	9.9×10^5 µg/mL =	9504 µg	5.3695 mL =	1000 PPM	OL 08/18/97-1	HPLC H_2O EM 390162	8/98

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NORTH COAST LABORATORIES I . ORGANIC STOCK STANDARD LOG

0034

Init.	Date	Method/ Analyte	#Compon.	Supplier	Lot #	Amount Standard	Conc. Standard	Wt. of Std.	Std. Final Vol.	Std. Final Conc.	Std. Lot #	Solvent/ Lot #	Exp. Date
MH	8/18/97	paraquat	1 of 1	ULTRASCIENTIFIC	UL-73B	0.0111g g/mL x	95x10^5 µg/mL/g =	~~5950~~ 10545 µg (cor) MH 8/19/97	÷ 5.958 mL =	1000 PPM	OL08/18/97-2	HPLC H2O Em 37062	9/97
SKD	8/19/97	TEBUTHIURON	1 of 1	CHEMSERVICE	144-123A	0.0102 g/mL x	9.98x10^5 µg/mL/g =	10179.6 µg	÷ 10.1796 mL =	1000 PPM	OL08/19/97-1	CH3CN B+J BO977	02/00
↓	↓	TEBUTHIURON	1 of 1	NCL	OL-081997-1	1.0 g/mL x	1000 µg/mL/g =	1000 µg	÷ 10 mL =	100 PPM	OL08/19/97-2	↓	8/98
KB	8/19/97	EDB/DBCP	1 of 1	Absolute	052396	0.005 g/mL x	200 µg/mL/g =	1.0 µg	÷ 1.0 mL =	1.0 PPM	OL08/19/97-3	MeOH BP026	7/98
	↓	EDB/DBCP	1 of 1	NCL	OL-081997-3	0.1 g/mL x	1 µg/mL/g =	0.1 µg	÷ 1.0 mL =	0.1 PPM	OL08/19/97-4	↓	7/98
	↓	EDB/DBCP	1 of 1	ChemServ	185-20A	0.005 g/mL x	2000 µg/mL/g =	10 µg	÷ 10 mL =	1.0 PPM	OL08/19/97-5	↓	8/98
	/ /		of	~~ChemServ~~	~~185-20A~~ (cor) KB 8-19-97	~~0.005~~ g/mL x	µg/mL/g =	µg	÷ mL =	PPM	OL / /		
DSF	8/21/97	Motor Oil	1 of 1	Pennzoil	85-91-1	0.0419 g/mL x	10^6 µg/mL/g =	41900 µg	÷ 8.38 mL =	5000 PPM	OL08/21/97-1	HEXANE B+J # BO185	8/98
DH	8/21/97	Dalapon	1 of	NCL	OL-080497-5	0.500 g/mL x	10,000 µg/mL/g =	5000 µg	÷ 10 mL =	500 PPM	OL08/21/97-2	Methanol B+J # BP633	12/97
↓	↓	Dicamba	2 of	NCL	OL-060297-2	0.050 g/mL x	10,000 µg/mL/g =	500 µg	÷ ↓ mL =	50 PPM	OL ↓ / /	↓	↓
↓	↓	Dichlorprop	3 of	NCL	OL-080497-3	0.100 g/mL x	10,000 µg/mL/g =	1000 µg	÷ ↓ mL =	100 PPM	OL ↓ / /	↓	↓
↓	↓	2,4-D	4 of	NCL	OL-071597-4	0.100 g/mL x	10,000 µg/mL/g =	1000 µg	÷ ↓ mL =	100 PPM	OL ↓ / /	↓	↓
↓	↓	2,4,5-T	5 of	NCL	OL-080497-2	0.100 g/mL x	5,000 µg/mL/g =	500 µg	÷ ↓ mL =	50 PPM	OL ↓ / /	↓	↓

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NORTH COAST LABORATORIES L[illegible] ORGANIC STOCK STANDARD LOG

0035

Init.	Date	Method/ Analyte	#Compon.	Supplier	Lot #	Amount Standard	Conc. Standard	Wt. of Std.	Std. Final Vol.	Std. Final Conc.	Std. Lot #	Solvent/ Lot #	Exp. Date
DK	8/11/97	Silvex	6 of 8	NCL	OL-072597-2	0.100 g/mL	5,000 µg/mL	500 µg	10 mL	50 PPM	OL 08/21/97-2	Methanol BSJ BP633	12-97
	/ /	2,4DB	7 of 8	NCL	OL-080197-4	0.100 g/mL	10,000 µg/mL	1000 µg	mL	100 PPM	OL / /		
	/ /	Dinoseb	8 of 8	NCL	OL-071597-5	0.050 g/mL	10,000 µg/mL	500 µg	mL	50 PPM	OL / /	Methanol	
DH	8/21/97	MCPP/MCPA	1 of 1	NCL	OL-080697-1	1.00 g/mL	50,000 µg/mL	50000 µg	5 mL	10,000 PPM	OL 8/21/97-3	BJSBP633	8/98
MH	8/21/97	paraquat	1 of 1	NCL	OL-081897-01	1.0 g/mL	1000 µg/mL	1000 µg	10 mL	100 PPM	OL 8/21/97-4	HPLC H2O BJT B1198	8/98
AB	8/21/97	BDMC	1 of 1	NCL	OL022497-1	0.100 g/mL	1000 µg/mL	100 µg	10 mL	10 PPM	OL 08/21/97-5	CH3CN BJS B0777	2/98
MH	8/22/97	Diquat	1 of 1	NCL	OL-072197-1	1.0 g/mL	1000 µg/mL	1000 µg	10 mL	100 PPM	OL 08/22/97-1	HPLC H2O BJT B1198	7/98
SKD	8/26/97	PARAQUAT	1 of 1	NCL	OL-081897-1	0.1 g/mL	1000 µg/mL	100 µg	10 mL	10 PPM	OL 08/26/97-1	HPLC H2O BSJ B1198	8/98
	/ /	PARAQUAT	1 of 1	NCL	OL-081897-2	0.1 g/mL	1000 µg/mL	100 µg	10 mL	10 PPM	OL 08/26/97-2		9/97
DSF	8/26/97	2-Nitrotoluene	1 of 1	NCL	OL-071897-1	1.5 g/mL	1000 µg/mL	1500 µg	10 mL	150 PPM	OL 08/26/97-3	MeOH BJS BP633	8/98
SKD	8/27/97	SIMAZINE	1 of 1	CHEM SERVICE	176-79C	0.0105 g/mL	9.9×10^5 µg/mL	10395 µg	103.95 mL	100 PPM	OL 08/27/97-1	MeOH BJS BP633	8/98
AB	8/29/97	531 mix 2 Cat	1 of 1	ULTRA	L.0804	1 g/mL	100 µg/mL	100 µg	10 mL	10 PPM	OL 08/29/97-1	MeOH BJS BP633	7/98
DSF	8/29/97	C11	1 of 1	NCL	OL-061697-6	1 g/mL	5000 µg/mL	5000 µg	25 mL	200 PPM	OL 08/29/97-2	Hexane BJS B0185	8/98

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EXTRACTION NOTEBOOK PAGE: CHEVRON RM 8-10

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PERCENT MOISTURE

Sample Number	Date	Container Wt.(g)	Container + Wet Sample	Net wt. of Wet Sample	Init.	Date	Container + Dry Sample	Net Wt of Dry Sample	Init.	Percent Moisture	Sample Type
9710383-01A	10/16	30.73	50.	20.00	MH	10/17	49.72	18.99	MH	5.0%	Soil
-02A		30.78	50.78	20.00			49.78	19.00		5.0%	
-03A		30.42	50.42	20.00			48.97	18.55		7.2%	
9710467-01A	10/24	30.48	50.48	20.00	MH	10/25	48.70	18.22	MH	8.9%	MH
-02A		30.47	50.47	20.00			48.08	17.61	MH	12%	
9710470-01A	10/27	30.93	50.93	20.00	MH	10/28	32.93	2.000	MH	90%	
-02A		30.49	50.49			10/28	31.71	1.220		94%	
-03A		30.42	50.42			10/29	48.40	17.98		10%	
-04A		30.48	50.48			10/28	48.43	17.95		10%	
-05A		30.96	50.96			10/28	48.84	17.88		11%	
-08A		30.48	50.48			10/18	46.40	15.92		20%	
WD0247-4		30.12	50.12			10/28	48.74	18.62		6.9%	
WA0247-1		31.42	51.42			10/28	50.45	19.03		4.8%	
9710574-02A										6.9%	
9710574-01A										4.8%	
9711105-01A	11/10/97	30.42	50.42	20.00	DAS	11/13/97	49.25	18.83	MH	5.8%	Soil
02A		30.95	50.95				49.44	18.49		7.8%	
03A		30.21	50.21				49.35	19.14		4.3%	
04A		30.93	50.93				50.00	19.07		4.6%	
05A		30.41	50.41				48.53	18.12		4.4%	
06A		59.00	79.00				76.96	17.96		10%	
09A		63.59	83.59				83.07	19.48		2.6%	
10A		30.82	50.82				49.68	18.86		5.7%	
9711184.01A		31.13	51.13				49.08	17.95		10%	
02A		30.72	50.72				48.44	17.72		11%	
03A		30.47	50.47				48.93	18.46		7.7%	
04A		63.36	83.36				81.66	18.30		8.5%	
05A		59.86	79.86				78.10	18.24		8.8%	

DATE: 11/07/97 VOC

EXTRACTION METHOD: paraquat Soil

SOP#: ME024 03

NORTH COAST LABORATORIES LTD.

59

SAMPLE EXTRACTION INFORMATION

SR VOL	NA	IN VOL	NA	SPK VOL	100 µl
SR CONC	↓	IN CONC	↓	SPK CONC	1000 ppm
SR ID		IN ID		SPK ID	paraquat
SR LOT#	↓	IN LOT#	↓	SPK LOT#	01-090897-4

QC BATCH # 971107-01
SPK SMPL# 9711105-07A
VOL/WT SMPL 20g
SPK FINAL CONC 5 ppm

	SAMPLE	CLIENT	SAMPLE VOL/WT	FINAL EXT. VOL	SAMPLE DILUTION
1.	method blank		20g	25mL	N/A
2.	LCS VS		↓	↓	↓
3.	MS DH				
4.	MSD VS				
5.	9711105-01A	Garstr			
6.	-02A				
7.	-03A				
8.	-04A				
9.	-05A				
10.	-06A				
11.	-07A				
12.	-08A				
13.	-09A				
14.	-10A				
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
25.					

REVIEWED BY: [signature]

DATE: 11/19/97

EXTRACTED DATE/INIT. 11/07/97 MH

CONCENTRATED DATE/INIT. N/A

J:\WPROC\MISC\FORMS\EXTBOOK

DATE: 11/11/97 0920
EXTRACTION METHOD: Paraquat soil
SOP#: ME 024 03

NORTH COAST LABORATORIES LTD.

62

SAMPLE EXTRACTION INFORMATION

SR VOL N/A	IN VOL N/A	SPK VOL 100 µl	QC BATCH # 971111-01
SR CONC	IN CONC	SPK CONC 1000ppm	SPK SMPL# Ottawa sand
SR ID	IN ID	SPK ID paraquat	VOL/WT SMPL 20g
SR LOT#	IN LOT#	SPK LOT# 01-1911097-01	SPK FINAL CONC 5.0ppm

9711105-08A

SAMPLE	CLIENT	SAMPLE VOL/WT	FINAL EXT. VOL	SAMPLE DILUTION
1. method blank			25mL	N/A
2. LCS		20g		
3. MS				
4. MSD				
5. 9711105-01A	Barstr			
6. -02A				
7. -03A				
8. -04A				
9. -05A				
10. -06A				
11. -07A				
12. -08A				
13. -09A				
14. -10A				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

REVIEWED BY: [signature]
DATE: 11/14/97

EXTRACTED DATE/INIT. 11/11/97 mtt. CONCENTRATED DATE/INIT. N/A

J:\WPROC\MISC\FORMS\EXTBOOK

EXTRACTION NOTEBOOK PAGE: EPA 549.1

DATE: 11/6/97

EXTRACTION METHOD: 549 W

SOP#: ME 019 04

NORTH COAST LABORATORIES LTD

23

SAMPLE EXTRACTION INFORMATION

SR VOL N/A	IN VOL N/A	SPK VOL 50µL	QC BATCH # 971106.1
SR CONC	IN CONC	SPK CONC 10 ppm	SPK SMPL# DI
SR ID	IN ID	SPK ID Diquat/Paraquat	VOL/WT SMPL 250 mL
SR LOT#	IN LOT#	SPK LOT# 01092197.3 01082697.1	SPK FINAL CONC 2.0 ppb

Begin ext: 1210 11/6/97

SAMPLE	CLIENT	SAMPLE VOL/WT	FINAL EXT. VOL	SAMPLE DILUTION
1. BLANK		250mL	5mL	
2. BLANK				
3. BLANK				
4. BLANK				
5. (p)LCS				
6. (p)MS				
7. (p)MSD				
8. (d)LCS				
9. (d) MS				
10. (p) BNOLA14 9711105.11A*				pH ~ 5.0
11. (d) 9711097.01H				pH ~ 7.0
12.				
13. * Received sample from Jay Tarvin 1015 11/6/97				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

REVIEWED BY: [signature]

DATE: 11/19/97

EXTRACTED DATE/INIT. 11/6/97 AB

CONCENTRATED DATE/INIT. NA

J:\WPROC\MISC\FORMS\EXTBOOK

ANALYTICAL RAW DATA (NOTEBOOK PAGE) CHEVRON RM 8-10

Calib. Std & LCS Lot # 0108189 7.01 / 0109089 7.4 Page 3 50

2nd Lot Standard Lot # 0109089 7.4 Date 11/8/97/13:05

CS/MS Solution Conc. & Volume 100mL / 1000ppm Analyst AB

Sample Volume 20.5 Test Paraquat · Soil

LCS/MS Final Conc. 5 ppm Units mg/kg

Work Order #	Absorbance			Dil	Conc.	Reported Value	Comments
	Run	Color Blank or Re-run	Absorbance - Color Blank				
BLANK							
1.0 ppm	0.147	0.173			0.90		W011089 7.7 Rerun w/ new Stand
5.0 ppm	0.594	0.586			5.26		W011089 7.8 Rerun w/ new Stand.
7.5 ppm	0.744	0.754			7.23		W011089 7.9 Rerun w/ new Stand
5.0 ppm Lot 2	0.514	0.509			4.68		W011089 7.10 Rerun w/ new Stand
LCS	0.385				3.25	65.0%	
9711105.7A MS	~~0.3870~~ 0.378				3.17	63.4%	
↓ MSD	0.408				3.51	70.2%	
9711105.1A	0.353				2.90		
2A	0.077				-0.16	ND	
3A	0.033				-0.65	ND	
4A	0.060				-0.35	ND	
5A	0.620				5.86		
6A	0.184				1.02		
7A	0.050				-0.46	ND	
8A	0.040				-0.57	ND	
9A	0.042				-0.55	ND	
10A	0.081				-0.12	ND	
5.0ppm CCV	0.565				5.25		
$r^2 = 0.9953$							

Analyst Signature AB

REVIEWED BY: MDostal

Verified by Michelle Dostal Date 11/17/97 DATE: 11/17/97

J:\WPROC\WTLSOP\COLOR2.FRM

Calib. Std & LCS Lot # 100ppm OL-111197-02 1000ppm OL-111197-02 (11/14/97) Page 4 51

2nd Lot Standard Lot # OL-111097-01 Date 11-12-97 1315

CS/MS Solution Conc. & Volume 100µl / 1000 ppm Analyst MH

Sample Volume 10 g Test Paraquat · Soil

LCS/MS Final Conc. 5 ppm Units mg/kg

Work Order #	Absorbance			Dil	Conc.	Reported Value	Comments see back for dry weight concentration
	Run	Color Blank or Re-run	Absorbance - Color Blank				
method blank							
1.0 ppm	0.138				0.89	89%	WO-111297-01
5.0 ppm	0.519				5.27	105%	WO-111297-02
7.5 ppm	0.698				7.33	97.7%	WO-111297-03
5.0 ppm (LOT2)	0.473				4.75	95%	
LCS (OK MH 11-12-97)	0.429	0.433			4.29	85.8%	
MS 9711105-08A	0.427				4.22	84.4%	
MSD	0.408				4.00	80.0%	(OK MH 11-12-97)
9711105-01A	0.415	0.178			2.03	2.0	Slightly blue
-02A	0.064	0.105		(OK MH 11-12-97)	2.03 0.04	ND	
-03A	0.049				-0.13	ND	
-04A	0.035				-0.29	ND	
-05A	0.708	0.100	0.449 (OK MH 11-12-97) 1:2		8.24	raise detection 2.0 ppm	blue
-06A	0.145				0.98	ND	slightly blue
-07A	0.079	0.057			-0.04	ND	
-08A	0.042				-0.21	ND	
-09A	0.048				-0.14	ND	
-10A	0.101				0.47	ND	Color interference
CCV (5.0 ppm)	0.421				4.15	83.0%	
R^2=0.9947=0.995							

Analyst Signature MH 11-12-97

Verified by [signature] 11/12/97 Date

REVIEWED BY: MH

DATE: 11/17/97

J:\WPROC\WTLSOP\COLOR2.FRM

ANALYTICAL RAW DATA (CHROMATOGRAMS) EPA 549.1

Time: 11/07/97 07:58:45
Time: 11/07/97 07:58:45

Sample Summary

Instrument	Run Start Time	Seq	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Bpk Seq	Dilution	Weight	Flag	Ver
ORLC1	11/07/97 05:24:48	1	9711105-16A	P549W	B R	W D			1.00	1.000000		ADB
		2	1XDETLIM	P549W	T 1	W D			1.00	1.000000		ADB
		3	5XDETLIM	P549W	T 3	W D			1.00	1.000000		ADB
		4	10XDTLIM	P549W	T 5	W D			1.00	1.000000		ADB
		5	5XDETLIM	P549W	T S	W D			1.00	1.000000		ADB
		6	9711105-17A	P549W	K M	W D	1		1.00	1.000000		ADB
		7	9711105-18A	P549W	K S	W D	9		1.00	1.000000		ADB
		8	9711105-19A	P549W	K S D	W D	9	7	1.00	1.000000		ADB
		9	9711105-11A	P549W	S 1	W D			1.00	1.000000		ADB
		10	5XDETLIM	P549W	T C	W D			1.00	1.000000		ADB

Analyst: [signature]

Date: 11/7/97

Reviewed by: [signature]

Date: 11/7/97

Time: 11/07/97 08:00:11 — Sample Detail — Page: 1
Instrument: ORLC1

BLANK

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	REF. Volume	Conv. Factor	Final Factor	Flag	Units	Ver
1	9711105-16A	P549W	B R	W D			1.00	1.000000	1.000000	1.000000	1.000000	1.00		ug/L	ADB

Analyzed= 11/07/97 05:55:15 Extracted= _____ File ID= F:PARCT5.ATB Batch ID= _____ Client= _____

Analytes	Raw Result	Calc. Result	Detection Limit	Specs Low	Specs High	Retention Time	V
Paraquat		ND	0.40				Y

CONTROL

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	REF. Volume	Conv. Factor	Final Factor	Flag	Units	Ver
2	1XDETLIM	P549W	T 1	W D			1.00	1.000000	1.000000	1.000000	1.000000	1.00		ug/L	ADB

Analyzed= 11/07/97 05:24:48 Extracted= _____ File ID= F:PARCT1.ATB Batch ID= _____ Client= _____

Analytes	Raw Result	Calc. Result	Theoretical Value	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High	Retention Time	V
Paraquat		0.4533000	0.400	0.40		113				Y

CONTROL

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	REF. Volume	Conv. Factor	Final Factor	Flag	Units	Ver
3	5XDETLIM	P549W	T 3	W D			1.00	1.000000	1.000000	1.000000	1.000000	1.00		ug/L	ADB

Analyzed= 11/07/97 05:28:16 Extracted= _____ File ID= F:PARCT2.ATB Batch ID= _____ Client= _____

Analytes	Raw Result	Calc. Result	Theoretical Value	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High	Retention Time	V
Paraquat		1.9040000	2.00	0.40		95.2				Y

CONTROL

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	REF. Volume	Conv. Factor	Final Factor	Flag	Units	Ver
4	10XDTLIM	P549W	T 5	W D			1.00	1.000000	1.000000	1.000000	1.000000	1.00		ug/L	ADB

Analyzed= 11/07/97 05:36:57 Extracted= _____ File ID= F:PARCT3.ATB Batch ID= _____ Client= _____

Analytes	Raw Result	Calc. Result	Theoretical Value	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High	Retention Time	V
Paraquat		4.0427000	4.00	0.40		101				Y

CONTROL

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	REF. Volume	Conv. Factor	Final Factor	Flag	Units	Ver
5	5XDETLIM	P549W	T 5	W D			1.00	1.000000	1.000000	1.000000	1.000000	1.00		ug/L	ADB

Analyzed= 11/07/97 05:50:21 Extracted= _____ File ID= F:PARCT4.ATB Batch ID= _____ Client= _____

Analytes	Raw Result	Calc. Result	Theoretical Value	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High	Retention Time	V
Paraquat		1.9476000	2.00	0.40		97.4	85	115		Y

SPIKE

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	REF. Volume	Conv. Factor	Final Factor	Flag	Units	Ver
6	9711105-17A	P549W	K M	W D	1		1.00	1.000000	1.000000	1.000000	1.000000	1.00		ug/L	ADB

Analyzed= 11/07/97 05:58:35 Extracted= _____ File ID= F:PARCT6.ATB Batch ID= _____ Client= _____

Analytes	Raw Result	Calc. Result	Unspiked Result	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High				Retention Time	V
Paraquat		1.7873000	ND	0.40	2.00	89.4	36	130					Y

SPIKE

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	REF. Volume	Conv. Factor	Final Factor	Flag	Units	Ver
7	9711105-18A	P549W	K S	W D	9		1.00	1.000000	1.000000	1.000000	1.000000	1.00		ug/L	ADB

Analyzed= 11/07/97 06:02:14 Extracted= _____ File ID= F:PARCT7.ATB Batch ID= _____ Client= _____

Analytes	Raw Result	Calc. Result	Unspiked Result	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High				Retention Time	V
Paraquat		1.6379000	ND	0.40	2.00	81.9	23	135					Y

SPIKE DUPLICATE

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	REF. Volume	Conv. Factor	Final Factor	Flag	Units	Ver
8	9711105-19A	P549W	K S D	W D	9	7	1.00	1.000000	1.000000	1.000000	1.000000	1.00		ug/L	ADB

Analyzed= 11/07/97 06:07:15 Extracted= _____ File ID= F:PARCT8.ATB Batch ID= _____ Client= _____

Analytes	Raw Result	Calc. Result	Unspiked Result	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High	RPD Low	Refer. Recov.	RPD	RPD Retention Time	V
Paraquat		1.6760000	ND	0.40	2.00	83.8	23	135	20	81.9	2.29	2.30	Y

DATA SYSTEM USES PERCENT RECOVERIES, TO CALCULATE RPD'S RATHER THAN CONCENTRATIONS.

Time: 11/07/97 08:06:41 — Sample Detail — Page: 1
Instrument: ORLC1

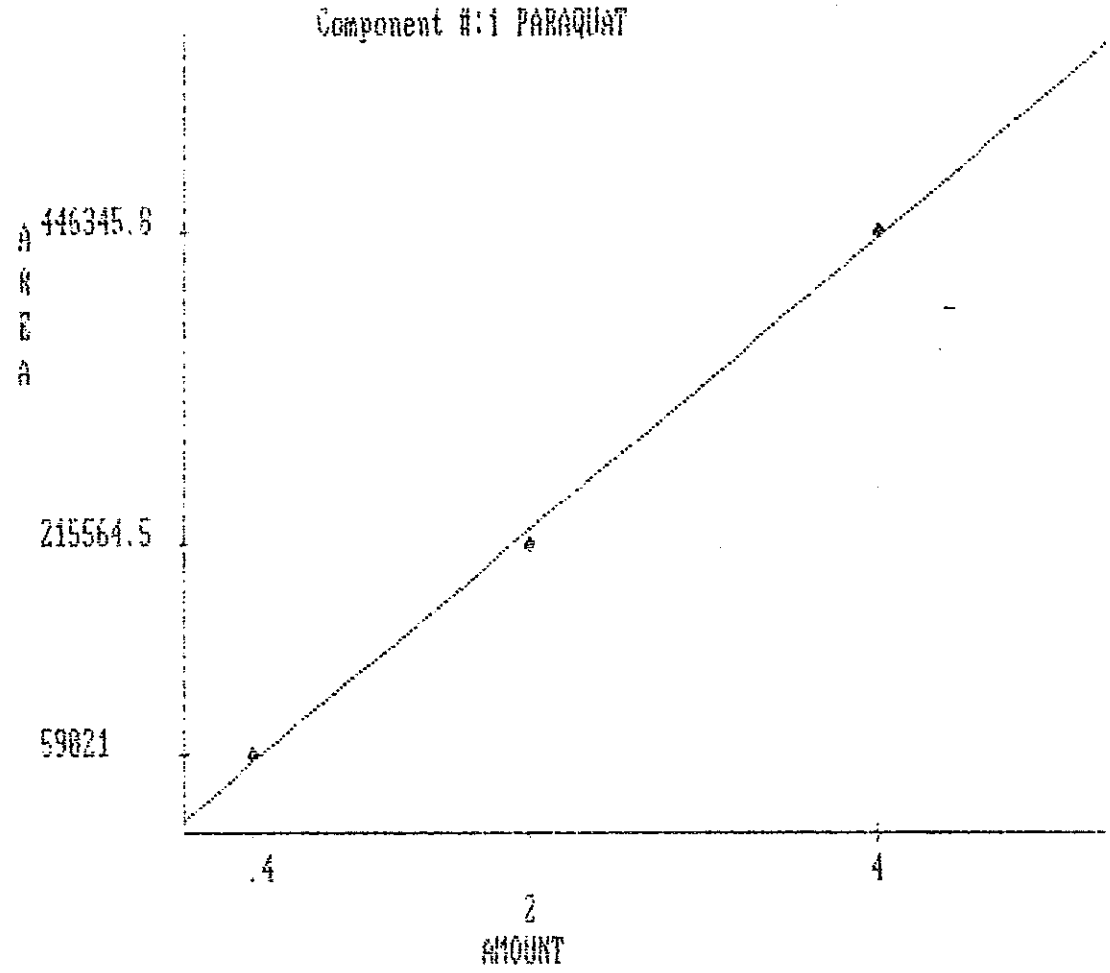
CONTROL

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	REF. Volume	Conv. Factor	Final Factor	Flag	Units	Ver
10	5XDETLIM	P549W	T C	W D			1.00	1.000000	1.000000	1.000000	1.000000	1.00		ug/L	ADB

Analyzed= 11/07/97 06:14:36 Extracted= _____ File ID= F:PARCT10.ATB Batch ID= _____ Client= _____

Analytes	Raw Result	Calc. Result	Theoretical Value	Detection Limit	Spike Value	Recovery	Specs Low	Specs High				Retention Time	V
Paraquat		1.9343000	2.00	0.40		96.7	80	120					Y

Method G:PARQT
Sample IXDETLIM WD T1
Operator ADB
Run date 11-07-1997 05:49:27 version: 1047
Printed on 11-07-1997 AT 06:23:41
Straight line fit



Component 1 : PARAQUAT
EXTERNAL STANDARD CALIBRATION

LEVEL	AMOUNT	AREA
1	0.4000	59021
2	2.0000	215565
3	4.0000	446346

Y = SLOPE * X + INTERCEPT

Area = 1.0791E+05 * Amount + 1.0103E+04
Amount = 9.2670E-06 * Area + -9.3621E-02
R squared = 0.9979

EXTERNAL STANDARD TABLE

11-07-1997 07:00:58 Version 5.1.5

* Sample Name: 9711105-16A WD BR 971106-1 Data File: F:PARCT5 *
* Date: 11-07-1997 05:55:15 Method: G:PARCT 11-07-1997 05:49:27 # 1047 *
* Interface: 16 Cycle#: 5 Operator ADB Channel#: 0 Vial#: N.A. *
* Starting Peak Width: 30 Threshold: 20 Area Threshold: 250 *

* Instrument Type: HPLCW/POSTCOLUMNPUMP Column Type: HAMILTON PRP-X400 *
* Solvent Description: .005M KH2PO4,pH=7.00 *
* Conditions: 0.6ml/MIN:COLUMN TEMP 55:REACTOR TEMP 36 *
* Detector 0: UV Detector 1: FLOURESCEN *
* Misc. Information: EXCITATION 320-380NM:EMISSION 400NM *

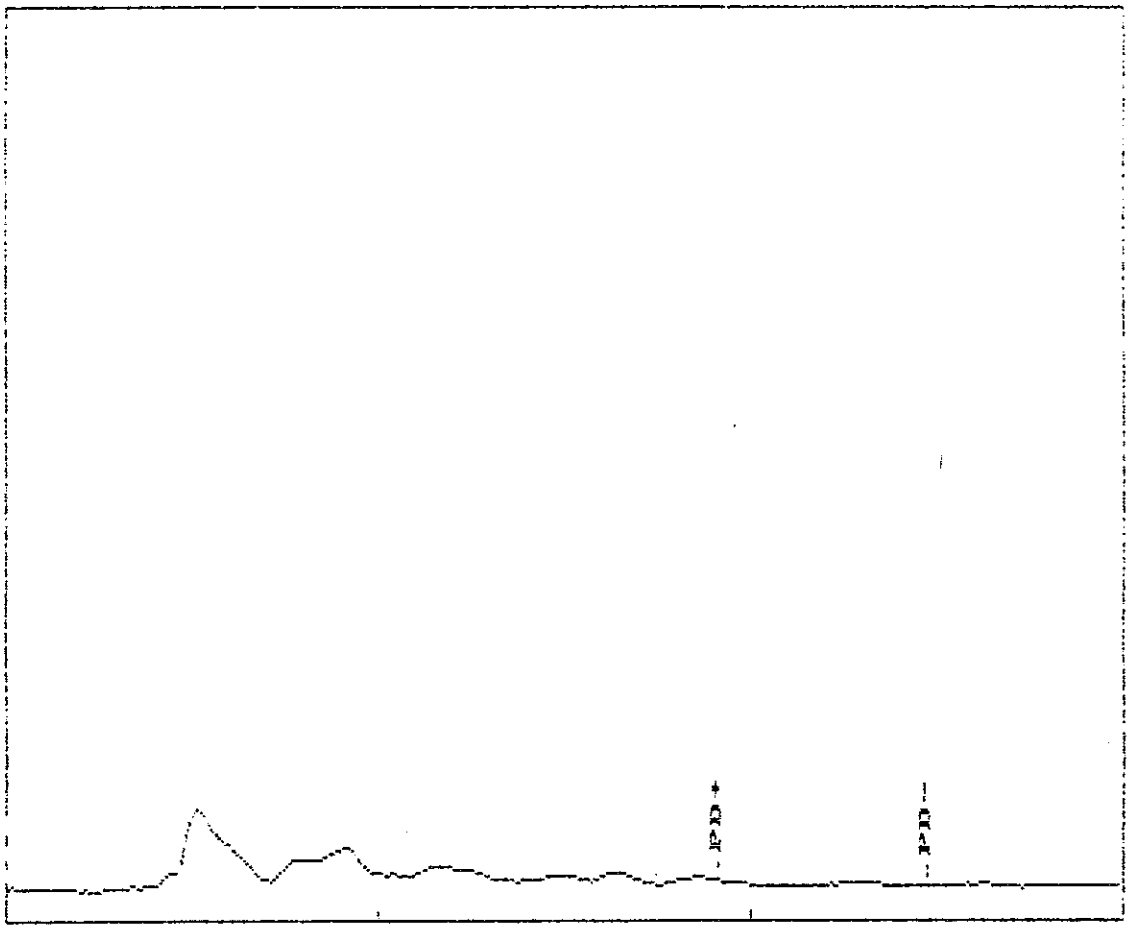
Starting Delay: 0.00
Area reject: 1500
Amount injected: 1.00
Sample Weight: 1.00000

Ending retention time: 3.00
One sample per 0.500 sec.
Dilution factor: 1.00

PEAK NUM	RET TIME	PEAK NAME	CONCENTRATION in ug/L	NORMALIZED CONC	AREA	AREA/ HEIGHT	HEIGHT RL	REF PEAK	-% DELTA RET TIME	CONC/AREA

TOTAL AMOUNT : 0.0000

Areas, times, and heights stored in: F:PARCT5.ATB
Data File = F:PARCT5.PTS Printed on 11-07-1997 at 07:01:08
Start time: 0.00 min. Stop time: 3.00 min. Offset: 5 mV.
Full Range: 200 millivolts



EXTERNAL STANDARD TABLE

11-07-1997 05:26:22 Version 5.1.5

* Sample Name: 1XDETLIM WD T1 WO-110797-1-LC Data File: F:PARCT1
* Date: 11-07-1997 05:24:48 Method: G:PARCT 11-07-1997 05:49:27 # 1047
* Interface: 16 Cycle#: 1 Operator ADS Channel#: 0 Vial#: N.A.
* Starting Peak Width: 30 Threshold: 20 Area Threshold: 250

* Instrument Type: HPLCW/POSTCOLUMNPUMP Column Type: HAMILTON PRP-X400
* Solvent Description: .005M KH2PO4,pH=2.00
* Conditions: 0.6ml/MIN:COLUMN TEMP 55:REACTOR TEMP 36
* Detector 0: UV Detector 1: FLOURESCEN
* Misc. Information: EXCITATION 320-380NM:EMISSION 400NM

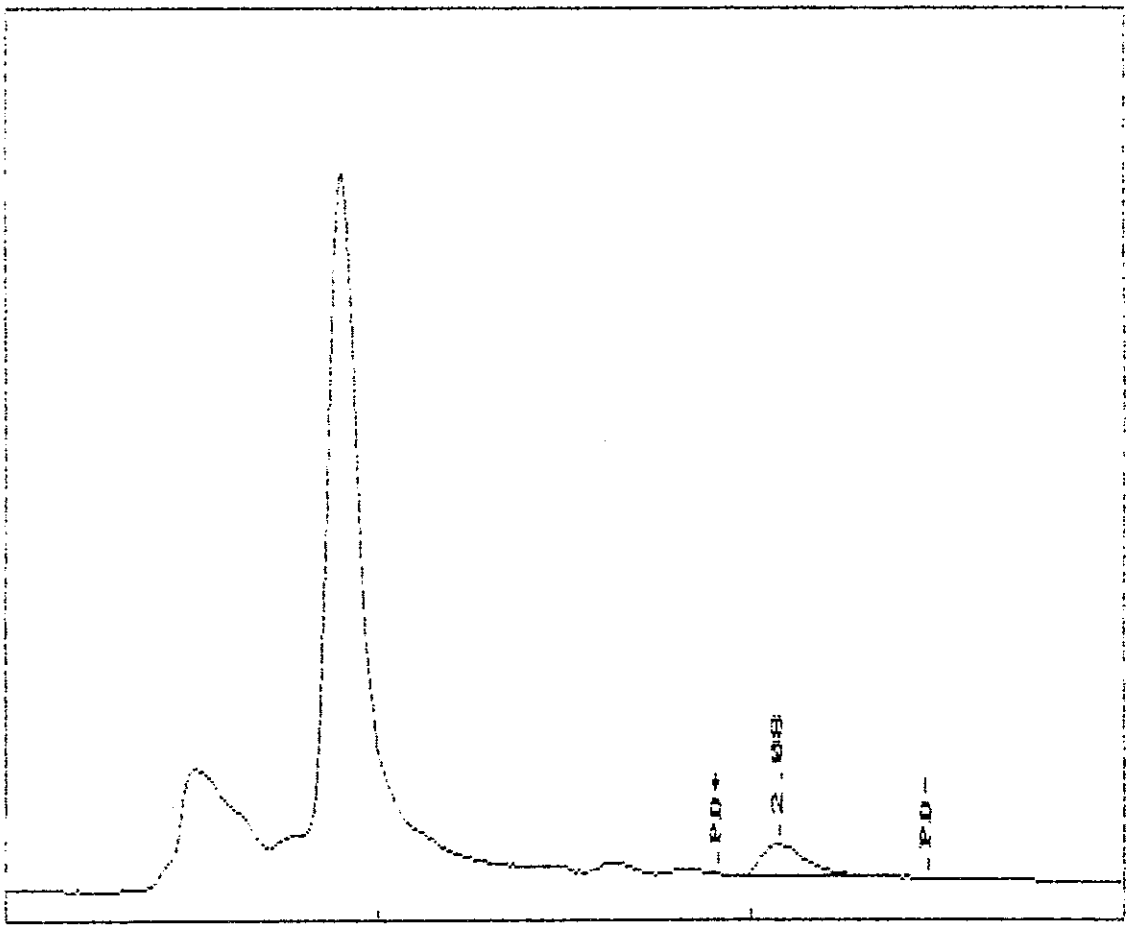
Starting Delay: 0.00
Area reject: 1500
Amount Injected: 1.00
Sample Weight: 1.00000

Ending retention time: 3.00
One sample per 0.500 sec.
Dilution factor: 1.00

PEAK NUM	RET TIME	PEAK NAME	CONCENTRATION in ug/l	NORMALIZED CONC	AREA	HEIGHT	AREA/ HEIGHT RT	REF PEAK	% DELTA RET TIME	CONC/AREA
1	2.083	PARAQUAT	0.4533	100.00004	59021	7238	8.2 1	1	0	7.6808E-06

TOTAL AMOUNT : 0.4533

Areas, times, and heights stored in: F:PARCT1.ATB
Data File = F:PARCT1.PTS Printed on 11-07-1997 at 06:26:32
Start time: 0.00 min. Stop time: 3.00 min. Offset: 5 mv.
Full Range: 200 millivolts



EXTERNAL STANDARD TABLE

11-07-1997 06:27:14 Version 5.1.5

* Sample Name: 5XDETLIM WO T3 WO-110797-2-LC Data File: F:PARCT2
* Date: 11-07-1997 05:28:16 Method: G:PARCT 11-07-1997 05:49:27 # 1047
* Interface: 16 Cycle#: 2 Operator ADB Channel#: 0 Vial#: N.A.
* Starting Peak Width: 30 Threshold: 20 Area Threshold: 250

* Instrument Type: HPLCW./POSTCOLUMNPUMP Column Type: HAMILTON PRP-X400
* Solvent Description: .005M KH2PO4,pH=2.00
* Conditions: 0.5ml/MIN:COLUMN TEMP 55:REACTOR TEMP 36
* Detector 0: UV Detector 1: FLOURESCEN
* Misc. Information: EXCITATION 320-380NM:EMISSION 400NM

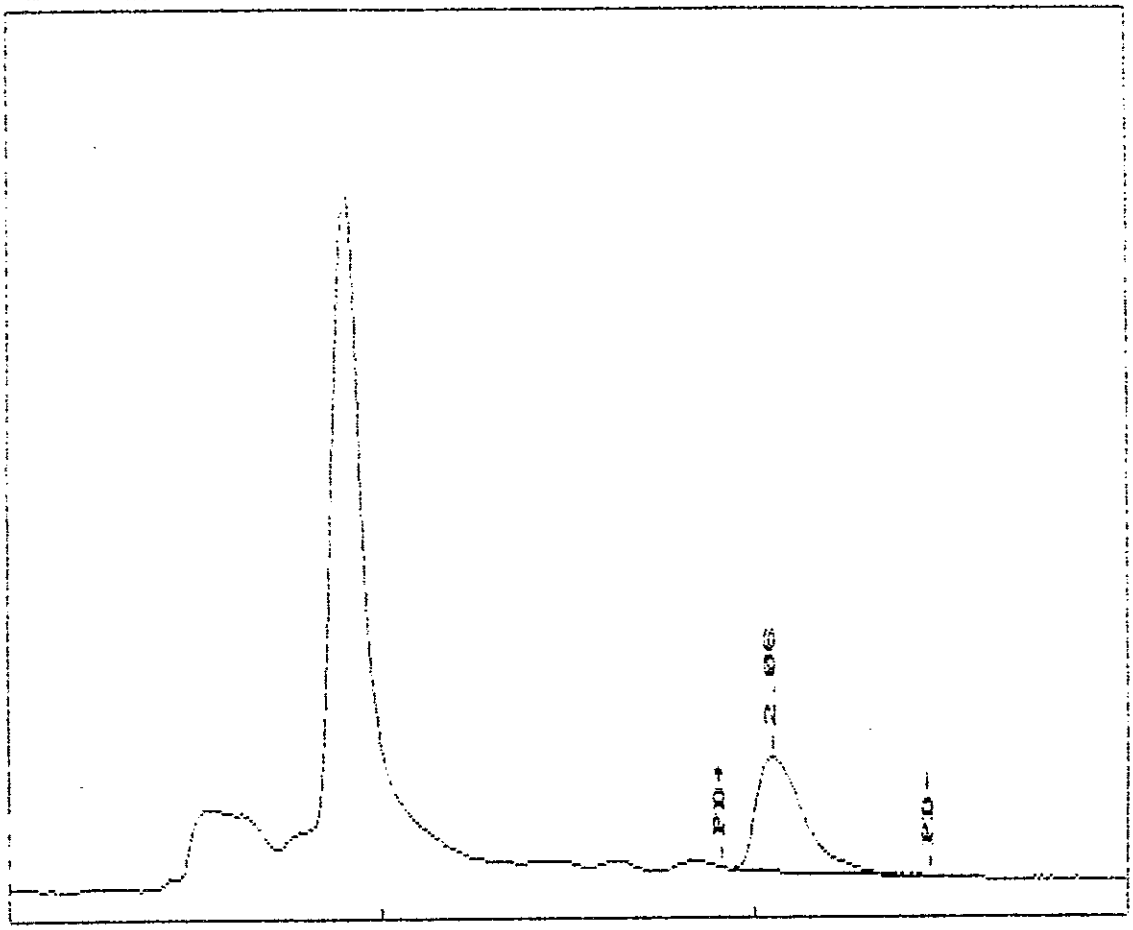
Starting Delay: 0.00
Area reject: 1500
Amount Injected: 1.00
Sample Weight: 1.00000

Ending retention time: 3.00
One sample per 0.500 sec.
Dilution factor: 1.00

PEAK NUM	RET TIME	PEAK NAME	CONCENTRATION in ug/L	NORMALIZED CONC	AREA	HEIGHT	AREA/ HEIGHT RL	REF PEAK	DELTA RET TIME	CONC/AREA
1	2.058	PARAQUAT	1.9040	100.0000%	215565	24645	8.71	1	0	8.8327E-06

TOTAL AMOUNT : 1.9040

Areas, times, and heights stored in: F:PARCT2.ATB
Data File = F:PARCT2.PTS Printed on 11-07-1997 at 06:27:24
Start time: 0.00 min. Stop time: 3.00 min. Offset: 5 mv.
Full Range: 200 millivolts



EXTERNAL STANDARD TABLE

11-07-1997 07:00:08 Version 5.1.5

* Sample Name: 5XDETLIM WD TS WD-110797-4-LC Data File: F:PARCT4 *
* Date: 11-07-1997 05:50:21 Method: G:PARCT 11-07-1997 05:49:27 # 1047 *
* Interface: 16 Cycle#: 4 Operator ADB Channel#: 0 Vial#: N.A. *
* Starting Peak Width: 30 Threshold: 20 Area Threshold: 250 *

* Instrument Type: HPLCW/POSTCOLUMNPUMP Column Type: HAMILTON PRP-X406 *
* Solvent Description: .005M KH2PO4,pH=2.00 *
* Conditions: 0.6mL/MIN:COLUMN TEMP 55:REACTOR TEMP 36 *
* Detector 0: UV Detector 1: FLOURESCEN *
* Misc. Information: EXCITATION 320-380NM:EMISSION 400NM *

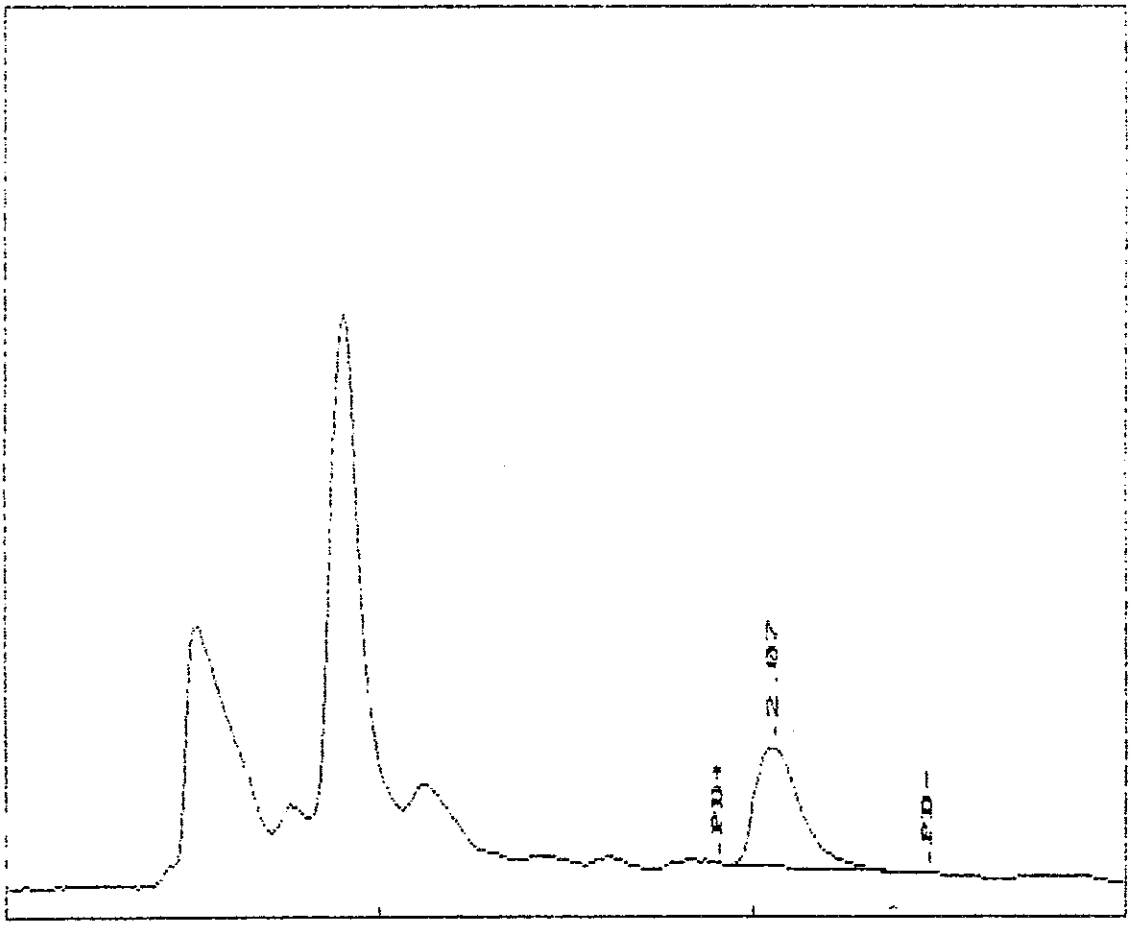
Starting Delay: 0.00
Area reject: 1500
Amount injected: 1.00
Sample Weight: 1.00000

Ending retention time: 3.00
One sample per 0.500 sec.
Dilution factor: 1.00

PEAK NUM	RET TIME	PEAK NAME	CONCENTRATION in ug/L	NORMALIZED CONC	AREA	HEIGHT	AREA/ HEIGHT RI	REF PEAK	-% DELTA RET TIME	CONC/AREA
1	2.967	PARAQUAT	1.9476	100.0000%	220269	25726	8.6 i	1	0	8.8420E-06

TOTAL AMOUNT : 1.9476

Areas, times, and heights stored in: F:PARCT4.ATR
Data File = F:PARCT4.PTS Printed on 11-07-1997 at 07:00:19
Start time: 0.00 min. Stop time: 3.00 min. Offset: 5 mv.
Full Range: 200 millivolts



EXTERNAL STANDARD TABLE

11-07-1997 06:28:07 Version 5.1.5

* Sample Name: 10XDTLIM WD T5 WO-110797-3-LC Data File: F:PARCT3 *
* Date: 11-07-1997 05:36:57 Method: G:PARCT 11-07-1997 05:49:27 # 1047 *
* Interface: 16 Cycle#: 3 Operator ADE Channel#: 0 Vial#: N.A. *
* Starting Peak Width: 30 Threshold: 20 Area Threshold: 250 *

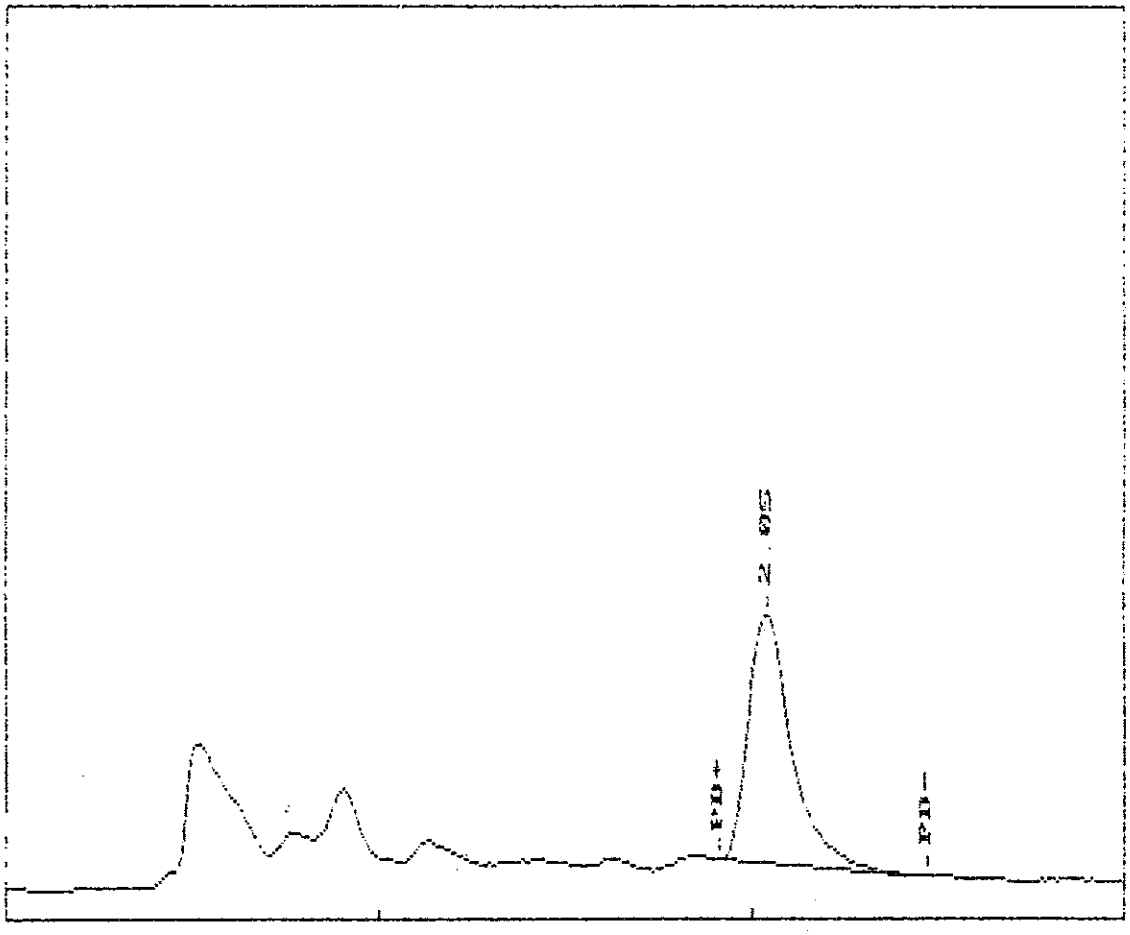
* Instrument Type: HPLCW/POSTCOLUMNPUMP Column Type: HAMILTON PRP-X400 *
* Solvent Description: .005M KH2PO4,pH=2.00 *
* Conditions: 0.6ml /MIN:COLUMN TEMP 55:REACTOR TEMP 36 *
* Detector 0: UV Detector 1: FLOURESCEN *
* Misc. Information: EXCITATION 320-380NM:EMISSION 400NM *

Starting Delay: 0.00 Ending retention time: 3.00
Area reject: 1500 One sample per 0.500 sec.
Amount injected: 1.00 Dilution factor: 1.00
Sample Weight: 1.00000

PEAK NUM	RET TIME	PEAK NAME	CONCENTRATION in ug/l	NORMALIZED CONC	AREA	HEIGHT	AREA/ HEIGHT RT	REF PEAK	DELTA RET TIME	CONC/AREA
1	2.050	PARAQUAT	4.0427	100.0000%	445346	54473	8.2 1	1	0	9.0572E-06

TOTAL AMOUNT : 4.0427

Areas, times, and heights stored in: F:PARCT3.ATB
Data File = F:PARCT3.PTS Printed on 11-07-1997 at 06:28:17
Start time: 0.00 min. Stop time: 3.00 min. Offset: 5 mv.
Full Range: 200 millivolts



EXTERNAL STANDARD TABLE

11-07-1997 07:01:49 Version 5.1.5

Sample Name: 9711105-17A WD KM 971106-1 Data File: F:PARCT6

Date: 11-07-1997 05:58:35 Method: G:PARCT 11-07-1997 05:49:27 # 1047

Interface: 16 Cycle#: 6 Operator ADB Channel#: 0 Vial#: N.A.

Starting Peak Width: 30 Threshold: 20 Area Threshold: 250

Instrument Type: HPLCW/POSTCOLUMNPUMP Column Type: HAMILTON PRP-X400

Solvent Description: .005M KH2PO4,pH=2.00

Conditions: 0.6mL/MIN:COLUMN TEMP 55:REACTOR TEMP 36

Detector 0: UV Detector 1: FLOURESCEN

Misc. Information: EXCITATION 320-380NM:EMISSION 400NM

Starting Delay: 0.00 Ending retention time: 3.00

Area reject: 1500 One sample per 0.500 sec.

Amount injected: 1.00 Dilution factor: 1.00

Sample Weight: 1.00000

PEAK NUM	RET TIME	PEAK NAME	CONCENTRATION in ug/L	NORMALIZED CONC	AREA	HEIGHT	AREA/ HEIGHT RATIO	REF PEAK	-% DELTA RET TIME	CONC/AREA
1	2.075	PARAQUAT	1.7873	100.0000%	202967	22595	9.11	1	0	8.8057E-06

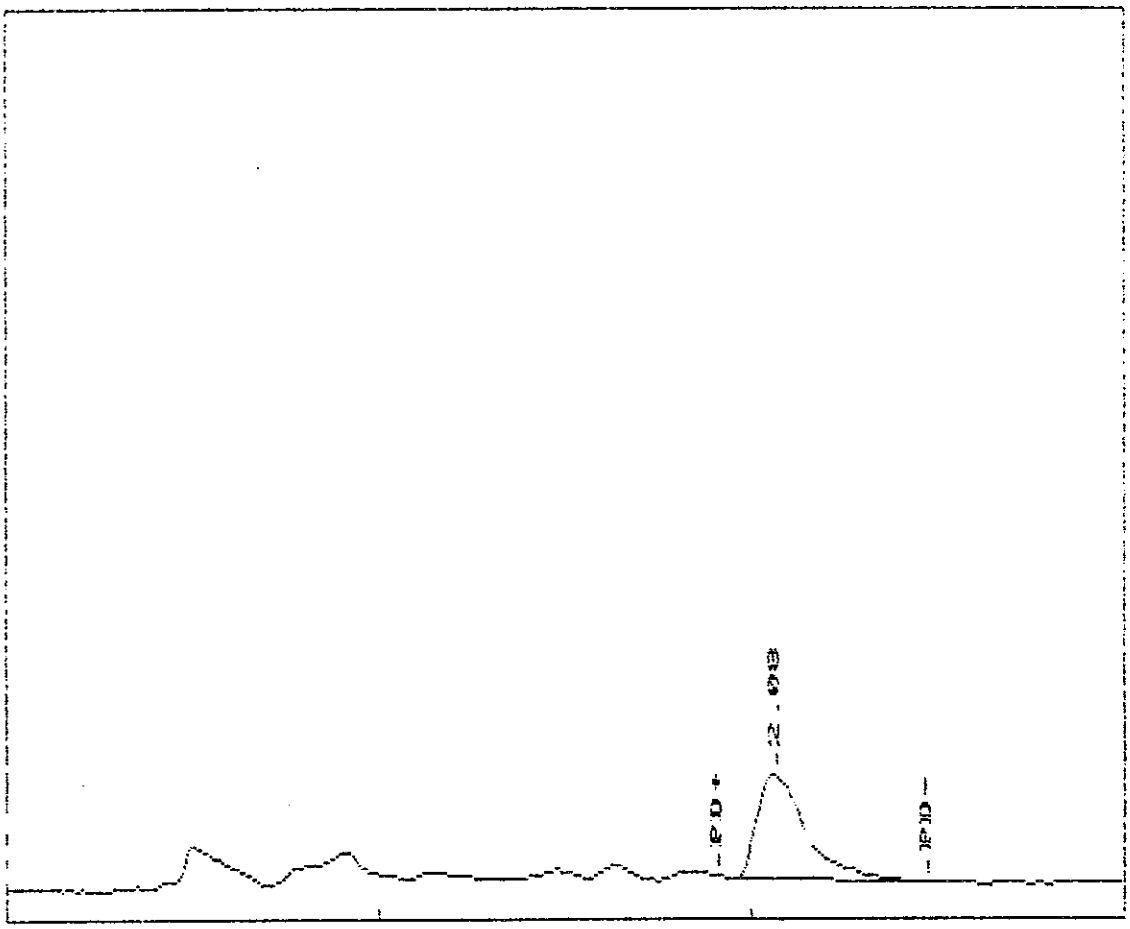
TOTAL AMOUNT = 1.7873

Areas, times, and heights stored in: F:PARCT6.ATB

Data file = F:PARCT6.PTS Printed on 11-07-1997 at 07:01:59

Start time: 0.00 min. Stop time: 3.00 min. Offset: 5 mv.

Full Range: 200 millivolts



EXTERNAL STANDARD TABLE

11-07-1997 07:36:45 Version 5.1.5

Sample Name: 9711105-1SA WD KS 971106-1 Data File: F:PARCT7

Date: 11-07-1997 06:02:14 Method: G:PARCT 11-07-1997 05:49:27 # 1047

Interface: 16 Cycle#: 7 Operator ADB Channel#: 0 Vial#: N.A.

Starting Peak Width: 30 Threshold: 20 Area Threshold: 250

Instrument Type: HPLCW/POSTCOLUMNPUMP Column Type: HAMILTON PRP-X400

Solvent Description: .005M KH2PO4,pH=2.00

Conditions: 0.6ML/MIN:COLUMN TEMP 55:REACTOR TEMP 36

Detector 0: UV Detector 1: FLOURESCEN

Misc. Information: EXCITATION 320-380NM:EMISSION 400NM

Starting Delay: 0.00 Ending retention time: 3.00

Area reject: 1500 One sample per 0.500 sec.

Amount injected: 1.00 Dilution factor: 1.00

Sample Weight: 1.00000

PEAK NUM	RET TIME	PEAK NAME	CONCENTRATION in ug/l	NORMALIZED CONC	AREA	HEIGHT	AREA/ HEIGHT	BC	REF PEAK	% DELTA RET TIME	CONC/AREA
1	2.083	PARAQUAT	1.6379	100.0000%	186849	20762	9.0	I	1	0	8.7659E-06

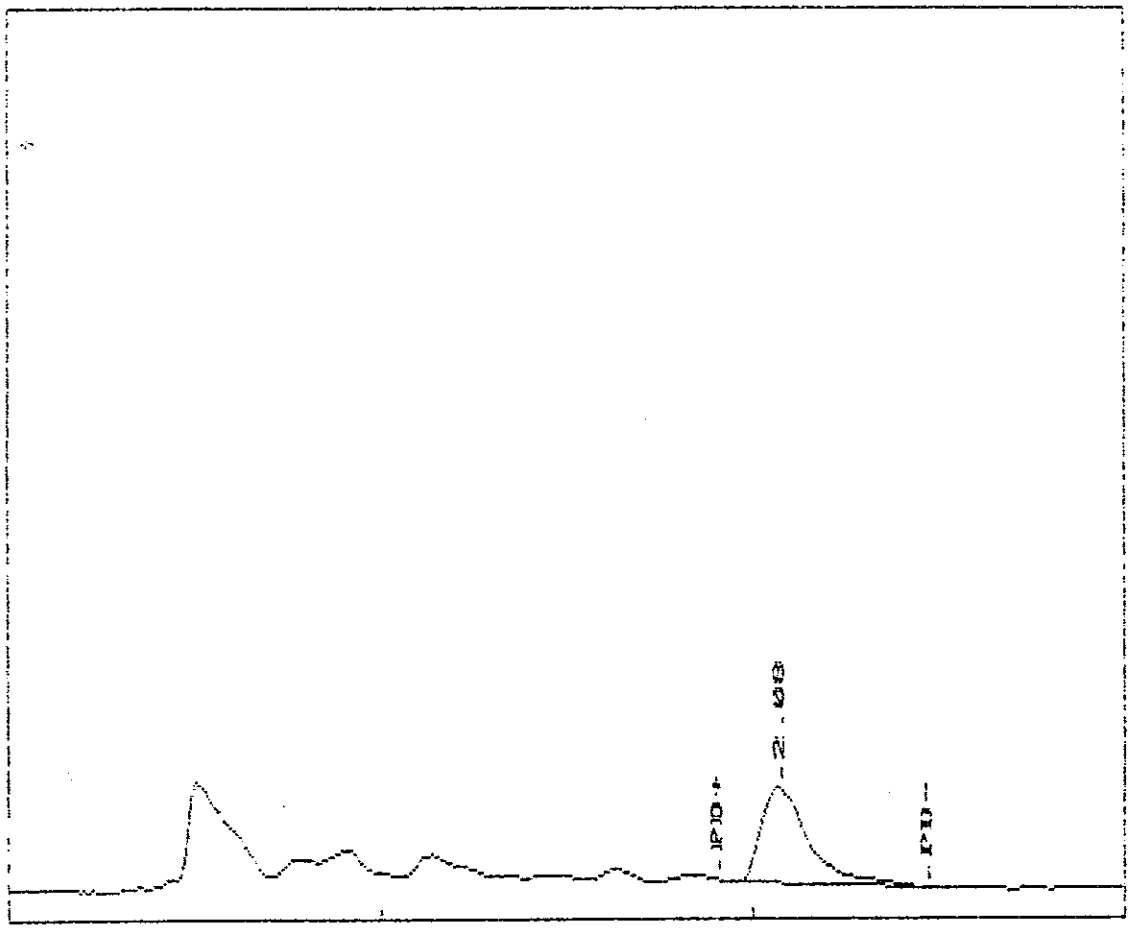
TOTAL AMOUNT : 1.6379

Areas, times, and heights stored in: F:PARCT7.ATB

Data File = F:PARCT7.PTS Printed on 11-07-1997 at 07:36:55

Start time: 0.00 min. Stop time: 3.00 min. Offset: 5 mv.

Full Range: 200 millivolts



EXTERNAL STANDARD TABLE

11-07-1997 07:37:36 Version 5.1.5

Sample Name: 9711105-19A WD KSD 971106-1 Data File: F:PARCT8
Date: 11-07-1997 06:07:15 Method: G:PARCT 11-07-1997 05:49:27 # 1047
Interface: 16 Cycle#: 8 Operator ADD Channel#: 0 Vial#: N.A.
Starting Peak Width: 30 Threshold: 20 Area Threshold: 250

Instrument Type: HPLCW/POSTCOLUMNPUMP Column Type: HAMILTON PRP-X400
Solvent Description: .005M KH2PO4,pH=2.00
Conditions: 0.6ml/MIN:COLUMN TEMP 55:REACTOR TEMP 36
Detector 0: UV Detector 1: FLOURESCEN
Misc. Information: EXCITATION 320-380NM:EMISSION 400NM

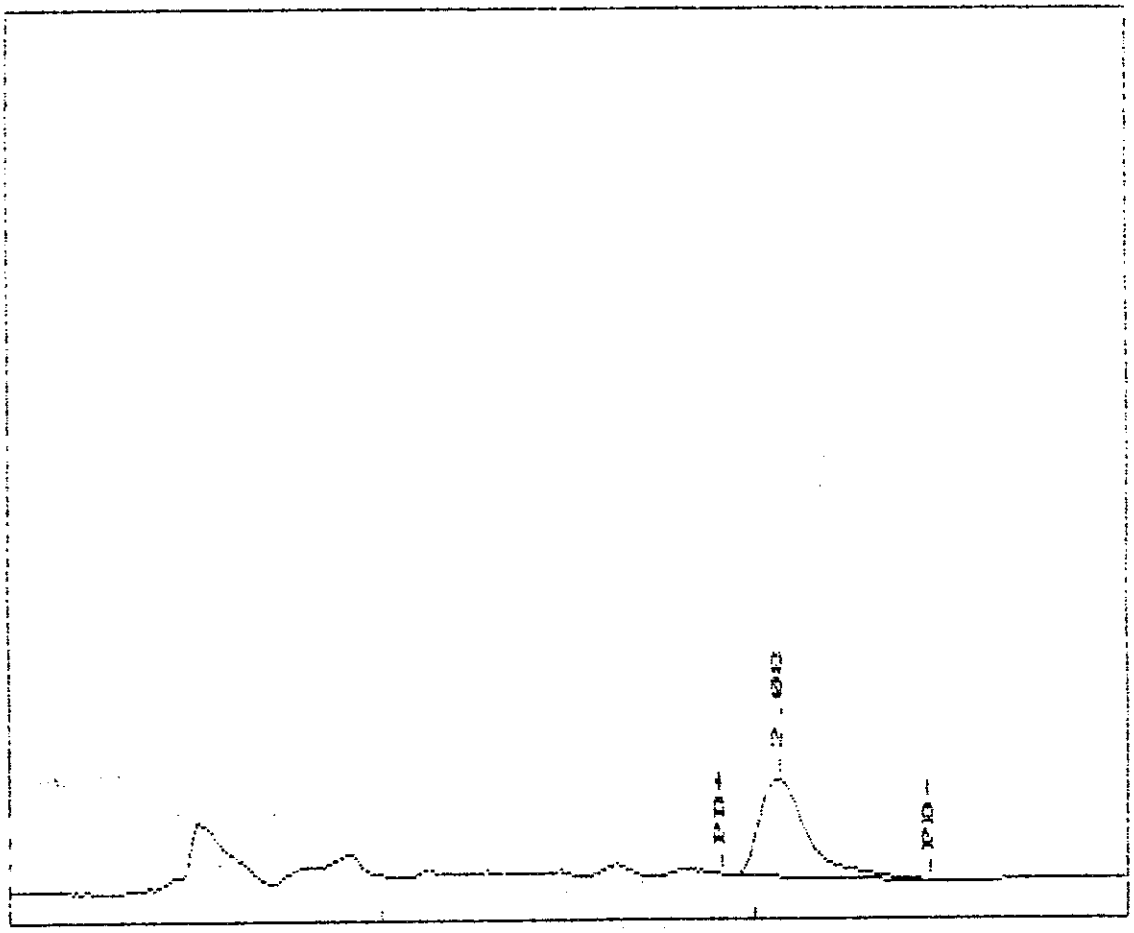
Starting Delay: 0.00
Area reject: 1500
Amount injected: 1.00
Sample Weight: 1.00000

Ending retention time: 3.00
One sample per 0.500 sec.
Dilution factor: 1.00

PEAK NUM	RET TIME	PEAK NAME	CONCENTRATION in UG/L	NORMALIZED CONC	AREA	HEIGHT	AREA/ HEIGHT RT	REF PEAK	% DELTA RET TIME	CONC/AREA
1	2.075	PARAQUAT	1.6760	100.0000%	190961	21458	8.9 1	1	0	8.7763E-06

TOTAL AMOUNT = 1.6760

Areas, times, and heights stored in: F:PARCT8.ATB
Data File = F:PARCT8.PTS Printed on 11-07-1997 at 07:37:46
Start time: 0.00 min. Stop time: 3.00 min. Offset. 5 mv.
Full Range: 200 millivolts



EXTERNAL STANDARD TABLE

11-07-1997 07:38:27 Version 5.1.5

Data File: F:PARCT9

* Sample Name: 9711105-11A WD S1 971106-1
* Date: 11-07-1997 06:10:34 Method: G:PARCT 11-07-1997 05:49:27 # 1047
* Interface: 16 Cycle#: 9 Operator ADB Channel#: 0 Vial#: N.A.
* Starting Peak Width: 30 Threshold: 30 Area Threshold: 250

* Instrument Type: HPLCW/POSTCOLUMNPUMP Column Type: HAMILTON PRP-X400
* Solvent Description: .005M KH2PO4,pH=2.00
* Conditions: 0.6mL/MIN:COLUMN TEMP 55:REACTOR TEMP 36
* Detector 0: UV Detector 1: FLOURESCEN
* Misc. Information: EXCITATION 320-380NM;EMISSION 400NM

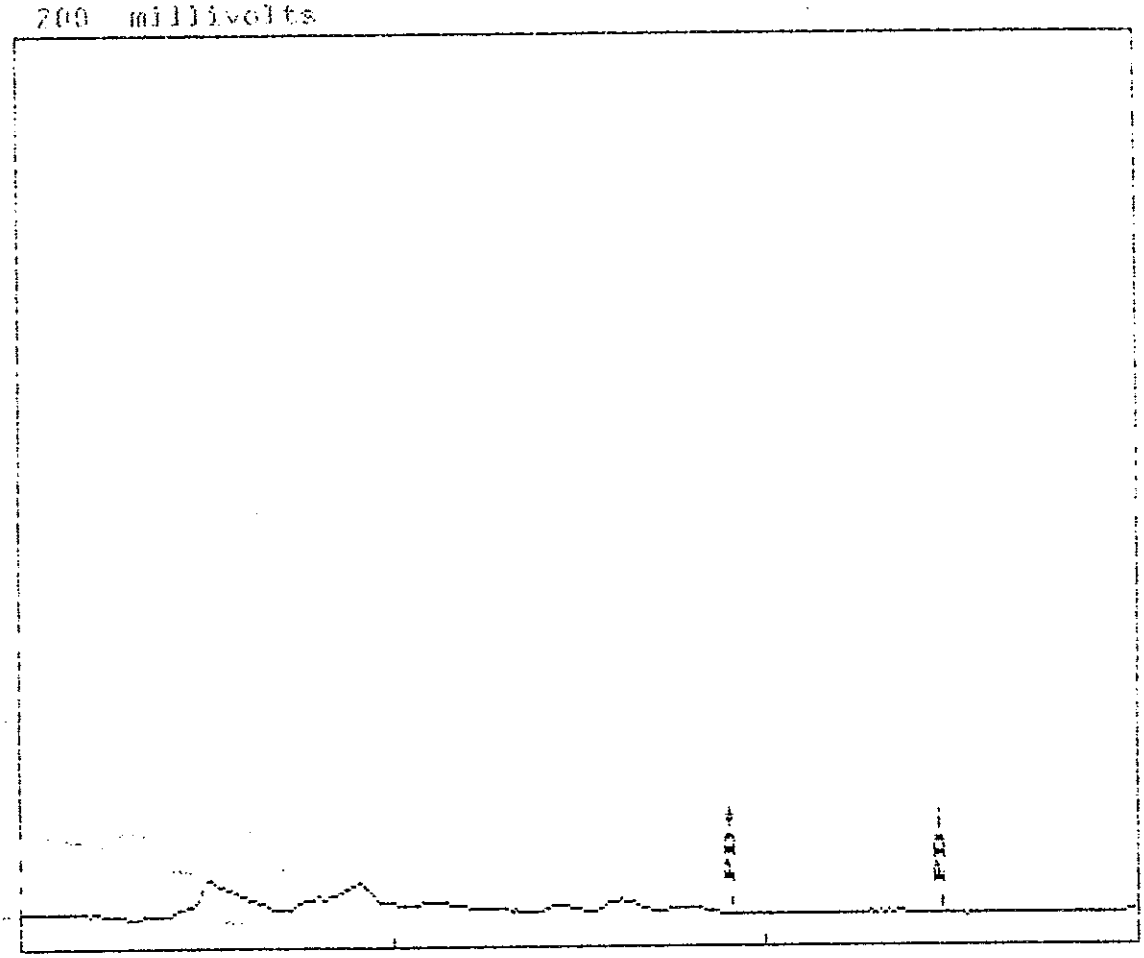
Starting Delay: 0.00
Area reject: 1500
Amount Injected: 1.00
Sample Weight: 1.00000

Ending retention time: 3.00
One sample per 0.500 sec.
Dilution Factor: 1.00

PEAK NUM	RET TIME	PEAK NAME	CONCENTRATION in ug/L	NORMALIZED CONC	AREA	AREA/ HEIGHT	HEIGHT BL	REF PEAK	Δ DELTA RET TIME	CONC/AREA

TOTAL AMOUNT : 0.0000

Areas, times, and heights stored in: F:PARCT9.ATB
Data File : F:PARCT9.PTS Printed on 11-07-1997 at 07:38:37
Start time: 0.00 min. Stop time: 3.00 min. Offset: 5 mv.
Full Range: 200 millivolts



EXTERNAL STANDARD TABLE

11-07-1997 07:39:17 Version 5.1.5

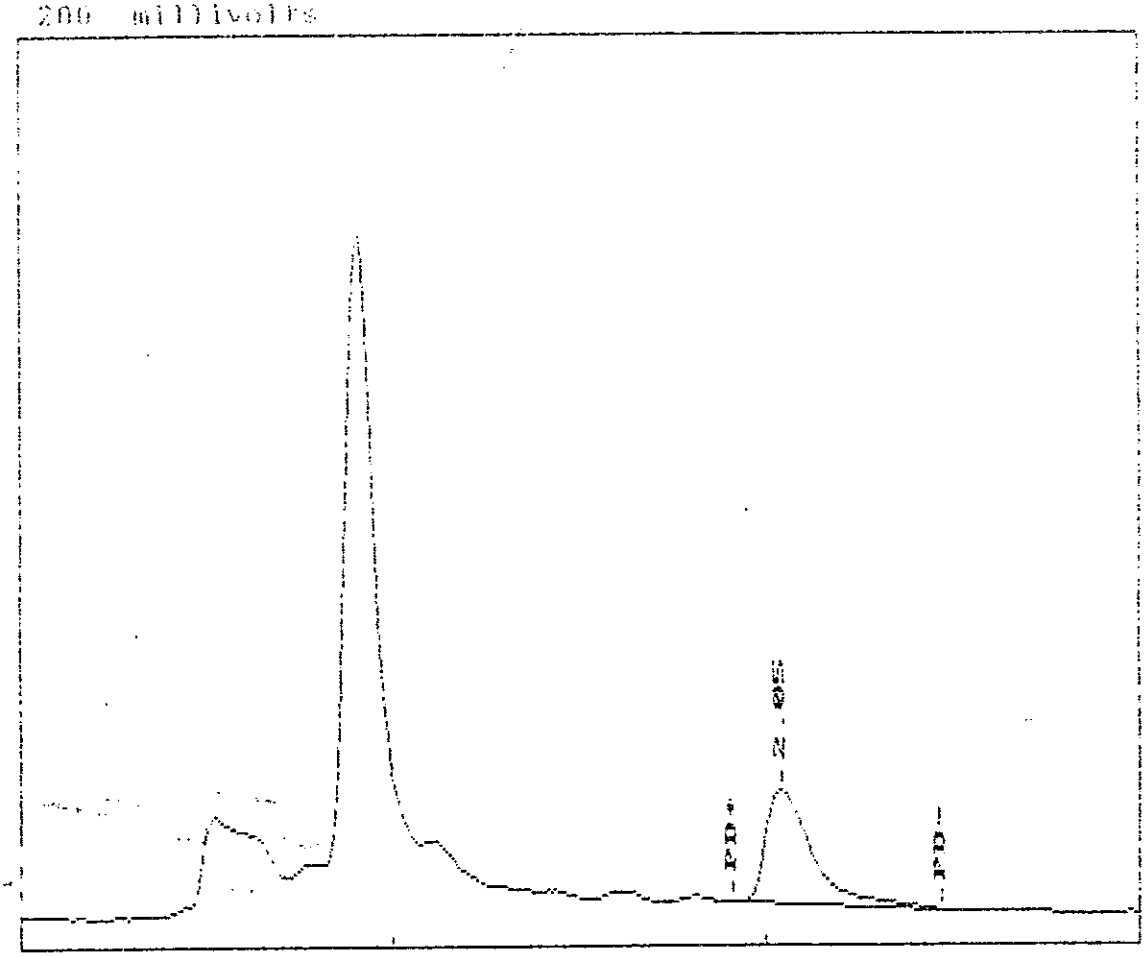
* Sample Name: SXDETLIM WD TC WO-110797-?-LC Data File: F:PARCT10
* Date: 11-07-1997 06:14:36 Method: G:PARCT 11-07-1997 05:49:27 # 1047
* Interface: 16 Cycle#: 10 Operator ADB Channel#: 0 Vial#: N.A.
* Starting Peak Width: 30 Threshold: 20 Area Threshold: 250
* Instrument Type= HPLCW/POSTCOLUMNPUMP Column Type: HAMILTON PRP-X400
* Solvent Description: .005M KH2PO4,pH=2.00
* Conditions: 0.6ml /MIN:COLUMN TEMP 55:REACTOR TEMP 36
* Detector 0: UV Detector 1: FLOURESCEN
* Misc. Information: EXCITATION 320-330NM:EMISSION 400NM

Starting Delay: 0.00 Ending retention time: 5.00
Area reject: 1500 One sample per 0.500 sec.
Amount Injected: 1.00 Dilution Factor: 1.00
Sample Weight: 1.00000

PEAK NUM	RET TIME	PEAK NAME	CONCENTRATION in ug/L	NORMALIZED CONC	AREA	HEIGHT	AREA/ HEIGHT RL	REF PEAK	-% DELTA RET TIME	CONC/AREA
1	2.050	PARAQUAT	1.5343	100.0000%	218834	25146	8.7 1	1	0	8.85927E-06

TOTAL AMOUNT : 1.5343

Areas, times, and heights stored in: F:PARCT10.ATB
Data File = F:PARCT10.PTS Printed on 11-07-1997 at 07:39:27
Start time: 0.00 min. Stop time: 5.00 min. Offset: 5 mv.
Full Range: 200 millivolts



NCL WO# 9711105

ANALYTICAL REPORT

NORTH COAST LABORATORIES LTD.

Date: 11/19/97

REPORT

REPORT TO
Garry Struthers Associates
3150 Richards Rd., Ste 100
Bellevue, WA 98005-4446

WORK ORDER 97-11-105

INVOICE # 60062356

Attn: Mike Webb

WORK ID: WTFRFC

REPORT CERTIFIED BY

Laboratory Supervisor(s)

QA Officer

Jesse G. Chaney, Jr.
Laboratory Director

SAMPLE IDENTIFICATION

Fraction	Sample Description
01	FC9B2N0471
02	FC8A4N0472
03	FC7A2N0473
04	FC7A2N0474
05	FC6C2N01475
06	FC5C4N0476
07	FC41N0477
08	FC3A5N0479
09	FC2A2N04710
10	FC1A1N04711
11	FCEBN04714
12	Method Blank
13	Lab. Control Sample
14	Matrix Spike
15	Matrix Spike Dup
16	Method Blank
17	Lab. Control Sample
18	Matrix Spike
19	Matrix Spike Dup

Comments:

Samples 07A & 08A are reported on a wet weight basis. Due to insufficient sample volume a percent moisture analysis was not possible for samples 07A & 08A. A trace amount of paraquat was present in sample 06A.

Notes and Definitions:

Limit = Reporting Limit
ND = None Detected
NQ = Not Quantifiable
NR = Not Requested

SAMPLE ID: FC9B2N0471 FRAC.: 01A COLLECTED: 11/04/97 RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	2.2	1.1	ug/g	1.0	11/11/97	11/12/97	CHEV.RM8-10
Percent Moisture	5.8		%				SM2540 G

SAMPLE ID: FC8A4N0472 FRAC.: 02A COLLECTED: 11/04/97 RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	ND	1.1	ug/g	1.0	11/11/97	11/12/97	CHEV.RM8-10
Percent Moisture	7.6		%				SM2540 G

SAMPLE ID: FC7A2N0473 FRAC.: 03A COLLECTED: 11/04/97 RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	ND	1.0	ug/g	1.0	11/11/97	11/12/97	CHEV.RM8-10
Percent Moisture	4.3		%				SM2540 G

SAMPLE ID: FC7A2N0474 FRAC.: 04A COLLECTED: 11/04/97 RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	ND	1.0	ug/g	1.0	11/11/97	11/12/97	CHEV.RM8-10
Percent Moisture	4.6		%				SM2540 G

SAMPLE ID: FC6C2N01475 FRAC.: 05A COLLECTED: 11/04/97 RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	9.1	2.2	ug/g	2.0	11/11/97	11/12/97	CHEV.RM8-10
Percent Moisture	9.4		%				SM2540 G

SAMPLE ID: FC5C4N0476 FRAC.: 06A COLLECTED: 11/04/97 RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	ND	1.1	ug/g	1.0	11/11/97	11/12/97	CHEV.RM8-10
Percent Moisture	10		%				SM2540 G

SAMPLE ID: FC41N0477 FRAC.: 07A COLLECTED: 11/04/97 RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	ND	1.0	ug/g	1.0	11/11/97	11/12/97	CHEV.RM8-10

SAMPLE ID: FC3A5N0479 FRAC.: 08A COLLECTED: 11/04/97 RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	ND	1.0	ug/g	1.0	11/11/97	11/12/97	CHEV.RM8-10

SAMPLE ID: FC2A2N04710 FRAC.: 09A COLLECTED: 11/04/97 RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	ND	1.0	ug/g	1.0	11/11/97	11/12/97	CHEV.RM8-10
Percent Moisture	2.6		%				SM2540 G

SAMPLE ID: FC1A1N04711 FRAC.: 10A COLLECTED: 11/04/97 RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	ND	1.1	ug/g	1.0	11/11/97	11/12/97	CHEV.RM8-10
Percent Moisture	5.7		%				SM2540 G

SAMPLE ID: FCEBN04714 FRAC.: 11A COLLECTED: 11/04/97 RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat/water	ND	0.40	ug/L	1.0	11/06/97	11/07/97	EPA 549.1

SAMPLE ID: Method Blank FRAC.: 12A COLLECTED: N/A RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	ND	1.0	ug/g	1.0	11/11/97	11/12/97	CHEV.RM8-10

Date: 11/19/97
Work Order: 97-11-105
Invoice #: 60062356

REPORT

SAMPLE ID: Lab. Control Sample FRAC.: 13A COLLECTED: N/A RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	85.8	N/A	% Rec	1.0	11/11/97	11/12/97	CHEV.RM8-10

SAMPLE ID: Matrix Spike FRAC.: 14A COLLECTED: N/A RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	84.4	N/A	% Rec	1.0	11/11/97	11/12/97	CHEV.RM8-10

SAMPLE ID: Matrix Spike Dup FRAC.: 15A COLLECTED: N/A RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat	80.0	N/A	% Rec	1.0	11/11/97	11/12/97	CHEV.RM8-10

SAMPLE ID: Method Blank FRAC.: 16A COLLECTED: N/A RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat/water	ND	0.40	ug/L	1.0	11/06/97	11/07/97	EPA 549.1

SAMPLE ID: Lab. Control Sample FRAC.: 17A COLLECTED: N/A RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat/water	89.4	N/A	% Rec	1.0	11/06/97	11/07/97	EPA 549.1

SAMPLE ID: Matrix Spike FRAC.: 18A COLLECTED: N/A RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat/water	81.9	N/A	% Rec	1.0	11/06/97	11/07/97	EPA 549.1

SAMPLE ID: Matrix Spike Dup FRAC.: 19A COLLECTED: N/A RECEIVED: 11/06/97

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Paraquat/water	83.8	N/A	% Rec	1.0	11/06/97	11/07/97	EPA 549.1

INTERNAL TRACKING DOCUMENTATION

North Coast Laboratories
SAMPLE CONTROL STORAGE LOG

74 971106-4

SAMPLE ID	#	STORED		IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
9711103-11A	1	R/3-Yellow/24H	DATE	11-6-97	11/7 97										
			TIME	1430	1630										
			INIT	SL	[illegible]										
			BOTTLE	All											
			TRANSFERRED TO:	E	L1	A1				BOX #	72		L2	A2	
9711103-12A	1	R/3-Yellow/24H	DATE												
			TIME												
			INIT												
			BOTTLE	All											
			TRANSFERRED TO:	E	L1	A1				BOX #	72		L2	A2	
9711105-01A	1	3-Yellow/CLP*3D	DATE		11/7 97	11/7 97	11/11 97	11/11 97	11/12 97						
			TIME		750	1430	930	1200	1500						
			INIT		MH	MH	MH	MH	DLS						
			BOTTLE	All											
			TRANSFERRED TO:	E	L1	A1				BOX #	7		L2	A2	
9711105-02A	1	3-Yellow/CLP*3DI	DATE												
			TIME												
			INIT												
			BOTTLE	All											
			TRANSFERRED TO:	E	L1	A1				BOX #	7		L2	A2	
9711105-03A	1	3-Yellow/CLP*3DI	DATE												
			TIME												
			INIT												
			BOTTLE	All											
			TRANSFERRED TO:	E	L1	A1				BOX #	7		L2	A2	
9711105-04A	1	3-Yellow/CLP*3DI	DATE												
			TIME												
			INIT												
			BOTTLE	All											
			TRANSFERRED TO:	E	L1	A1				BOX #	7		L2	A2	
9711105-05A	1	3-Yellow/CLP*3DI	DATE												
			TIME												
			INIT												
			BOTTLE	All											
			TRANSFERRED TO:	E	L1	A1				BOX #	7		L2	A2	

Stored Locations with a #-Color are stored in FARE001.

= # of Labels

"Bottle" line is left blank when there is only 1 sample bottle (1 label), or when there is a composite sample ("COMP X->1" written in the stored location).

E=Empty L1=Limbo A1=Archive L2=Relimbo A2=Rearchive "I" (in TIME row)=Immediately upon receipt J:\WPROC\QA\SCSL3.FRM

North Coast Laboratories
SAMPLE CONTROL STORAGE LOG

SAMPLE ID	#	STORED		IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
9711105-06A	1	3-Yellow/CLP*3DI	DATE	11/6 97	11/7 97	11/7 97	11/11 97	11/11 97	11/12 97						
			TIME	1430	750	1430	930	1300	1520						
			INIT	JL	MH	MH	MH	MH	MS						
			BOTTLE	All											
			TRANSFERRED TO: E L1 A1							BOX # 7			L2 A2		
9711105-07A	1	3-Yellow/CLP*3DI	DATE												
			TIME												
			INIT												
			BOTTLE	All											
			TRANSFERRED TO: E L1 A1							BOX # 7			L2 A2		
9711105-08A	1	3-Yellow/CLP*3DI	DATE												
			TIME												
			INIT												
			BOTTLE	All											
			TRANSFERRED TO: E L1 A1							BOX # 7			L2 A2		
9711105-09A	1	3-Yellow/CLP*3DI	DATE												
			TIME												
			INIT												
			BOTTLE	All											
			TRANSFERRED TO: E L1 A1							BOX # 7			L2 A2		
9711105-10A	1	3-Yellow/CLP*3DI	DATE												
			TIME												
			INIT												
			BOTTLE	All											
			TRANSFERRED TO: E L1 A1							BOX # 7			L2 A2		
9711105-11A	2	3-Yellow/CLP*3DI	DATE	Received sample from Jay Tarvin 11/6 97 1015										11/19/97 0945	
			TIME												
			INIT												
			BOTTLE	All											
			TRANSFERRED TO: E L1 A1 (2) 11/19/97 08							BOX # 19			L2 A2		
9711106-01A	1	3-Yellow	DATE												
			TIME												
			INIT												
			BOTTLE	All											
			TRANSFERRED TO: E L1 A1							BOX #			L2 A2		

Stored Locations with a #-Color are stored in FARE001.

= # of Labels

"Bottle" line is left blank when there is only 1 sample bottle (1 label), or when there is a composite sample ("COMP X->1" written in the stored location).
"I" (in TIME row)=Immediately upon receipt

E=Empty L1=Limbo A1=Archive L2=Relimbo A2=Rearchive

J:\WPROC\QA\SCSL3.F

CHAIN OF CUSTODY

9711105

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. East
Tacoma, Washington 98424
(253) 922-2310 • FAX (253) 922-5047

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

CLIENT: GARY STRUTHERS ASSOC
PROJECT NAME: WTFRFC
CONTACT: MIKE WEBB
PHONE NO: 425 519 - 0300 X217

ANALYSIS REQUESTED:

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	PARAQUAT
1	FC9B2N0471	11/4/97	1340	SOIL															✓
2	FC8A4N0472		1330																✓
3	FC7A2N0473		1400																✓
4	FC7A2N0474		1410																✓
5	FC6C2N0475		1420																✓
6	FC5C4N0476		1430																✓
7	FC4A1N0477		1440																✓
8	FC3A5N0479		1500																✓
9	FC2A2N0480		1515																✓
10	FC1A1N0481		1520																✓
11	FCEBN0482		1550	WATER	2														✓
	TEMP BLANK																		

RELEASED TO FED X W/ CUSTODY SEALS

	Signature	Printed Name	Firm	Time / Date
Relinquished By		Michael Webb	GSA Inc.	1645 11/5/97
Received By	Jay Tarvin	JAY TARVIN	NCL	1030 11/6/97
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:
SAMPLED BY MIKE WEBB
These samples will be disposed of 45 days after receipt.
Check this box to have samples returned ☐.
LAB CONTACT: MICHELLE DOSTAL
USACE PROJECT - ANALYZE AS PER QAPP
72 HR. TAT
Cooler Blank Temp: 2°C JT

Chain of Custody seals intact on cooler. JT

LAB NO. 78

PAGE __ OF __

COOLER RECEIPT FORM

PROJECT: WTFRFC W.O.#

COOLER RECEIVED ON 11/6/97 1030 AND OPENED ON 11/6/97 BY JAY TARVIN

(SIGNATURE) Jay Tarvin

Temperature upon receipt: cooler ____ °C
temp. blank 2° °C.

1. Were custody seals on outside of cooler and intact? (YES) NO
   a. If YES, how many and where: 2, sealing cooler on front
   b. Were signature and date correct? (YES) NO
2. Were custody papers taped to lid inside cooler? YES (NO)
3. Were custody papers properly filled out (ink, signed, etc)? They were bagged & on top of packing material (YES) NO
4. Did you sign custody papers in the appropriate place? ~~They were bagged & on to~~ (YES) NO
5. Did you attach shipper's packing slip to this form? (YES) NO
6. What kind of packing material was used? bubble wrap
7. Was sufficient ice used (if appropriate)? (YES) NO
8. Were all bottles sealed in separate plastic bags? (YES) NO
9. Did all bottles arrive in good condition (unbroken)? (YES) NO
10. Were all bottle labels complete (no., date, signed, pres, etc)? (YES) NO
11. Did all bottle labels and tags agree with custody papers? (YES) NO
12. Were correct bottles used for the test indicated? (YES) NO
13. If present, were VOA vials checked for absence of air bubbles and noted if found? (N/A) YES NO
14. Was sufficient amount of sample sent in each bottle? (YES) NO
15. Were correct preservatives used? (YES) NO (N/A)
16. Corrective action taken, if necessary:
    a. Name of person contacted: _____
    b. Date: _____

MEMORANDUM

DATE: December 17, 1997

TO: Fred Luck, Project Manager

FROM: Michael Webb, Chemical Data Quality Manager

SUBJECT: Contract DACA67-95-G-0001-38
Wenatchee Tree Fruit Research Center Remediation
Summary Chemical Data Quality Control Report:
Final Confirmation Sampling November 17, 1997
Sound Analytical Report #68872

Purpose: This assessment summarizes data quality factors that affect usability and provides guidance in the use of these data for the intended purpose.

Analytical Methods:

- Method 8081 for Organochlorine Pesticides.

Data Use Intended:

- Final Confirmation Samples: To establish that the remediation lowered the concentrations below the clean-up standard.

Summary of Qualified and Rejected Data:

- No soil data were rejected due to quality control problems.
- Some results were below the quantitation limit and were flagged with "J" qualifiers. "C" flags were used to indicate that second-column confirmation had confirmed the results (4,4'-DDD and 2,4'-DDT cannot be confirmed when both are present). "U" qualifiers were not used for undetected results, rather "ND" was placed in the quantitative value data field.

Summary of Method 8081 and TCLP Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled November 17, 1997: FC2-4B3N1771, FC2-9B2.5N1773, FC2-9B2.5N1775 (field duplicate of FC2-9B2.5N1773), FC2SW-1AWN17710, FC3SW-7ANN17711, FC3SW-8ANN17712.
- Sample Handling, Holding Time and Chain of Custody - **Acceptable.**
- Performance Evaluation (PE) Results - **Not evaluated in this delivery group.**
- Analytical Sensitivity - **Acceptable.**
- Accuracy -

  Calibration (Initial and Continuing) - **Acceptable for all compounds found in samples.**
  DDT and Endrin Breakdown Standards - **Acceptable.**
  Surrogates - **Acceptable except for sample FC2-4B3N1771.** The recovery for one of two surrogates for this sample is outside of the project targets but within the laboratory statistical limits as required by the SW-846 methodology. This occurrence of high recovery is not

deemed significant to the data use and no data qualification has resulted. The laboratory reported other surrogate nonconformances, but they were actually within the project targets.
Matrix Spikes - **Acceptable except for 4,4'-DDE.** This occurrence of high recovery in one sample has been assigned to a case of sample inhomogeneity. All other accuracy indicators are acceptable and it appears that sample precision is the only concern.
Laboratory Control Samples (LCS) - **Acceptable.**
Laboratory Blanks - **Acceptable.**
Field Blanks - **Not evaluated in this delivery group.**

- Laboratory Precision - **Acceptable.** However, an occurrence of high recovery in one matrix spike sample has been assigned to a case of sample inhomogeneity. No data qualification has resulted. All sample locations that had results close to the regulatory limit have subsequently been excavated further.
- Field Precision - **Acceptable.**

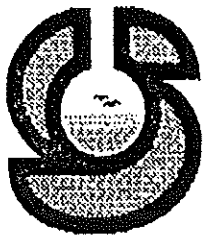
Summary of Data Comparability, Representativeness, and Completeness

- **Field Sampling Issues** - No problems were encountered.
- **Data Completeness** - The data completeness was 100% for this phase of work.

Overall Conclusions

These data are acceptable for use for the intended purposes. The QC results meet the accuracy, precision, and completeness DQOs for the project.

Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy East • Tacoma, WA 98424
(253) 922-2310 • FAX (253) 922-5047
e-mail: SoundL@aol.com



FAX TRANSMITTAL

Contact, Company, and Address:
Mike Webb, Project Chemist
Garry Struthers Associates, Inc.
3150 Richards Road, Ste. 100
Bellevue, WA 98005-4446

Date: December 18, 1997

Phone Number: (425) 519-0300 x217

Fax Number: (425) 519-0309

Pages sent by fax: 1

Hard copy to follow: No

From: Lila Transue

Message:
Mike - For Laboratory Work Order Number 68142, OC pesticide results were reported preliminary from the 10/17/97 analysis. Samples were reanalyzed for the final report on 10/20/97 due to DDT and/or endrin breakdown standard failures in the preliminary run. Samples 68142-1 and 68142-2 were field duplicates. All detected analyte concentrations were comparable except for DDT. The difference between the two DDT concentrations is most likely due to matrix variability based on a reveiw of the MS/MSD results for 68142-1. The MS result for DDE in sample 68872-1 was high. This appears to be due to a matrix interference which caused peak broadening in the MS chromatogram. The MSD also exhibited slight peak broadening for DDE. The unspiked sample did not exhibit peak broadening for DDE. Therefore, it is unlikely that the sample result for 68872-1 is biased significantly high.

Sound Analytical Services, Inc.
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4813 Pacific Hwy East • Tacoma, WA 98424
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e-mail: SoundL@aol.com

TRANSMITTAL MEMORANDUM

DATE: November 24, 1997

TO: Mike Webb
Garry Struthers Associates, Inc.
3150 Richards Road, Ste. 100
Bellevue, WA 98005-4446

PROJECT: Wenatchee Test Plot Soils, USACOE

REPORT NUMBER: 68872

Enclosed are the test results for six samples received at Sound Analytical Services on November 19, 1997.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chain-of-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Lila Transue

Lila Transue
Project Manager

Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy East • Tacoma, WA 98424
(253) 922-2310 • FAX (253) 922-5047
e-mail: SoundL@aol.com

ANALYTICAL NARRATIVE

Client: Garry Struthers Associates, Inc.

Date: November 24, 1997

Project: WTFREC

Lab No.: 68872

Delivered By: Client

Condition of samples upon receipt: Samples were received in good condition. Chain of custody was in order.

Sample Identification:

Lab. No.	Client ID	Date Sampled	Matrix	Description
68872-1	FC2-4B3N1771	11-17-97	Soil	Dry, brown, silt
68872-2	FC2-9B2.5N1773	11-17-97	Soil	Dry, dark brown, silt
68872-3	FC2-9B2.5N1775	11-17-97	Soil	Dry, dark brown, silt
68872-4	FC2SW-1AWN17710	11-17-97	Soil	Dry, brown, silt
68872-5	FC3SW-7ANN17711	11-17-97	Soil	Dry, brown, silt
68872-6	FC3SW-8ANN17712	11-17-97	Soil	Dry, brown, silt

SAMPLE EXTRACTION AND ANALYSIS

ORGANOCHLORINE PESTICIDES

Samples 68872-1 through 68872-6 were analyzed for organochlorine pesticides in accordance with EPA SW-846 Method 8081. The samples were extracted in accordance with EPA SW-846 Method 3540 on 11-19-97 and analyzed on 11-21-97.

Samples 68872-4, 68872-5 and 68872-6 required secondary dilution analyses due to the high concentrations of various target analytes.

All detected compounds were confirmed as present using a second dissimilar column. All relative percent difference values between the two analytical columns were less than or equal to 40%, except for 4,4'-DDD, which coelutes with 2,4'-DDT on the confirmation column, as most samples that contained 4,4'-DDD contained significant concentrations of 2,4'-DDT.

The percent recovery of the surrogate TCMX exceeded the project control limits for sample 68872-1 and 68872-1MSD. The percent recoveries are within the current laboratory control limits established by charting the actual recoveries of samples run by the laboratory.

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL NARRATIVE

Client: Garry Struthers Associates, Inc. Date: November 24, 1997

Project: WTFREC Lab No.: 68872

ORGANOCHLORINE PESTICIDES, CONT.

The percent recovery of 4,4'-DDE in the matrix spike analysis of sample 68872-1 was outside the quality control limits. Matrix interference is indicated by the blank spike recovery.

All other quality control parameters were within acceptance limits.

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC2-4B3N1771
Lab ID:	68872-01
Date Received:	11/19/97
Date Prepared:	11/19/97
Date Analyzed:	11/21/97
% Solids	97.21
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	142	N	65	130
Decachlorobiphenyl	98		65	130

Sample results are on a dry weight basis.

Analyte		**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	ND		0.4	0.06	
alpha-BHC	ND		16	0.061	
beta-BHC	ND		16	0.11	
delta-BHC	ND		16	0.063	
gamma-BHC (Lindane)	ND		16	0.14	
Chlordane (technical)	ND		8	2	
4,4'-DDD	ND		16	0.14	
4,4'-DDE		6.1	16	0.29	J C
4,4'-DDT		2.6	16	1	J C
2,4'-DDD	ND		16	1.2	
2,4'-DDE		1.8	16	1.2	J C
2,4'-DDT		11	16	1.2	J C
Dieldrin	ND		0.8	0.057	
Endosulfan I	ND		1.6	0.26	
Endosulfan II	ND		1.6	0.13	
Endosulfan sulfate	ND		1.6	0.19	
Endrin	ND		0.8	0.097	
Endrin aldehyde	ND		16	0.71	
Heptachlor	ND		16	0.082	
Heptachlor epoxide	ND		16	0.13	
Methoxychlor	ND		16	1.8	
Toxaphene	ND		16	35	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC2-9B2.5N1773
Lab ID:	68872-02
Date Received:	11/19/97
Date Prepared:	11/19/97
Date Analyzed:	11/21/97
% Solids	91.53
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
TCMX	80		65	130
Decachlorobiphenyl	84		65	130

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Aldrin	ND		0.44	0.066	
alpha-BHC	ND		18	0.068	
beta-BHC	ND		18	0.13	
delta-BHC	ND		18	0.069	
gamma-BHC (Lindane)	ND		18	0.15	
Chlordane (technical)	ND		8.8	2.2	
4,4'-DDD	ND		18	0.15	
4,4'-DDE		98	18	0.32	C
4,4'-DDT		47	18	1.1	C
2,4'-DDD	ND		18	1.3	
2,4'-DDE		2.2	18	1.3	J C
2,4'-DDT		24	18	1.3	C
Dieldrin	ND		0.88	0.063	
Endosulfan I	ND		1.8	0.29	
Endosulfan II	ND		1.8	0.15	
Endosulfan sulfate	ND		1.8	0.21	
Endrin	ND		0.88	0.11	
Endrin aldehyde	ND		18	0.79	
Heptachlor	ND		18	0.09	
Heptachlor epoxide	ND		18	0.15	
Methoxychlor	ND		18	2	
Toxaphene	ND		18	39	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC2-9B2.5N1775
Lab ID:	68872-03
Date Received:	11/19/97
Date Prepared:	11/19/97
Date Analyzed:	11/21/97
% Solids	91.48
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	72		65	130
Decachlorobiphenyl	75		65	130

Sample results are on a dry weight basis.

Analyte		**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	ND		0.43	0.064	
alpha-BHC	ND		17	0.065	
beta-BHC	ND		17	0.12	
delta-BHC	ND		17	0.067	
gamma-BHC (Lindane)	ND		17	0.15	
Chlordane (technical)	ND		8.5	2.1	
4,4'-DDD	ND		17	0.14	
4,4'-DDE		82	17	0.31	C
4,4'-DDT		41	17	1.1	C
2,4'-DDD	ND		17	1.3	
2,4'-DDE		2.4	17	1.3	J C
2,4'-DDT		20	17	1.3	C
Dieldrin	ND		0.85	0.061	
Endosulfan I	ND		1.7	0.28	
Endosulfan II	ND		1.7	0.14	
Endosulfan sulfate	ND		1.7	0.21	
Endrin	ND		0.85	0.1	
Endrin aldehyde	ND		17	0.76	
Heptachlor	ND		17	0.087	
Heptachlor epoxide	ND		17	0.14	
Methoxychlor	ND		17	1.9	
Toxaphene	ND		17	37	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC2SW-1AWN17710
Lab ID:	68872-04
Date Received:	11/19/97
Date Prepared:	11/19/97
Date Analyzed:	11/21/97
% Solids	93.85
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
TCMX	73		65	130
Decachlorobiphenyl	74		65	130

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Aldrin	ND		0.44	0.066	
alpha-BHC	ND		18	0.068	
beta-BHC	ND		18	0.13	
delta-BHC	ND		18	0.069	
gamma-BHC (Lindane)	ND		18	0.15	
Chlordane (technical)	ND		8.8	2.2	
4,4'-DDD	ND		18	0.15	
4,4'-DDE		540	18	0.32	D C
4,4'-DDT		93	18	1.1	C
2,4'-DDD	ND		18	1.3	
2,4'-DDE		7.1	18	1.3	J C
2,4'-DDT		48	18	1.3	C
Dieldrin	ND		0.88	0.063	
Endosulfan I	ND		1.8	0.29	
Endosulfan II	ND		1.8	0.15	
Endosulfan sulfate	ND		1.8	0.21	
Endrin	ND		0.88	0.11	
Endrin aldehyde	ND		18	0.79	
Heptachlor	ND		18	0.09	
Heptachlor epoxide	ND		18	0.15	
Methoxychlor	ND		18	2	
Toxaphene	ND		18	39	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC3SW-7ANN17711
Lab ID:	68872-05
Date Received:	11/19/97
Date Prepared:	11/19/97
Date Analyzed:	11/21/97
% Solids	92.77
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	High
TCMX	74		65	130
Decachlorobiphenyl	86		65	130

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Aldrin	ND		0.43	0.064	
alpha-BHC	ND		17	0.066	
beta-BHC	ND		17	0.12	
delta-BHC	ND		17	0.067	
gamma-BHC (Lindane)	ND		17	0.15	
Chlordane (technical)	ND		8.6	2.1	
4,4'-DDD		17	17	0.15	J C
4,4'-DDE		3200	17	0.31	D C
4,4'-DDT		1300	17	1.1	D C
2,4'-DDD		40	17	1.3	C
2,4'-DDE		82	17	1.3	C
2,4'-DDT		720	17	1.3	D C
Dieldrin		24	0.86	0.061	C
Endosulfan I	ND		1.7	0.28	
Endosulfan II	ND		1.7	0.14	
Endosulfan sulfate		7.4	1.7	0.21	C
Endrin		44	0.86	0.1	C
Endrin aldehyde		9.6	17	0.77	J C
Heptachlor	ND		17	0.088	
Heptachlor epoxide	ND		17	0.14	
Methoxychlor		23	17	1.9	C
Toxaphene	ND		17	38	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC3SW-8ANN17712
Lab ID:	68872-06
Date Received:	11/19/97
Date Prepared:	11/19/97
Date Analyzed:	11/21/97
% Solids	95.2
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	High
TCMX	78		65	130
Decachlorobiphenyl	113		65	130

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Aldrin	ND		0.41	0.061	
alpha-BHC	ND		16	0.063	
beta-BHC	ND		16	0.12	
delta-BHC	ND		16	0.064	
gamma-BHC (Lindane)	ND		16	0.14	
Chlordane (technical)	ND		8.2	2	
4,4'-DDD		40	16	0.14	C
4,4'-DDE		4800	16	0.29	D C
4,4'-DDT		2000	16	1	D C
2,4'-DDD		110	16	1.2	C
2,4'-DDE		110	16	1.2	C
2,4'-DDT		1100	16	1.2	D C
Dieldrin		35	0.82	0.058	C
Endosulfan I	ND		1.6	0.26	
Endosulfan II	ND		1.6	0.14	
Endosulfan sulfate		86	1.6	0.2	C
Endrin	ND		0.82	0.099	
Endrin aldehyde		70	16	0.73	C
Heptachlor	ND		16	0.083	
Heptachlor epoxide		4	16	0.14	J C
Methoxychlor		62	16	1.8	C
Toxaphene		1500	16	36	C

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - PE834
Date Received:	-
Date Prepared:	11/19/97
Date Analyzed:	11/21/97
% Solids	
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	High
TCMX	87		65	130
Decachlorobiphenyl	97		65	130

Sample results are on an as received basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Aldrin	ND		0.42	0.062	
alpha-BHC	ND		17	0.064	
beta-BHC	ND		17	0.12	
delta-BHC	ND		17	0.065	
gamma-BHC (Lindane)	ND		17	0.14	
Chlordane (technical)	ND		8.3	2	
4,4'-DDD	ND		17	0.14	
4,4'-DDE	ND		17	0.3	
4,4'-DDT	ND		17	1	
2,4'-DDD	ND		17	1.2	
2,4'-DDE	ND		17	1.2	
2,4'-DDT	ND		17	1.2	
Dieldrin	ND		0.83	0.059	
Endosulfan I	ND		1.7	0.27	
Endosulfan II	ND		1.7	0.14	
Endosulfan sulfate	ND		1.7	0.2	
Endrin	ND		0.83	0.1	
Endrin aldehyde	ND		17	0.74	
Heptachlor	ND		17	0.085	
Heptachlor epoxide	ND		17	0.14	
Methoxychlor	ND		17	1.9	
Toxaphene	ND		17	36	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike/Blank Spike Duplicate Report

Lab ID:	PE834
Date Prepared:	11/19/97
Date Analyzed:	11/21/97
QC Batch ID:	PE834

Organochlorine Pesticides by USEPA Method 8081

Compound Name	Blank Result (ug/kg)	Spike Amount (ug/kg)	BS Result (ug/kg)	BS % Rec.	BSD Result (ug/kg)	BSD % Rec.	RPD	Flag
Aldrin	0	20.8	15.8	75.9	17.9	85.8	12	
gamma-BHC (Lindane)	0	20.8	15.4	74	17.2	82.8	11	
4,4'-DDD	0	41.6	33.8	81.3	38.4	92.1	12	
4,4'-DDE	0	41.6	36.6	88	40.6	97.5	10	
4,4'-DDT	0	41.6	34.3	82.3	37.4	89.9	8.8	
2,4'-DDD	0	41.6	38.1	91.5	42	101	9.9	
2,4'-DDE	0	41.6	35.6	85.4	39.5	94.9	11	
2,4'-DDT	0	41.6	36.7	88.1	40.2	96.6	9.2	
Dieldrin	0	41.6	37.1	89.2	40.7	97.7	9.1	
Endrin	0	41.6	35.1	84.3	37.3	89.6	6.1	
Heptachlor	0	20.8	16	76.9	17.9	85.9	11	

SOUND ANALYTICAL SERVICES, INC.

Client Name	0
Client ID:	
Lab ID:	SPE834
Date Received:	-
Date Prepared:	11/19/97
Date Analyzed:	11/21/97
% Solids	
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	78		65	130
Decachlorobiphenyl	86		65	130

Sample results are on an as received basis.

Analyte	**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	16	0.42	0.062	C
gamma-BHC (Lindane)	15	17	0.14	J C
4,4'-DDD	34	17	0.14	C
4,4'-DDE	37	17	0.3	C
4,4'-DDT	34	17	1	C
2,4'-DDD	38	17	1.2	C
2,4'-DDE	36	17	1.2	C
2,4'-DDT	37	17	1.2	C
Dieldrin	37	0.83	0.059	C
Endrin	35	0.83	0.1	C
Heptachlor	16	17	0.085	J C

SOUND ANALYTICAL SERVICES, INC.

Client Name	0
Client ID:	
Lab ID:	DPE834
Date Received:	-
Date Prepared:	11/19/97
Date Analyzed:	11/21/97
% Solids	
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	High
TCMX	82		65	130
Decachlorobiphenyl	95		65	130

Sample results are on an as received basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Aldrin	18	0.42	0.062	C
gamma-BHC (Lindane)	17	17	0.14	C
4,4'-DDD	38	17	0.14	C
4,4'-DDE	41	17	0.3	C
4,4'-DDT	37	17	1	C
2,4'-DDD	42	17	1.2	C
2,4'-DDE	40	17	1.2	C
2,4'-DDT	40	17	1.2	C
Dieldrin	41	0.83	0.059	C
Endrin	37	0.83	0.1	C
Heptachlor	18	17	0.085	C

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	FC2-4B3N1771
Lab ID:	68872-01
Date Prepared:	11/19/97
Date Analyzed:	11/21/97
QC Batch ID:	PE834

Organochlorine Pesticides by USEPA Method 8081

Compound Name	Sample Result (ug/kg)	Spike Amount (ug/kg)	MS Result (ug/kg)	MS % Rec.	MSD Result (ug/kg)	MSD % Rec.	RPD	Flag
Aldrin	0	20.5	17.1	83.6	17.1	83.8	0.24	
gamma-BHC (Lindane)	0	20.5	16.8	82.3	16.6	81.4	1.1	
4,4'-DDD	0	40.9	39.5	96.6	38.8	95.3	1.4	
4,4'-DDE	6.1	40.9	68.3	152	52.8	115	28	X7
4,4'-DDT	2.6	40.9	47.9	111	44.4	103	7.5	
2,4'-DDD	0	40.9	42.4	104	42.3	104	0	
2,4'-DDE	1.8	40.9	40.7	95	40.2	94.1	0.95	
2,4'-DDT	11	40.9	54.2	105	50.6	96.2	8.7	
Dieldrin	0	40.9	42.4	104	41.7	102	1.9	
Endrin	0	40.9	42.3	103	40.9	100	3	
Heptachlor	0	20.5	18.1	88.6	18	88.5	0.11	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC2-4B3N1771 - ms
Lab ID:	68872S01
Date Received:	11/19/97
Date Prepared:	11/19/97
Date Analyzed:	11/21/97
% Solids	97.21
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	130		65	130
Decachlorobiphenyl	98		65	130

Sample results are on a dry weight basis.

Analyte	**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	17	0.41	0.061	C
gamma-BHC (Lindane)	17	16	0.14	C
4,4'-DDD	40	16	0.14	C
4,4'-DDE	68	16	0.29	C
4,4'-DDT	48	16	1	C
2,4'-DDD	42	16	1.2	C
2,4'-DDE	41	16	1.2	C
2,4'-DDT	54	16	1.2	C
Dieldrin	42	0.82	0.058	C
Endrin	42	0.82	0.099	C
Heptachlor	18	16	0.083	C

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC2-4B3N1771 - msd
Lab ID:	68872D01
Date Received:	11/19/97
Date Prepared:	11/19/97
Date Analyzed:	11/21/97
% Solids	97.21
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	131	N	65	130
Decachlorobiphenyl	92		65	130

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Aldrin	17	0.41	0.061	C
gamma-BHC (Lindane)	17	16	0.14	C
4,4'-DDD	39	16	0.14	C
4,4'-DDE	53	16	0.29	C
4,4'-DDT	44	16	1	C
2,4'-DDD	42	16	1.2	C
2,4'-DDE	40	16	1.2	C
2,4'-DDT	51	16	1.2	C
Dieldrin	42	0.81	0.058	C
Endrin	41	0.81	0.099	C
Heptachlor	18	16	0.083	C

CHAIN OF CUSTODY

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy. East
Tacoma, Washington 98424
(253) 922-2310 • FAX (253) 922-5047

68872 7/2

COC #16

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

CLIENT: BARRY STRUTHERS ASSOC.

PROJECT NAME: WTFREC

CONTACT: MIKE WEBB

PHONE NO: (425) 519-0300 X217

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	OC Pesticides								
1	FC2-4B3.5N1771	11/7/97	12:16	SOIL	2														✓								
✓	FC2-9A2.5N1772	11/7/97	12:20	SOIL	2														ON HOLD								
2	FC2-9B2.5N1773	11/7/97	12:25	SOIL	2														✓								
3	FC2-9B2.5N1775	11/7/97	12:45	SOIL	2														✓								
✓	FC2-9C2.5N1776	11/7/97	12:30	SOIL	2														ON HOLD								
	~~FC2-1BW~~																										MW
✓	FC2SW-1BWN1779	11/7/97	13:15	SOIL	2														ON HOLD								
4	FC2SW-1AWN1770	11/7/97	13:05	SOIL	2														✓								
5	FC3SW-7ANN1711	11/7/97	16:35	SOIL	2														✓								
6	FC3SW-8ANN1712	11/7/97	16:25	SOIL	2														✓								
✓	FC3SW-8NW1713	11/7/97	16:45	SOIL	1														ON HOLD								
	TEMP. BLANK																										
	SAMPLED BY MIKE WEBB & DENNIS O'NEIL (NLENVFELDER) AND KIM CONVERSE (USACE)																										

	Signature	Printed Name	Firm	Time / Date
Relinquished By	HAND DELIVERED Michael Webb	Michael Webb	GSA Inc.	11/19/97 9:35
Received By	Duc Nguyen	Duc Nguyen	SAS	11/19/97 9:35
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:

These samples will be disposed of 45 days after receipt.
Check this box to have samples returned ☐.

ARMY CORPS OF ENGINEERS PROJECT - ANALYZE AS PER QAPP
LAB CONTACT - KATIE DOWNIE

SAMPLING LOG - SEE DCQCR 11/7/97 FOR COC HISTORY.
72 HR TAT

Cold samples in H1/53

SAS LAB NO. 68876

PAGE 1 OF

COOLER RECEIPT FORM

PROJECT: Wenatchee Test Plot: Soils, USACOE W.O.# —

COOLER RECEIVED ON 11-19-97 AND OPENED ON 11-19-97 BY SSiang

SSiang
(SIGNATURE)

Temperature upon receipt: cooler 2 °C
temp. blank 3 °C

1. Were custody seals on outside of cooler and intact? YES (N)
   a. If YES, how many and where: hand delivered
   b. Were signature and date correct? YES (N)
2. Were custody papers taped to lid inside cooler? YES (N)
3. Were custody papers properly filled out (ink, signed, etc)? (YES) N
4. Did you sign custody papers in the appropriate place? (YES) N
5. Did you attach shipper's packing slip to this form? YES (N)
6. What kind of packing material was used? bubble wrap
7. Was sufficient ice used (if appropriate)? (YES) N
8. Were all bottles sealed in separate plastic bags? (YES) N
9. Did all bottles arrive in good condition (unbroken)? (YES) N
10. Were all bottle labels complete (no., date, signed, pres, etc)? (YES) N
11. Did all bottle labels and tags agree with custody papers? (YES) N
12. Were correct bottles used for the test indicated? (YES) N
13. If present, were VOA vials checked for absence of air bubbles and noted if found? N/A YES N
14. Adequate volume of VOA vials received per sample? N/A YES N
15. Was sufficient amount of sample sent in each bottle? ~~N/A~~ (YES) N
16. Were correct preservatives used? N/A YES N
17. Corrective action taken, if necessary:
    a. Name of person contacted: _____
    b. Date: _____

DATA QUALIFIER DEFINITIONS

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE: (253) 922-2310 - FAX: (253) 922-5047

DATA QUALIFIERS AND ABBREVIATIONS

B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).

B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).

C: Additional confirmation performed.

D: The reported result for this analyte is calculated based on a secondary dilution factor.

E: The concentration of this analyte exceeded the instrument calibration range.

J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

MCL: Maximum Contaminant Level

MDL: Method Detection Limit

N: See analytical narrative.

ND: Not Detected

PQL: Practical Quantitation Limit

X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____ .

X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.

X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.

X4: RPD for duplicates outside advisory QC limits. Sample was re-analyzed with similar results.

X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.

X5: Matrix spike was diluted out during analysis.

X6: Recovery of matrix spike was outside advisory QC limits. Sample was re-analyzed with similar results.

X7: Recovery of matrix spike outside advisory QC limits. Matrix interference is indicated by blank spike recovery data.

X7a: Recovery and/or RPD values for MS/MSD outside advisory QC limits due to high contaminant levels.

X8: Surrogate was diluted out during analysis.

X9: Surrogate recovery outside advisory QC limits due to matrix composition.

CHLORINATED PESTICIDE DATA PACKAGE

INITIAL CALIBRATION DATA

Pesticide %RSD

Date Analyzed: 7-Nov-97
Instrument: 3400 Dual Column
Analytical Column: DB-1701

COMPOUND	A RF	B RF	C RF	D RF	E RF	F RF	Average RF	Average RF	Stdev.	%RSD	Correlation Coefficient
TCMX	5336	5219	5339	4823	4795	4918	5072	1.9717E-04	233	4.6	0.9951
alpha-BHC	8223	8202	8330	8393	8093	8108	8225	1.2158E-04	109	1.3	0.9975
Lindane	7593	7274	7583	7199	6988	7245	7314	1.3673E-04	214	2.9	0.9995
Heptachlor	7563	7557	7689	7367	7151	7497	7471	1.3386E-04	172	2.3	0.9992
Aldrin	7724	7601	7580	7047	6892	7120	7327	1.3648E-04	318	4.3	0.9995
B-BHC	2729	2669	2705	2584	2474	2542	2617	3.8212E-04	91	3.5	0.9996
D-BHC	5668	5903	6236	5958	5903	6229	5983	1.6714E-04	199	3.3	0.9990
Heptachlor Epoxide	5494	5582	5822	5539	5444	5591	5579	1.7925E-04	120	2.2	0.9997
Endosulfan-I	4857	5054	5551	4976	4798	4799	5006	1.9977E-04	261	5.2	0.9965
gamma-Chlordane	6509	6217	6293	6132	6067	6335	6259	1.5977E-04	144	2.3	0.9993
alpha-Chlordane	5733	5825	6145	5784	5648	5772	5818	1.7189E-04	156	2.7	0.9997
4,4'-DDE	5850	5652	5849	5478	5400	5505	5622	1.7787E-04	177	3.2	0.9998
Dieldrin	5340	5091	5202	4912	4923	4988	5076	1.9700E-04	155	3.0	0.9999
Endrin	4141	4283	4212	4160	4001	4241	4173	2.3963E-04	90	2.2	0.9989
4,4'-DDD	3303	3618	3770	3640	3609	3784	3621	2.7619E-04	158	4.4	0.9992
Endosulfan-II	4049	4305	4345	4099	4037	4211	4174	2.3956E-04	121	2.9	0.9951
4,4'-DDT	4077	4032	4266	3786	3646	3515	3887	2.5727E-04	260	6.7	0.9968
Endrin Aldehyde	1896	2345	2501	2812	2866	3111	2588	3.8635E-04	397	15.3	0.9950
Methox/Endo Sulfate	2396	2292	2357	2300	2223	2192	2293	4.3606E-04	71	3.1	0.9958
Endrin Ketone	4200	4406	4463	4245	4281	4409	4334	2.3075E-04	97	2.2	0.9996
Decachlorobiphenyl	4171	3887	3806	3583	3491	3637	3762	2.6578E-04	226	6.0	0.9993

Sample Concentration = (Linear Regression Value) x (Analyte Response)

Pesticide %RSD

Date Analyzed: 7-Nov-97
Instrument: 3400 Dual Column
Analytical Column: DB-17

COMPOUND	A RF	B RF	C RF	D RF	E RF	F RF	Average RF	Average RF	Stdev.	%RSD	Correlation Coefficient
TCMX	6741	6408	6505	6306	6334	6850	6524	1.5328E-04	204	3.1	0.9965
alpha-BHC	8685	9300	9571	9572	9617	10079	9471	1.0559E-04	420	4.4	0.9992
Lindane	8062	8488	8705	8387	8526	9152	8553	1.1691E-04	330	3.9	0.9981
beta-BHC	4003	3264	3389	3155	3087	3214	3352	2.9833E-04	306	9.1	0.9993
Heptachlor	8947	9048	8400	8097	8039	8508	8507	1.1756E-04	384	4.5	0.9988
D-BHC	6469	7139	7239	6980	7117	7737	7113	1.4058E-04	374	5.3	0.9973
Aldrin	9375	8825	8718	8316	8340	8808	8730	1.1454E-04	355	4.1	0.9988
Heptachlor Epoxide	7464	6710	6692	6288	6294	6574	6670	1.4992E-04	393	5.9	0.9992
gamma-Chlordane	6570	7555	7430	6935	6791	7064	7057	1.4169E-04	344	4.9	0.9993
alpha-Chlordane	6475	6966	7036	6524	6414	6705	6687	1.4955E-04	240	3.6	0.9992
Endosulfan-I	4978	5815	6049	5881	5959	6239	5820	1.7181E-04	400	6.9	0.9992
4,4'-DDE	6594	6096	6295	6070	6227	6904	6364	1.5713E-04	296	4.7	0.9960
Dieldrin	5178	5416	5557	5388	5565	6150	5542	1.8043E-04	301	5.4	0.9961
Endrin	4297	4467	4548	4490	4536	4949	4548	2.1989E-04	197	4.3	0.9973
4,4'-DDD	5824	4064	4299	4093	4221	4598	4516	2.2142E-04	610	13.5	0.9970
Endosulfan-II	4262	4288	4384	4270	4402	4775	4397	2.2744E-04	178	4.0	0.9974
4,4'-DDT	4871	4535	4726	4575	4731	5190	4771	2.0958E-04	217	4.6	0.9966
Endrin Aldehyde	2995	3168	3337	3202	3248	3536	3248	3.0792E-04	165	5.1	0.9973
Endosulfan Sulfate	3687	3725	3862	3793	3881	4185	3856	2.5936E-04	162	4.2	0.9978
Methoxychlor	1842	1924	1979	1941	2072	2130	1981	5.0470E-04	96	4.8	0.9992
Endrin Ketone	5159	4808	4985	4810	4981	5471	5036	1.9858E-04	228	4.5	0.9965
Decachlorobiphenyl	5437	4708	4747	4347	4194	4412	4641	2.1549E-04	406	8.7	0.9989

Sample Concentration = (Linear Regression Value) x (Analyte Response)

CONTINUING CALIBRATION DATA

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11209713
Date Analyzed: 11/21/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	48.5	3.0%	OK
alpha-BHC	25	24.9	0.3%	OK
Lindane	25	24.7	1.2%	OK
Heptachlor	25	23.8	5.0%	OK
Aldrin	25	24.3	2.7%	OK
B-BHC	25	25.9	3.7%	OK
D-BHC	25	26.2	4.8%	OK
Heptachlor Epoxide	25	25.7	2.6%	OK
Endosulfan-I	25	26.5	6.2%	OK
gamma-Chlordane	25	24.6	1.5%	OK
alpha-Chlordane	25	25.0	0.0%	OK
4,4'-DDE	50	49.9	0.2%	OK
Dieldrin	50	50.7	1.4%	OK
Endrin	50	48.6	2.9%	OK
4,4'-DDD	50	49.9	0.2%	OK
Endosulfan-II	50	50.6	1.2%	OK
4,4'-DDT	50	50.9	1.8%	OK
Endrin Aldehyde	50	45.6	8.7%	OK
Methoxychlor	250	266.4	6.6%	OK
Endosulfan Sulfate	50	46.5	7.0%	OK
Endrin Ketone	50	50.5	0.9%	OK
Decachlorobiphenyl	100	98.9	1.1%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11209714
Date Analyzed: 11/21/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	21.2	6.1%	OK
2,4-DDD	20	21.8	9.0%	OK
2,4-DDT	20	21.0	5.0%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11209726
Date Analyzed: 11/21/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	51.5	3.1%	OK
alpha-BHC	25	26.0	3.9%	OK
Lindane	25	26.8	7.1%	OK
Heptachlor	25	25.5	1.9%	OK
Aldrin	25	25.7	2.9%	OK
B-BHC	25	27.3	9.3%	OK
D-BHC	25	27.6	10.5%	OK
Heptachlor Epoxide	25	27.2	9.0%	OK
Endosulfan-I	25	28.7	14.6%	OK
gamma-Chlordane	25	25.4	1.8%	OK
alpha-Chlordane	25	26.6	6.5%	OK
4,4'-DDE	50	53.4	6.8%	OK
Dieldrin	50	54.1	8.1%	OK
Endrin	50	51.1	2.2%	OK
4,4'-DDD	50	52.7	5.4%	OK
Endosulfan-II	50	54.1	8.1%	OK
4,4'-DDT	50	55.0	10.0%	OK
Endrin Aldehyde	50	47.7	4.7%	OK
Methoxychlor	250	285.5	14.2%	OK
Endosulfan Sulfate	50	49.0	2.0%	OK
Endrin Ketone	50	53.7	7.3%	OK
Decachlorobiphenyl	100	106.8	6.8%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11209727
Date Analyzed: 11/21/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	20.8	4.1%	OK
2,4-DDD	20	21.7	8.7%	OK
2,4-DDT	20	21.1	5.3%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11209738
Date Analyzed: 11/21/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	51.9	3.9%	OK
alpha-BHC	25	26.6	6.3%	OK
Lindane	25	26.5	6.1%	OK
Heptachlor	25	25.3	1.1%	OK
Aldrin	25	25.8	3.4%	OK
B-BHC	25	27.6	10.5%	OK
D-BHC	25	28.3	13.0%	OK
Heptachlor Epoxide	25	27.7	11.0%	OK
Endosulfan-I	25	28.6	14.4%	OK
gamma-Chlordane	25	25.8	3.3%	OK
alpha-Chlordane	25	27.3	9.1%	OK
4,4'-DDE	50	53.4	6.7%	OK
Dieldrin	50	53.6	7.2%	OK
Endrin	50	53.6	7.1%	OK
4,4'-DDD	50	53.4	6.7%	OK
Endosulfan-II	50	54.7	9.4%	OK
4,4'-DDT	50	52.2	4.5%	OK
Endrin Aldehyde	50	47.2	5.7%	OK
Methoxychlor	250	283.0	13.2%	OK
Endosulfan Sulfate	50	50.2	0.3%	OK
Endrin Ketone	50	53.3	6.6%	OK
Decachlorobiphenyl	100	105.5	5.5%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 11209739
Date Analyzed: 11/21/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	21.8	9.2%	OK
2,4-DDD	20	23.0	14.9%	OK
2,4-DDT	20	22.9	14.4%	OK

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11209712
Date Analyzed: 11/21/97

DB-1701

Compound	Response (Area)
4,4'-DDE	3625
4,4'-DDD	0
4,4'-DDT	441517
Endrin Aldehyde	4495
Endrin Ketone	7568
Endrin	220570
DDT % Breakdown	0.8%
Endrin % Breakdown	5.2%
Total % Breakdown	6.0%

DB-17

Compound	Response (Area)
4,4'-DDE	2757
4,4'-DDD	9372
4,4'-DDT	520759
Endrin Aldehyde	7819
Endrin Ketone	5112
Endrin	241245
DDT % Breakdown	2.3%
Endrin % Breakdown	5.1%
Total % Breakdown	7.4%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11209725
Date Analyzed: 11/21/97

DB-1701

Compound	Response (Area)
4,4'-DDE	4889
4,4'-DDD	0
4,4'-DDT	486775
Endrin Aldehyde	10118
Endrin Ketone	12000
Endrin	236758
DDT % Breakdown	1.0%
Endrin % Breakdown	8.5%
Total % Breakdown	9.5%

DB-17

Compound	Response (Area)
4,4'-DDE	5223
4,4'-DDD	4357
4,4'-DDT	545296
Endrin Aldehyde	13115
Endrin Ketone	10534
Endrin	251298
DDT % Breakdown	1.7%
Endrin % Breakdown	8.6%
Total % Breakdown	10.3%

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 11209737
Date Analyzed: 11/21/97

DB-1701

Compound	Response (Area)
4,4'-DDE	26757
4,4'-DDD	0
4,4'-DDT	532540
Endrin Aldehyde	6264
Endrin Ketone	8536
Endrin	257816
DDT % Breakdown	4.8%
Endrin % Breakdown	5.4%
Total % Breakdown	10.2%

DB-17

Compound	Response (Area)
4,4'-DDE	45942
4,4'-DDD	10751
4,4'-DDT	613500
Endrin Aldehyde	8780
Endrin Ketone	7171
Endrin	276842
DDT % Breakdown	8.5%
Endrin % Breakdown	5.4%
Total % Breakdown	13.9%

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. East
Tacoma, Washington 98424
(253) 922-2310 • FAX (253) 922-5047

68872 7/2

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS COC #16

CLIENT: GARRY STRUTHERS ASSOC.
PROJECT NAME: WTFREC
CONTACT: MIKE WEBB
PHONE NO: (425) 519-0300 X217

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	OC Pesticides
1	FC2-4B3N1771	11/17/97	12:16	SOIL	2														✓
✓	FC2-9A2.5N1772	11/17/97	12:20	SOIL	2														ON HOLD
2	FC2-9B2.5N1773	11/17/97	12:25	SOIL	2														✓
3	FC2-9B2.5N1775	11/17/97	12:45	SOIL	2														✓
✓	FC2-9C2.5N1776	11/17/97	12:30	SOIL	2														ON HOLD
	~~FC2-1BW~~																		MW
✓	FC2SW-1BWN1779	11/17/97	13:15	SOIL	2														ON HOLD
4	FC2SW-1AWX1770	11/17/97	13:05	SOIL	2														✓
5	FC3SW-7ANN1711	11/17/97	16:35	SOIL	2														✓
6	FC3SW-8ANN1712	11/17/97	16:25	SOIL	2														✓
✓	FC3SW-8ANW1713	11/17/97	16:45	SOIL	1														ON HOLD
	TEMP. BLANK																		
	SAMPLED BY MIKE WEBB & DENNIS O'NEIL (KLEINFELDER) AND KIM CONVERSE (USACE)																		

ANALYSIS REQUESTED:

	Signature	Printed Name	Firm	Time / Date
Relinquished By	HAND DELIVERED Michael Webb	Michael Webb	OSA Inc.	11/19/97 9:35
Received By	Duc Nguyen	Duc Nguyen	SAS	11/19/97 9.35
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:

These samples will be disposed of 45 days after receipt.
Check this box to have samples returned ☐.

ARMY CORPS OF ENGINEERS PROJECT - ANALYZE AS PER QAPP
LAB CONTACT - KATIE DOWNIE

SAMPLING LOG - SEE DCQCR 11/17/97 FOR COC HISTORY.
72 HR TAT

(Hold samples in H1/53

MEMORANDUM

DATE: February 4, 1998

TO: Fred Luck, Project Manager

FROM: Michael Webb, Chemical Data Quality Manager MW

SUBJECT: Contract DACA67-95-G-0001-38
Wenatchee Tree Fruit Research Center Remediation
Summary Chemical Data Quality Control Report:
Final Confirmation Sampling December 10, 1997
Sound Analytical Report #69345

Purpose: This assessment summarizes data quality factors that affect usability and provides guidance in the use of these data for the intended purpose.

Analytical Methods:

- Method 8081 for Organochlorine Pesticides.

Data Use Intended:

- Final Confirmation Samples: To establish that the remediation lowered the soil concentrations for the contaminants of concern to below the clean-up standards.

Summary of Qualified and Rejected Data/Definitions of Qualifiers:

- No soil data were rejected due to quality control problems. However, the data for the organochlorine analytes detected have been assigned a "J" qualifier indicating to use with caution due to variability in the spiked sample replicates. Consider the results as being potentially biased either high or low but within 50% of the actual value present. The data demonstrates characteristics of an inhomogeneous sample.
- Some results were below the quantitation limit and were flagged by the laboratory with "J" qualifiers. "C" flags were used in the organochlorine results to indicate that second-column confirmation had confirmed the results. 4,4'-DDD and 2,4'-DDT cannot be confirmed when both are present, as is the case with these analytes. "U" qualifiers were not used for undetected results, rather "ND" was placed in the quantitative value data field.

Summary of Method 8081 Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled December 10, 1997: FC4-SW8AD101.
- Sample Handling, Holding Time and Chain of Custody - **Acceptable.**
- Performance Evaluation (PE) Results - **Not evaluated in this delivery group.**
- Analytical Sensitivity - **Acceptable.**
- Accuracy -

  Calibration (Initial and Continuing) - **Acceptable.**
  DDT and Endrin Breakdown Standards - **Acceptable.**

Surrogates - **Acceptable except for matrix spike sample FC4-SW8AD101-ms.** The recovery for one of two surrogates for this sample is outside of the project targets but within the laboratory statistical limits as required by the SW-846 methodology. The unspiked project sample result also showed a surrogate recovery at the lower limit of the project target range. The relatively low surrogate recovery for these samples, in combination with the inhomogeneity discussed under the topic of matrix spikes, resulted in qualification of the results. This surrogate comes very early in the chromatogram and is not representative of all of the pesticide analytes. The variability in the matrix spike results discussed below is likely a more significant factor to the data quality than the surrogate results. A discussion by the laboratory regarding the variable results is provided as an attachment to this report.

Matrix Spikes - **Not Acceptable.** The occurrence of high recovery for dieldrin has been assigned to a case of sample inhomogeneity. Some of the results for other compounds are affected by high concentrations of the spiked compounds in the original sample, but the variability between the replicates noted for dieldrin is also evident in the spiked sample concentrations. One of the matrix spike replicates shows low recovery for one surrogate compound, explaining some of the data variability. However, the primary indication is inhomogeneity rather than matrix interference. The laboratory control sample results indicate that the method is in control.

Laboratory Control Samples (LCS) - **Acceptable.**

Laboratory Blanks - **Acceptable.**

Field Blanks - **Not evaluated in this delivery group.**

- Laboratory Precision - **Not Acceptable.** Although the matrix spike replicate results are affected by high concentrations of target analytes in the original sample, inhomogeneity is the primary indication for the spurious spike replicate concentrations. All of the spiked analytes above detection in the project sample except 4,4'-DDD have been qualified with a "J" flag indicating to use with caution.
- Field Precision - **Not evaluated in this delivery group.**

Summary of Method 8141 (Modified) Laboratory and Field Sampling Quality Control:

- Samples Covered - Sampled December 10, 1997: FC4-FR2BD103.
- Sample Handling, Holding Time and Chain of Custody - **Acceptable.**
- Performance Evaluation (PE) Results - **Not evaluated in this delivery group.**
- Analytical Sensitivity - **Acceptable.**
- Accuracy -

  Calibration, Tune, and Internal Standard Response- **Acceptable.**

  Surrogates - **Acceptable.**

  Matrix Spikes - **Acceptable.**

  Laboratory Control Samples (LCS) - **Acceptable.**

  Laboratory Blanks - **Acceptable.**

  Field Blanks - **Not evaluated in this delivery group.**

- Laboratory Precision - **Acceptable.**
- Field Precision - **Not evaluated in this delivery group.**

Summary of Data Comparability, Representativeness, and Completeness

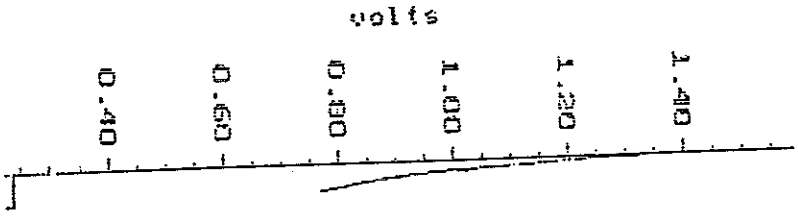
- **Field Sampling Issues** - No problems were encountered.
- **Data Completeness** - The data completeness was 100% for this phase of work.

Overall Conclusions

These data are acceptable for use for the intended purposes. The QC results meet the accuracy, precision, and completeness DQOs for the project except as discussed. Sample inhomogeneity is evident in the QC results for the organochlorine pesticides.

Attachment

Sample: 69345-1 Channel: ECD DB-1701 Filename: 12149735
Acquired: 15-DEC-97 10:47 Method: C:\MAX\DATA1\9712148 Operator: JDW



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e-mail: SoundL@aol.com

FAX TRANSMITTAL

Contact, Company, and Address:
Mike Webb, Project Chemist
Garry Struthers Associates, Inc.
3150 Richards Road, Ste. 100
Bellevue, WA 98005-4446

Date: February 6, 1998

Phone Number: (425) 519-0300 x217

Fax Number: (425) 519-0309

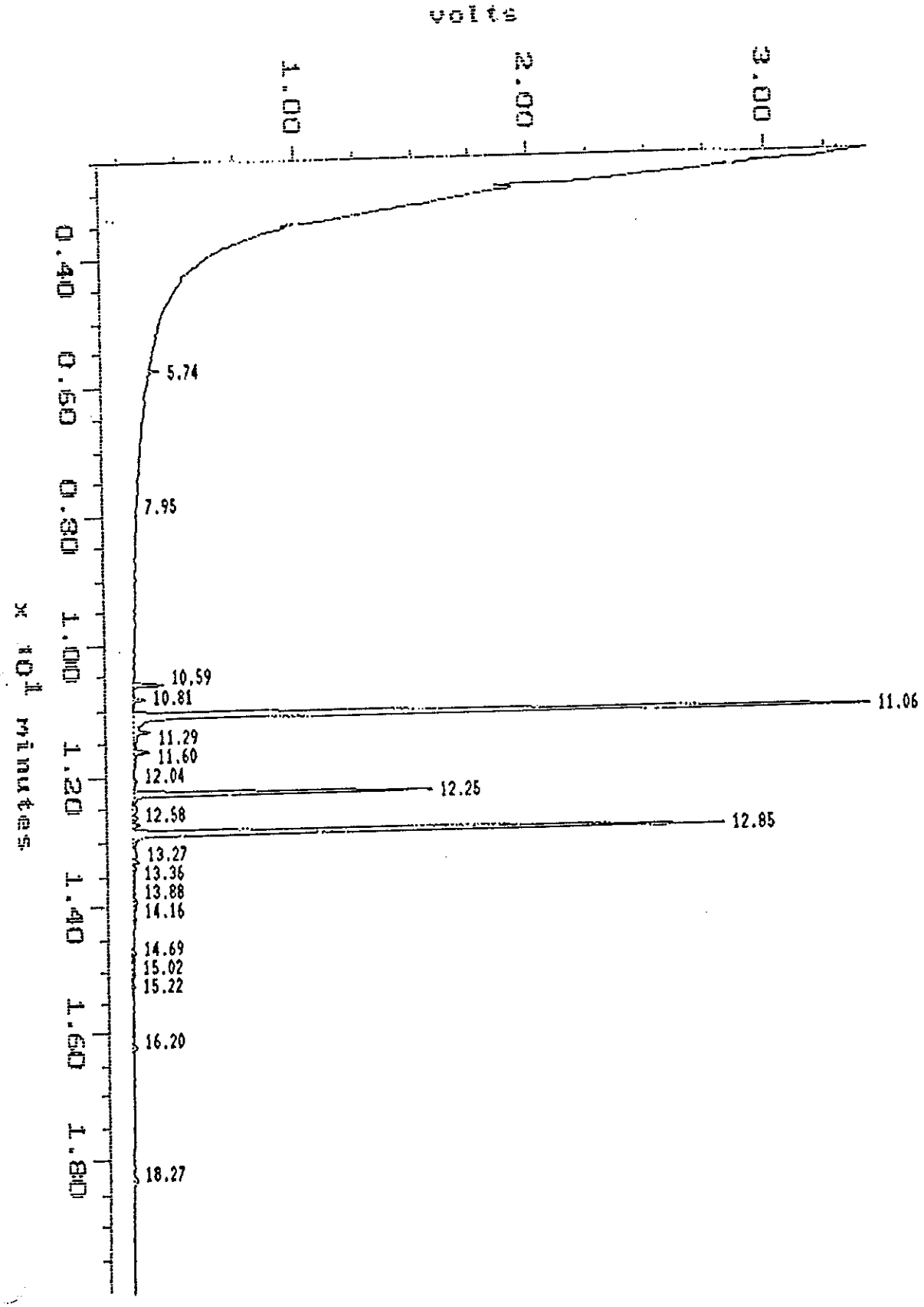
Pages sent by fax: 10

Hard copy to follow: No

From: Katie Downie

Message:
Mike--we don't have a ready explanation for the variable results between the matrix spike and matrix spike duplicate for 69345-1. There are probably a combination of factors, including the normal variation in subsampling a soil sample, and the need for the secondary dilution to bring some compounds into the calibrated range. Here is a copy of the chromatogram and quant report for the OCP sample that had low but acceptable recovery for TCMX, as you requested.

Sample: 69345-1 Channel: ECD DB-17 Filename: 12149735
Acquired: 15-DEC-97 10:47 Method: C:\MAX\DATA1\9712148 Operator: JDW



MAXIMA 820 CUSTOM REPORT

Printed: 15-DEC-1997 13:57:04

SAMPLE: 69345-1
#37 in Method: 8081 PESTICIDES - 11/14 ICAL
Acquired: 15-DEC-1997 10:47
Rate: 3.5 points/sec
Duration: 19.999 minutes
Operator: JDW

Type: UNKN
Instrument: Pesticides
Filename: 12149735
Index: Disk

12.015b

DETECTOR: ECD DB-1701

Relative Time	Retention Time (minutes)	Component Name		ID#	Peak Area	Area Percent (per cent)	Solution Conc (ppb)	Original Conc (ppb)
0.331	5.217	TCMX	1701	1	64288	0.72	13.07	13.07
(0.420)	(6.613)	A-BHC	1701	3	0	0.00	0.0	0.0
(0.460)	(7.250)	LINDANE	1701	5	0	0.00	0.0	0.0
(0.484)	(7.626)	HEPTACHLOR	1701	6	0	0.00	0.0	0.0
(0.512)	(8.068)	ALDRIN	1701	9	0	0.00	0.0	0.0
(0.528)	(8.325)	B-BHC	1701	11	0	0.00	0.0	0.0
(0.556)	(8.762)	D-BHC	1701	13	0	0.00	0.0	0.0
(0.586)	(9.228)	HEPT-EPOX	1701	15	0	0.00	0.0	0.0
(0.619)	(9.752)	ENDO I	1701	16	0	0.00	0.0	0.0
0.615	9.696	G-CHLORDANE	1701	17	113577	1.26	17.45 NC	17.45
0.623	9.825	A-CHLORDANE	1701	18	4397	0.05	0.73 BD	0.73
0.631	9.948	DDE	1701	20	5254270	58.48	911.91!! F	911.91!!
0.654	10.304	DIELDRIN	1701	22	138288	1.54	24.82	24.82
0.680	10.713	ENDRIN	1701	25	15866	0.18	3.22 RT	3.22
0.724	11.402	DDD	1701	28	152249	1.69	40.23	40.23
0.737	11.611	ENDO II	1701	29	20655	0.23	4.39	4.39
0.745	11.744	DDT	1701	30	3060865	34.07	808.30!! F	808.30!!
0.784	12.356	END ALD	1701	34	12490	0.14	4.39 RT	4.39
0.821	12.941	METHOXY	1701	36	45803	0.51	21.47 RT	21.47
0.831	13.093	ENDOSULFTE	1701	37	20063	0.22	~~Invalid~~	Invalid
0.867	13.663	END KETONE	1701	40	20637	0.23	~~5.92~~	5.92
1.000	15.757	DCB	1701	43	61549	0.69	16.06	16.06
TOTAL					8984997		1871.95!!	1871.95!!

!! Result calculation based on peak response more than 10% outside of calibration range.

DETECTOR: ECD DB-17

Relative Time	Retention Time (minutes)	Component Name	ID#	Peak Area	Area Percent (per cent)	Solution Conc (ppb)	Original Conc (ppb)

0.314	5.744	TCMX	17	2	96488	0.40	14.77	14.77
(0.382)	(6.972)	A-BHC	17	4	0	0.00	0.0	0.0
(0.420)	(7.670)	LINDANE	17	7	0	0.00	0.0	0.0
(0.425)	(7.768)	B-BHC	17	8	0	0.00	0.0	0.0
(0.451)	(8.235)	HEPTACHLOR	17	10	0	0.00	0.0	0.0
(0.460)	(8.409)	D-BHC	17	12	0	0.00	0.0	0.0
(0.486)	(8.878)	ALDRIN	17	14	0	0.00	0.0	0.0
(0.548)	(10.013)	HEPT-EPOX	17	19	0	0.00	0.0	0.0
(0.565)	(10.325)	G-CHLORDNE	17	21	0	0.00	0.0	0.0
0.580	10.594	A-CHLORDNE	17	23	309806	1.29	43.01	43.01
(0.586)	(10.711)	ENDO I	17	24	0	0.00	0.0	0.0
0.605	11.060	DDE	17	26	12209660	51.02	1632.11!!	1632.11!!
0.618	11.288	DIELDRIN	17	27	247638	1.03	35.09	35.09
0.659	12.043	ENDRIN	17	31	48338	0.20	7.94	7.94
0.671	12.247	DDD	17	32	3314848	13.85	689.41!!	689.41!!
0.681	12.447	ENDO II	17	33	60312	0.25	10.99	10.99
0.703	12.846	DDT	17	35	7452642	31.14	1534.85!!	1534.85!!
0.721	13.164	END ALD	17	38	40188	0.17	12.44	12.44
0.731	13.359	ENDOSULFTE	17	39	19564	0.08	4.62	4.62
0.804	14.689	METHOXY	17	41	33862	0.14	14.53	14.53
0.822	15.016	END KETONE	17	42	25729	0.11	5.09	5.09
1.000	18.265	DCB	17	44	72488	0.30	16.04	16.04
TOTAL					23931564		4020.90!!	4020.90!!

Result calculation based on peak response more than 10% outside of calibration range.

MAXIMA 820 CUSTOM REPORT

Printed: 15-DEC-1997 15:51:16

SAMPLE: 68345-1
#10 in Method: SEDIMENT PESTICIDES-12/14 ICAL
Acquired: 15-DEC-1997 10:47
Rate: 3.5 points/sec
Duration: 19.999 minutes
Operator: JDW

Type: UNKN
Instrument: Pesticides
Filename: 12149735
Index: Disk

DETECTOR: ECD DB-1701

Relative Time	Retention Time (minutes)	Component Name		ID#	Peak Area	Area Percent (per cent)	Solution Conc (ppb)	Original Conc (ppb)
0.331	5.217	TCMX	1701	1	64288	0.56	12.58	12.58
0.594	9.359	2,4'-DDE	1701	3	272657	2.37	72.37	72.37
0.615	9.696				113577	0.99		
0.623	9.825				4397	0.04		
0.631	9.948				5254270	45.63		
0.654	10.304				138288	1.20		
0.667	10.513	2,4'-DDD	1701	4	158332	1.38	51.20	51.20
0.680	10.713				15866	0.14		
0.687	10.827	2,4'-DDT	1701	6	1547517	13.44	422.88!! E	422.88!!
0.692	10.903				67350	0.58		
0.696	10.969				14377	0.12		
0.713	11.235				16531	0.14		
0.718	11.316				4402	0.04		
0.724	11.402				152249	1.32		
0.733	11.549				42817	0.37		
0.737	11.611				20655	0.18		
0.745	11.744				3060865	26.58		
0.760	11.976				15793	0.14		
0.767	12.086				86149	0.75		
0.775	12.214				10008	0.09		
0.780	12.285				14865	0.13		
0.784	12.356				12490	0.11		
0.789	12.432				9395	0.08		
0.810	12.770				14080	0.12		
0.821	12.941				45803	0.40		
0.831	13.093				20063	0.17		
0.839	13.221				34497	0.30		
0.852	13.430				20653	0.18		
0.856	13.492				18521	0.16		
0.867	13.663				20637	0.18		
0.896	14.114				100682	0.87		
0.924	14.556				71950	0.62		
0.949	14.955				8454	0.07		
1.000	15.757	DCB	1701	9	61549	0.53	14.82	14.82

TOTAL	11514026	573.85!!	573.85!!

!! Result calculation based on peak response more than 10% outside of calibration range.

DETECTOR: ECD DB-17

Relative Time	Retention Time (minutes)	Component Name		ID#	Peak Area	Area Percent (per cent)	Solution Conc (ppb)	Original Conc (ppb)
0.314	5.744	TCMX	17	2	96488	0.39	13.83	13.83
0.435	7.953				8353	0.03		
0.580	10.594	2,4'-DDE	17	5	309806	1.25	67.33	67.33
0.592	10.808				121020	0.49		
0.605	11.060				12209660	49.38		
0.618	11.288				247638	1.00		
0.625	11.411				11292	0.05		
0.635	11.596	2,4'-DDD	17	7	193758	0.78	52.22	52.22
0.659	12.043				48338	0.20		
0.671	12.247	2,4'-DDT	17	8	3314848	13.41	766.44!!	766.44!!
0.681	12.447				60312	0.24		
0.689	12.584				43400	0.18		
0.696	12.713				76544	0.31		
0.703	12.846				7452642	30.14		
0.721	13.164				40188	0.16		
0.726	13.268				60491	0.24		
0.731	13.359				19564	0.08		
0.742	13.549				9589	0.04		
0.752	13.743				21973	0.09		
0.760	13.881				75478	0.31		
0.765	13.971				36829	0.15		
0.775	14.161				33929	0.14		
0.804	14.689				33862	0.14		
0.810	14.798				15879	0.06		
0.822	15.016				25729	0.10		
0.833	15.216				20778	0.08		
0.875	15.981				11818	0.05		
0.887	16.199				51461	0.21		
1.000	18.265	DCB	17	10	72488	0.29	14.67	14.67
TOTAL					24724155		914.49!!	914.49!!

!! Result calculation based on peak response more than 10% outside of calibration range.

MAXIMA 820 CUSTOM REPORT

Printed: 6-JAN-1998 15:09:28

SAMPLE: 69345-1

#4 in Method: 8080 PESTICIDES - TOXAPHENE
Acquired: 15-DEC-1997 10:[illegible]
Rate: 3.5 points/sec
Duration: 19.999 minutes
Operator: JDW

use-17

Type: UNKN
Instrument: Pesticides
Filename: 12149735
Index: Disk

DETECTOR: ECD 08-1701

Relative Time	Retention Time (minutes)	Component Name		IDs	Peak Area	Area Percent (per cent)	Solution Conc (ppb)	Original Conc (ppb)
0.331	5.217				64288	0.56		
0.594	9.359				272657	2.37		
0.615	9.696				113577	0.99		
0.623	9.825				4397	0.04		
0.631	9.948				5254270	45.63		
0.654	10.304				138288	1.20		
0.667	10.513	TOXAPH-A	1701	3	158332	1.38	1012.15!!	1012.15!!
0.680	10.713				15866	0.14		
0.687	10.827				1547517	13.44		
0.692	10.903				67350	0.58		
0.696	10.969				14377	0.12		
0.713	11.235				16531	0.14		
0.718	11.316				4402	0.04		
0.724	11.402				152249	1.32		
0.733	11.549	TOXAPH-B	1701	4	42817	0.37	235.95	235.95
0.737	11.611	TOXAPH-C	1701	5	20655	0.18	117.94	117.94
0.745	11.744				3060865	26.58		
0.760	11.976				15793	0.14		
0.767	12.086	TOXPAH-D	1701	7	86149	0.75	512.08!	512.08!
0.775	12.214				10008	0.09		
0.780	12.285				14665	0.13		
0.784	12.356				12490	0.11		
0.789	12.432				9395	0.08		
0.810	12.770				14080	0.12		
0.821	12.941	TOXAPH-E	1701	8	45803	0.40	287.88	287.88
0.831	13.093				20063	0.17		
0.839	13.221				34497	0.30		
0.852	13.430				20653	0.18		
0.856	13.492				18521	0.16		
0.867	13.663				20637	0.18		
0.896	14.114				100682	0.87		
0.924	14.556				71950	0.62		
0.949	14.955				8454	0.07		
1.000	15.757				61549	0.53		

TOTAL	11514026	2165.99!!	2165.99!!

!! Result calculation based on peak response more than 10% outside of calibration range.
! Result calculation based on peak response ratio outside of calibration range.

GROUP SUMMARY: ECD DB-1701

Relative Time	Group Center (minutes)	Group Name	ID#	Peak Area	Area Percent (per cent)	Solution Conc (ppb)	Original Conc (ppb)
(0.702)	13.563	TOXTIME TOT1701	15	11207104	96.94	5608.48!!	5608.48!!
		TOX-TOTAL 1701	18	353755	3.06	420.95	420.95
TOTAL				11560859		6029.42!!	6029.42!!

!! Result calculation based on peak response more than 10% outside of calibration range.

DETECTOR: ECD DB-17

Relative Time	Retention Time (minutes)	Component Name		ID#	Peak Area	Area Percent (per cent)	Solution Conc (ppb)	Original Conc (ppb)
0.314	5.744	TCMX	17	2	96488	0.39	509.17!!	509.17!!
0.435	7.953				8353	0.03		
0.580	10.594				309806	1.25		
0.592	10.808				121020	0.49		
0.605	11.060				12209660	49.38		
0.618	11.288				247638	1.00		
0.625	11.411				11292	0.05		
0.635	11.596	TOXAPH-A	17	6	193758	0.78	1769.49!!	1769.49!!
0.659	12.043				48338	0.20		
0.671	12.247				3314848	13.41		
0.681	12.447				60312	0.24		
0.689	12.584				43400	0.18		
0.696	12.713				76544	0.31		
0.703	12.846				7452642	30.14		
0.721	13.164	TOXAPH-B	17	9	40188	0.16	170.85	170.85
0.726	13.268	TOXAPH-C	17	10	60491	0.24	185.49	185.49
0.731	13.359				19564	0.08		
0.742	13.549				9589	0.04		
0.752	13.743	TOXAPH-D	17	11	21973	0.09	194.80	194.80
0.760	13.881				75478	0.31		
0.765	13.971				36829	0.15		
0.775	14.161				33929	0.14		
0.804	14.689				33862	0.14		
0.810	14.798				15679	0.06		
0.822	15.016	TOXAPH-E	17	12	25729	0.10	164.42	164.42

0.833	15.216				20778	0.08		
0.875	15.981				11818	0.05		
0.887	16.199				51461	0.21		
1.000	18.265	DCB	17	14	72488	0.29	Invalid	Invalid
TOTAL					24724155		2994.21!!	2994.21!!

!! Result calculation based on peak response more than 10% outside of calibration range.

GROUP SUMMARY: ECD DB-17

Relative Time	Group Center (minutes)	Group Name		ID#	Peak Area	Area Percent (per cent)	Solution Conc (ppb)	Original Conc (ppb)
(0.650)	14.375	TOXTIME TOT	17	16	0	0.00	2896.67!!	2896.67!!
		TOX-TOTAL	17	17	342140	1.38	363.93	363.93
TOTAL					24804907		3260.60!!	3260.60!!

!! Result calculation based on peak response more than 10% outside of calibration range.

Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy East • Tacoma, WA 98424
(253) 922-2310 • FAX (253) 922-5047
e-mail: SoundL@aol.com

TRANSMITTAL MEMORANDUM

DATE: January 14, 1998

TO: Mike Webb
Garry Struthers Associates, Inc.
3150 Richards Road, Ste. 100
Bellevue, WA 98005-4446

PROJECT: Wenatchee Test Plot Soils, USACOE - Revised

REPORT NUMBER: 69345

Enclosed are the test results for two samples received at Sound Analytical Services on December 11, 1997.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chain-of-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Lila Transue

Lila Transue
Project Manager

Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy East • Tacoma, WA 98424
(253) 922-2310 • FAX (253) 922-5047
e-mail: SoundL@aol.com

ANALYTICAL NARRATIVE

Client: Garry Struthers Associates, Inc.

Date: January 15, 1998

Project: WTFREC

Lab No.: 69345

Delivered By: Courier

Condition of samples upon receipt: Samples were received in good condition. Chain of custody was in order.

Sample Identification:

Lab. No.	Client ID	Date Sampled	Matrix	Description
69345-1	FC4-SW8AD101	12-10-97	Soil	Dry, brown, sand
69345-2	FC4-FR2BD103	12-10-97	Soil	Dry, brown, silty sand

SAMPLE EXTRACTION AND ANALYSIS

ORGANOPHOSPHORUS PESTICIDES

Sample 69345-2 was analyzed for organophosphorus pesticides in accordance with EPA SW-846 Method 8141. The sample was extracted in accordance with EPA SW-846 Method 3540 on 12-12-97 and analyzed on 12-12-97.

All quality control parameters were within acceptance limits.

ORGANOCHLORINE PESTICIDES

Sample 69345-1 was analyzed for organochlorine pesticides in accordance with EPA SW-846 Method 8081. The sample was extracted in accordance with EPA SW-846 Method 3540 on 12-11-97 and analyzed on 12-15-97.

Sample 69345-1 required secondary dilution analyses due to the high concentrations of various target analytes.

All detected compounds were confirmed as present using a second dissimilar column. All relative percent difference values between the two analytical columns were less than or equal to 40%, except for 4,4'-DDD, which coelutes with 2,4'-DDT on the confirmation column, as most samples that contained 4,4'-DDD contained significant concentrations of 2,4'-DDT.

ANALYTICAL NARRATIVE

Client: Garry Struthers Associates, Inc. Date: January 15, 1998

Project: WTFREC Lab No.: 69345

ORGANOCHLORINE PESTICIDES, CONT.

The recovery of the surrogate TCMX for the matrix spike was low but within the laboratory control limits. No project-specific control limits were established for this surrogate.

The percent recoveries of 4,4'-DDE, 4,4'-DDT, and 2,4'-DDT in the matrix spike and matrix spike duplicate analysis of sample 69345-1 were outside the quality control limits due to the high levels of 4,4'-DDE, 4,4'-DDT and 2,4'-DDT in the original sample. The relative percent differences between the matrix spike and matrix spike duplicate for these compounds were also outside the control limits.

The percent recoveries of 2,4'-DDD, 2,4'-DDE and Dieldrin in the matrix spike and matrix spike duplicate analysis of sample 69345-1 were outside the quality control limits. The relative percent differences between the matrix spike and the matrix spike duplicate were also outside the control limits for these three compounds. Matrix interference is indicated by the percent recoveries of these compounds in the blank spike analysis.

All other quality control parameters were within acceptance limits.

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC4-SW8AD101
Lab ID:	69345-01
Date Received:	12/11/97
Date Prepared:	12/11/97
Date Analyzed:	12/15/97
% Solids	90.52
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	High
TCMX	65		65	130
Decachlorobiphenyl	80		65	130

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Aldrin	ND		0.46	0.069	
alpha-BHC	ND		18	0.071	
beta-BHC	ND		18	0.13	
delta-BHC	ND		18	0.072	
gamma-BHC (Lindane)	ND		18	0.16	
Chlordane (technical)	ND		9.2	2.3	
4,4'-DDD		37	18	0.16	C
4,4'-DDE		2300	370	6.6	D C
4,4'-DDT		1100	370	23	D C
2,4'-DDD		47	18	1.4	C
2,4'-DDE		67	18	1.4	C
2,4'-DDT		490	370	28	D C
Dieldrin		23	0.92	0.066	C
Endosulfan I	ND		1.8	0.3	
Endosulfan II		4	1.8	0.15	C
Endosulfan sulfate	ND		1.8	0.22	
Endrin	ND		0.92	0.11	
Endrin aldehyde	ND		18	0.82	
Heptachlor	ND		18	0.094	
Heptachlor epoxide	ND		18	0.15	
Methoxychlor	ND		18	2	
Toxaphene		330	18	40	C

M.W. 2/6/98 OK

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC4-FR2BD103
Lab ID:	69345-02
Date Received:	12/11/97
Date Prepared:	12/12/97
Date Analyzed:	12/12/97
% Solids	89.87
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	114		60	140

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	ND		130	84	
Dimethoate	ND		93	52	
Diazinon	ND		74	73	
Disulfoton	ND		67	44	
Parathion,methyl	ND		83	75	
Malathion	ND		88	63	
Parathion	ND		120	120	
Azinphos,methyl	ND		91	62	
Ethion	ND		87	44	
Paraoxon,methyl	ND		87	44	
Paraoxon,ethyl	ND		87	44	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - OP216
Date Received:	-
Date Prepared:	12/12/97
Date Analyzed:	12/12/97
% Solids	
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	117		60	140

Sample results are on an as received basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	ND	130	81	
Dimethoate	ND	89	50	
Diazinon	ND	71	70	
Disulfoton	ND	64	42	
Parathion,methyl	ND	80	71	
Malathion	ND	85	60	
Parathion	ND	120	110	
Azinphos,methyl	ND	87	59	
Ethion	ND	83	42	
Paraoxon,methyl	ND	83	42	
Paraoxon,ethyl	ND	83	42	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	OP216
Date Prepared:	12/12/97
Date Analyzed:	12/12/97
QC Batch ID:	OP216

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Parameter Name	Blank Result (ug/kg)	Spike Amount (ug/kg)	BS Result (ug/kg)	BS % Rec.	Flag
Dichlorvos	0	420	390	94	
Dimethoate	0	420	400	96	
Diazinon	0	420	410	98	
Disulfoton	0	420	380	90	
Parathion,methyl	0	420	340	81	
Malathion	0	420	410	99	
Parathion	0	420	370	89	
Azinphos,methyl	0	420	390	94	
Ethion	0	420	400	95	
Paraoxon,methyl	0	420	380	92	
Paraoxon,ethyl	0	420	380	91	

SOUND ANALYTICAL SERVICES, INC.

Client Name	0
Client ID:	
Lab ID:	SOP216
Date Received:	-
Date Prepared:	12/12/97
Date Analyzed:	12/12/97
% Solids	
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	93		60	140

Sample results are on an as received basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	390	130	81	
Dimethoate	400	89	50	
Diazinon	410	71	70	
Disulfoton	380	64	42	
Parathion,methyl	340	80	71	
Malathion	410	85	60	
Parathion	370	120	110	
Azinphos,methyl	390	87	59	
Ethion	400	83	42	
Paraoxon,methyl	380	83	42	
Paraoxon,ethyl	380	83	42	

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	FC4-FR2BD103
Lab ID:	69345-02
Date Prepared:	12/12/97
Date Analyzed:	12/12/97
QC Batch ID:	OP216

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Compound Name	Sample Result (ug/kg)	Spike Amount (ug/kg)	MS Result (ug/kg)	MS % Rec.	MSD Result (ug/kg)	MSD % Rec.	RPD	Flag
Dichlorvos	0	439	474	108	472	103	4.7	
Dimethoate	0	439	437	99.6	464	102	2.4	
Diazinon	0	439	411	93.6	431	94.4	0.85	
Disulfoton	0	439	447	102	464	102	0	
Parathion,methyl	0	439	404	92	421	92.2	0.22	
Malathion	0	439	407	92.8	453	99.4	6.9	
Parathion	0	439	442	101	435	95.4	5.7	
Azinphos,methyl	0	439	432	98.4	505	111	12	
Ethion	0	439	430	98	545	119	19	
Paraoxon,methyl	0	439	419	95.6	452	99.2	3.7	
Paraoxon,ethyl	0	439	434	99	447	98	1	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC4-FR2BD103 - ms
Lab ID:	69345S02
Date Received:	12/11/97
Date Prepared:	12/12/97
Date Analyzed:	12/12/97
% Solids	89.87
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	88		60	140

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	470	140	85	
Dimethoate	440	94	52	
Diazinon	410	75	74	
Disulfoton	450	68	44	
Parathion,methyl	400	84	75	
Malathion	410	89	63	
Parathion	440	120	120	
Azinphos,methyl	430	91	62	
Ethion	430	88	44	
Paraoxon,methyl	420	88	44	
Paraoxon,ethyl	430	88	44	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC4-FR2BD103 - msd
Lab ID:	69345D02
Date Received:	12/11/97
Date Prepared:	12/12/97
Date Analyzed:	12/12/97
% Solids	89.97
Dilution Factor	10

Organophosphorus Pesticides by USEPA Method 8141 GC/MS Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Triphenyl Phosphate	96		60	140

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Dichlorvos	470	140	88	
Dimethoate	460	98	54	
Diazinon	430	78	77	
Disulfoton	460	70	46	
Parathion,methyl	420	87	78	
Malathion	450	93	66	
Parathion	440	130	120	
Azinphos,methyl	510	95	65	
Ethion	540	91	46	
Paraoxon,methyl	450	91	46	
Paraoxon,ethyl	450	91	46	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - PE842
Date Received:	-
Date Prepared:	12/11/97
Date Analyzed:	12/15/97
% Solids	
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	High
TCMX	108		65	130
Decachlorobiphenyl	119		65	130

Sample results are on an as received basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Aldrin	ND	0.42	0.062	
alpha-BHC	ND	17	0.064	
beta-BHC	ND	17	0.12	
delta-BHC	ND	17	0.065	
gamma-BHC (Lindane)	ND	17	0.14	
Chlordane (technical)	ND	8.3	2	
4,4'-DDD	ND	17	0.14	
4,4'-DDE	ND	17	0.3	
4,4'-DDT	ND	17	1	
2,4'-DDD	ND	17	1.2	
2,4'-DDE	ND	17	1.2	
2,4'-DDT	ND	17	1.2	
Dieldrin	ND	0.83	0.059	
Endosulfan I	ND	1.7	0.27	
Endosulfan II	ND	1.7	0.14	
Endosulfan sulfate	ND	1.7	0.2	
Endrin	ND	0.83	0.1	
Endrin aldehyde	ND	17	0.74	
Heptachlor	ND	17	0.085	
Heptachlor epoxide	ND	17	0.14	
Methoxychlor	ND	17	1.9	
Toxaphene	ND	17	36	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike/Blank Spike Duplicate Report

Lab ID:	PE842
Date Prepared:	11/12/97
Date Analyzed:	11/15/97
QC Batch ID:	PE842

Organochlorine Pesticides by USEPA Method 8081

Compound Name	Blank Result (ug/kg)	Spike Amount (ug/kg)	BS Result (ug/kg)	BS % Rec.	BSD Result (ug/kg)	BSD % Rec.	RPD	Flag
Aldrin	0	20.8	17.5	83.8	18	86.4	3.1	
gamma-BHC (Lindane)	0	20.8	17.2	82.4	16.7	80.4	2.5	
4,4'-DDD	0	41.7	37	88.8	37.8	90.9	2.3	
4,4'-DDE	0	41.7	40.1	96.4	41.2	99	2.7	
4,4'-DDT	0	41.7	36	86.4	36.6	87.9	1.7	
2,4'-DDD	0	41.7	35.3	84.7	37.5	90.1	6.2	
2,4'-DDE	0	41.7	35.6	85.5	35.7	85.7	0.23	
2,4'-DDT	0	41.7	35.6	85.5	37.9	91	6.2	
Dieldrin	0	41.7	39.1	93.7	39.8	95.8	2.2	
Endrin	0	41.7	36.9	88.7	37.8	90.8	2.3	
Heptachlor	0	20.8	18	86.4	18.1	86.8	0.46	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	
Lab ID:	SPE842
Date Received:	-
Date Prepared:	11/12/97
Date Analyzed:	11/15/97
% Solids	
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	103		65	130
Decachlorobiphenyl	102		65	130

Sample results are on an as received basis.

Analyte	**Result (ug/kg)**	**PQL**	**MDL**	**Flags**
Aldrin	17	0.42	0.062	C
gamma-BHC (Lindane)	17	17	0.14	C
4,4'-DDD	37	17	0.14	C
4,4'-DDE	40	17	0.3	C
4,4'-DDT	36	17	1	C
2,4'-DDD	35	17	1.2	C
2,4'-DDE	36	17	1.2	C
2,4'-DDT	36	17	1.2	C
Dieldrin	39	0.83	0.059	C
Endrin	37	0.83	0.1	C
Heptachlor	18	17	0.085	C

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	
Lab ID:	DPE842
Date Received:	-
Date Prepared:	11/12/97
Date Analyzed:	11/15/97
% Solids	
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
TCMX	94		65	130
Decachlorobiphenyl	110		65	130

Sample results are on an as received basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Aldrin	18	0.42	0.062	C
gamma-BHC (Lindane)	17	17	0.14	C
4,4'-DDD	38	17	0.14	C
4,4'-DDE	41	17	0.3	C
4,4'-DDT	37	17	1	C
2,4'-DDD	38	17	1.2	C
2,4'-DDE	36	17	1.2	C
2,4'-DDT	38	17	1.2	C
Dieldrin	40	0.83	0.059	C
Endrin	38	0.83	0.1	C
Heptachlor	18	17	0.085	C

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	FC4-SW8AD101
Lab ID:	69345-01
Date Prepared:	12/11/97
Date Analyzed:	12/15/97
QC Batch ID:	PE842

Organochlorine Pesticides by USEPA Method 8081

Compound Name	Sample Result (ug/kg)	Spike Amount (ug/kg)	MS Result (ug/kg)	MS % Rec.	MSD Result (ug/kg)	MSD % Rec.	RPD	Flag
Aldrin	0	21.4	14.3	66.8	16.8	73.7	9.8	
gamma-BHC (Lindane)	0	21.4	15.4	71.8	17.9	78.7	9.2	
4,4'-DDD	37	42.8	70.8	79	82.9	101	24	
4,4'-DDE	2300	42.8	2080	0	3730	3200	200	X7a
4,4'-DDT	1100	42.8	1150	142	1810	1590	170	X7a
2,4'-DDD	47	42.8	67.2	47	105	128	93	X7
2,4'-DDE	67	42.8	87.2	48.2	130	139	97	X7
2,4'-DDT	490	42.8	456	0	867	828	200	X7a
Dieldrin	23	42.8	55.6	76.6	121	215	95	X7
Endrin	0	42.8	36.5	85.2	52	114	29	
Heptachlor	0	21.4	15.5	72.3	18.4	80.6	11	

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC4-SW8AD101 - ms
Lab ID:	69345S01
Date Received:	12/11/97
Date Prepared:	12/11/97
Date Analyzed:	12/15/97
% Solids	90.52
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	58	N	65	130
Decachlorobiphenyl	83		65	130

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Aldrin	14	0.43	0.064	C
gamma-BHC (Lindane)	15	17	0.15	J C
4,4'-DDD	71	17	0.15	C
4,4'-DDE	2100	17	0.31	D C
4,4'-DDT	1100	17	1.1	D C
2,4'-DDD	67	17	1.3	C
2,4'-DDE	87	17	1.3	C
2,4'-DDT	460	17	1.3	D C
Dieldrin	56	0.86	0.061	C
Endrin	36	0.86	0.1	C
Heptachlor	15	17	0.087	J C

SOUND ANALYTICAL SERVICES, INC.

Client Name	Garry Struthers Associates, Inc.
Client ID:	FC4-SW8AD101 - msd
Lab ID:	69345D01
Date Received:	12/11/97
Date Prepared:	12/11/97
Date Analyzed:	12/15/97
% Solids	90.52
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 8081

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
TCMX	71		65	130
Decachlorobiphenyl	90		65	130

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MDL	Flags
Aldrin	17	0.46	0.068	C
gamma-BHC (Lindane)	18	18	0.16	J C
4,4'-DDD	83	18	0.15	C
4,4'-DDE	3700	18	0.33	D C
4,4'-DDT	1800	18	1.1	D C
2,4'-DDD	110	18	1.4	C
2,4'-DDE	130	18	1.4	C
2,4'-DDT	870	18	1.4	D C
Dieldrin	120	0.91	0.065	C
Endrin	52	0.91	0.11	C
Heptachlor	18	18	0.093	C

DATA QUALIFIER DEFINITIONS

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE: (253) 922-2310 - FAX: (253) 922-5047

DATA QUALIFIERS AND ABBREVIATIONS

B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).

B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).

C: Additional confirmation performed.

D: The reported result for this analyte is calculated based on a secondary dilution factor.

E: The concentration of this analyte exceeded the instrument calibration range.

J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

MCL: Maximum Contaminant Level

MDL: Method Detection Limit

N: See analytical narrative.

ND: Not Detected

PQL: Practical Quantitation Limit

X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.

X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.

X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.

X4: RPD for duplicates outside advisory QC limits. Sample was re-analyzed with similar results.

X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.

X5: Matrix spike was diluted out during analysis.

X6: Recovery of matrix spike was outside advisory QC limits. Sample was re-analyzed with similar results.

X7: Recovery of matrix spike outside advisory QC limits. Matrix interference is indicated by blank spike recovery data.

X7a: Recovery and/or RPD values for MS/MSD outside advisory QC limits due to high contaminant levels.

X8: Surrogate was diluted out during analysis.

X9: Surrogate recovery outside advisory QC limits due to matrix composition.

CHAIN OF CUSTODY

OUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. East
Tacoma, Washington 9[illegible]
(253) 922-2310 • FAX (253) 922-5047

69345

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS COC #17

CLIENT: GARY STRUTHERS
PROJECT NAME: WTFRC
CONTACT: Fred Luck
PHONE NO: 425-519-0300

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	OC PESTICIDES	DP PESTICIDES	ARCHIVE ON HOLD
-1	FC4-SW8AD101	12/10/97	1500	Soil	2														X		
	FC4-SW7AD102	12/10/97	1510	Soil	2																X
-2	FC4-FR2BD103	12/10/97	1520	Soil	2															X	
	Collected 12/10/97 F. Luck																				

	Signature	Printed Name	Firm	Time / Date
Relinquished By		Fred Luck	GSA, INC	1530 12/10/97
Received By		Robin Larson	GSA INC	1531 12/10/97
RELEASED TO COURIER W/ CUSTODY SEALS Relinquished By		Robin Larson	GSA INC	15:10 12/11/97
Received By	Joe Palmquist	Joe Palmquist	SAS	12:10 12-11-97
Relinquished By	Joe Palmquist	Joe Palmquist	SAS	1:15 12-11-97
Received By	SGiang	Giang	SAS	115 12/11/97

I-20

SPECIAL INSTRUCTIONS/COMMENTS:

These samples will be disposed of 45 days after receipt.
Check this box to have samples returned ☐.

USACE PROJECT - ANALYZE AS PER QAPP. LAB CONTACT: KATIE D.

72-HR. TAT

SAS LAB NO. 6934

PAGE 1 OF _

COOLER RECEIPT FORM

PROJECT: Wenatchee Test Plot Soils) USACE

COOLER RECEIVED ON 12-11-97 AND OPENED ON 12-11-97 BY SGiang

SGiang
(SIGNATURE)

Temperature upon receipt: cooler 6 °C
temp. blank _____ °C

1.	Were custody seals on outside of cooler and intact?	(YES)	NO
	a. If YES, how many and where: 1- each side (back, front).		
	b. Were signature and date correct?	(YES)	NO
2.	Were custody papers taped to lid inside cooler?	YES	(NO)
3.	Were custody papers properly filled out (ink, signed, etc)?	(YES)	NO
4.	Did you sign custody papers in the appropriate place?	(YES)	NO
5.	Did you attach shipper's packing slip to this form? None	YES	(NO)
6.	What kind of packing material was used? _____		
7.	Was sufficient ice used (if appropriate)?	(YES)	NO
8.	Were all bottles sealed in separate plastic bags?	YES	NO
9.	Did all bottles arrive in good condition (unbroken)?	YES	NO
10.	Were all bottle labels complete (no., date, signed, pres, etc)?	YES	NO
11.	Did all bottle labels and tags agree with custody papers?	YES	NO
12.	Were correct bottles used for the test indicated?	YES	NO
13.	If present, were VOA vials checked for absence of air bubbles and noted if found?	YES	NO
14.	Adequate volume of VOA vials received per sample?	YES	NO
15.	Was sufficient amount of sample sent in each bottle?	YES	NO
16.	Were correct preservatives used?	YES	NO

17. Corrective action taken, if necessary:

a. Name of person contacted: _____
b. Date: _____

DATA DELIVERABLES PACKAGE

ORGANOPHOSPHORUS PESTICIDE DATA PACKAGE

INITIAL CALIBRATION DATA

Initial Calibration Report

INSTRUMENT : ITS40
LABORATORY : Sound Analytical Services
OPERATOR : Brent Hepner

12/12/97

HIT ANY KEY TO CONTINUE

						AVE	RSD
Triphenyl Phosphate	0.271	0.271	0.261	0.301	0.246	0.270	7.5%
Dichlorvos	0.391	0.536	0.470	0.530	0.476	0.481	12.1%
Dimethoate	0.257	0.321	0.307	0.303	0.276	0.293	8.8%
Diazinon	0.308	0.317	0.327	0.436	0.360	0.349	14.9%
Disulfoton	0.489	0.481	0.360	0.430	0.306	0.413	19.1%
Paraoxon,methyl	0.164	0.206	0.227	0.283	0.207	0.217	19.9%
Parathion,methyl	0.276	0.273	0.285	0.376	0.284	0.299	14.5%
Paraoxon,ethyl	0.165	0.161	0.155	0.189	0.145	0.163	9.9%
Malathion	0.338	0.454	0.418	0.528	0.484	0.444	16.2%
Parathion	0.140	0.119	0.141	0.178	0.133	0.142	15.3%
Ethion	0.826	1.014	1.020	1.330	1.062	1.050	17.2%
Azinphos,methyl	0.983	1.016	0.944	0.955	0.768	0.933	10.4%

CONTINUING CALIBRATION DATA

Calibration Check Report

DATAFILE : P26450 ANALYSIS DATE : 12/12/97 18:51
SAMPLE : 1.0 NG/UL 8141 SPECIAL LIST STD NO 0104-64-1
LABORATORY : Sound Analytical Services
OPERATOR : Brent Hepner
INSTRUMENT : ITS40
ANALYSIS : GC-MS Analysis

HIT ANY KEY TO CONTINUE

	AVE RF	CONT. RF	RPD	
Triphenyl Phosphate	0.270	0.271	0.370	%
Dichlorvos	0.481	0.536	11.450	%
Dimethoate	0.293	0.321	9.543	%
Diazinon	0.349	0.317	9.387	%
Disulfoton	0.413	0.481	16.377	%
Paraoxon,methyl	0.217	0.206	5.349	%
Parathion,methyl	0.299	0.273	8.667	%
Paraoxon,ethyl	0.163	0.161	1.334	%
Malathion	0.444	0.454	2.199	%
Parathion	0.142	0.119	16.416	%
Ethion	1.050	1.014	3.471	%
Azinphos,methyl	0.933	1.016	8.917	%

Calibration Check Report

DATAFILE : P26460 ANALYSIS DATE : 12/12/97 22:51
SAMPLE : 1.0 NG/UL 8141 END OF RUN CALIB. VERIFICATION SPECIAL 81
LABORATORY : Sound Analytical Services
OPERATOR : Brent Hepner
INSTRUMENT : ITS40
ANALYSIS : GC-MS Analysis

HIT ANY KEY TO CONTINUE

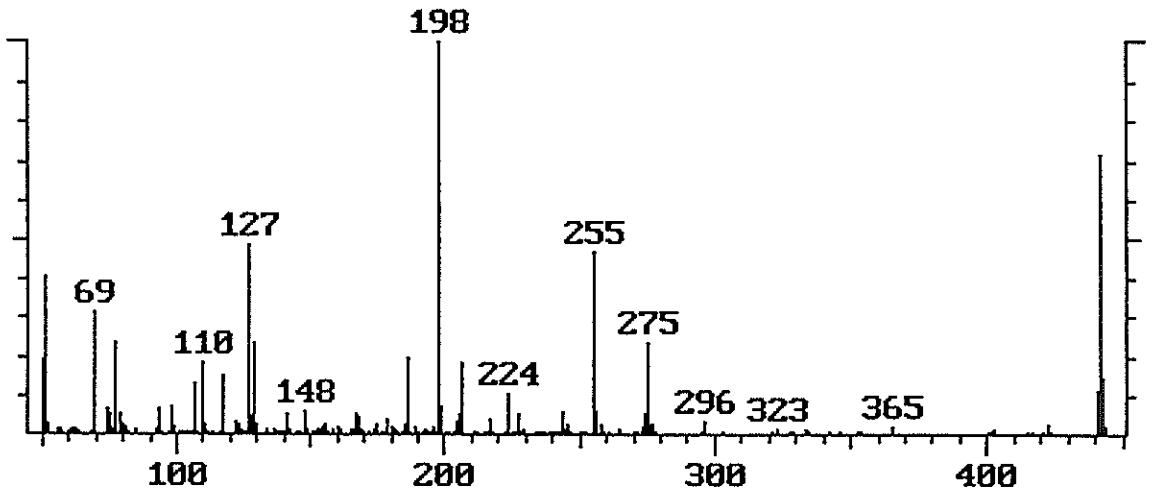
	AVE RF	CONT. RF	RPD	
Triphenyl Phosphate	0.270	0.279	3.527	%
Dichlorvos	0.481	0.515	7.102	%
Dimethoate	0.293	0.313	7.019	%
Diazinon	0.349	0.335	4.180	%
Disulfoton	0.413	0.417	0.974	%
Paraoxon,methyl	0.217	0.232	6.867	%
Parathion,methyl	0.299	0.274	8.238	%
Paraoxon,ethyl	0.163	0.179	9.742	%
Malathion	0.444	0.451	1.415	%
Parathion	0.142	0.145	2.275	%
Ethion	1.050	0.993	5.479	%
Azinphos,methyl	0.933	0.974	4.410	%

DFTPP TUNING DATA

Method 8270 DFTPP Report

Data File: P26448DF
Cali File: DFTPP

Acqu Date: 12/12/97
Acqu Time: 17:45

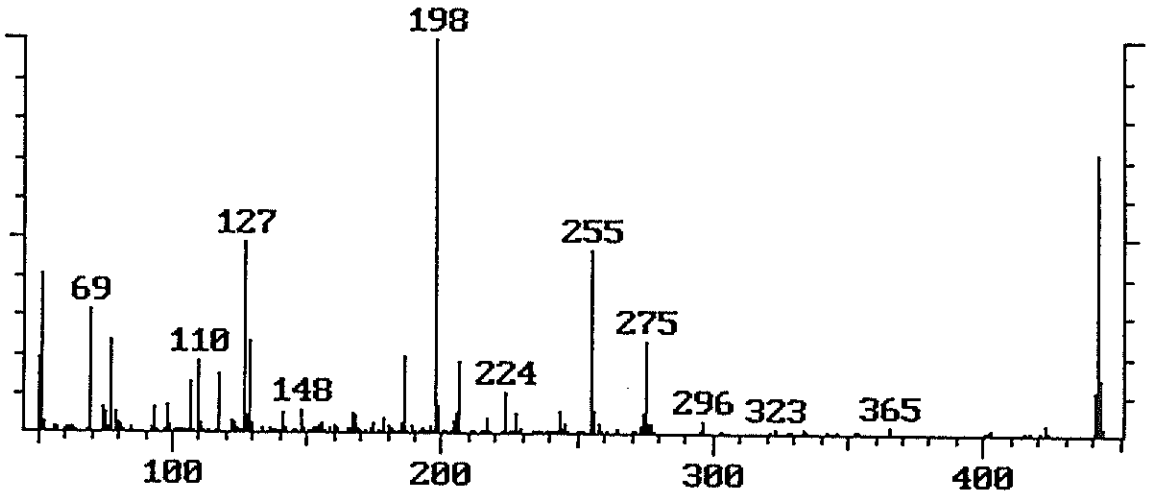


Mass	Acceptance Criterion	Value	Pass/Fail
51	30-60% of Mass 198	40.51	Pass
68	<= 2% of Mass 69	1.27	Pass
69	Exists Only	31.34	Pass
70	<= 2% of Mass 69	0.00	Pass
127	40-60% of Mass 198	48.52	Pass
197	<= 1% of Mass 198	0.01	Pass
198	Base Peak	100.00	Pass
199	5 - 9% of Mass 198	6.68	Pass
275	10-30% of Mass 198	23.09	Pass
365	>= 1% of Mass 198	1.51	Pass
441	Exists/<= Mass 443	15.50	Pass
442	40-100% of Mass 198	71.68	Pass
443	17-23% of Mass 442	19.63	Pass

Method 8270 DFTPP Report

Data File: P26448DF
Cali File: DFTPP

Acqu Date: 12/12/97
Acqu Time: 17:45



Mass	Acceptance Criterion	Value	Pass/Fail
51	30-60% of Mass 198	40.51	Pass
68	<= 2% of Mass 69	1.27	Pass
69	Exists Only	31.34	Pass
70	<= 2% of Mass 69	0.00	Pass
127	40-60% of Mass 198	48.52	Pass
197	<= 1% of Mass 198	0.01	Pass
198	Base Peak	100.00	Pass
199	5 - 9% of Mass 198	6.68	Pass
275	10-30% of Mass 198	23.09	Pass
365	>= 1% of Mass 198	1.51	Pass
441	Exists/<= Mass 443	15.50	Pass
442	40-100% of Mass 198	71.68	Pass
443	17-23% of Mass 442	19.63	Pass

CHLORINATED PESTICIDE DATA PACKAGE

INITIAL CALIBRATION DATA

Pesticide %RSD

Date Analyzed: 14-Dec-97
Instrument: 3400 Dual Column
Analytical Column: DB-1701

COMPOUND	A RF	B RF	C RF	D RF	E RF	F RF	Average RF	Average RF	Stdev.	%RSD	Correlation Coefficient
TCMX	5741	6065	5591	5472	4946	4817	5438	1.8388E-04	435	8.0	0.9982
alpha-BHC	7225	7969	7529	7334	7017	6843	7319	1.3662E-04	364	5.0	0.9994
Lindane	7029	7643	7143	7086	6666	6515	7014	1.4258E-04	362	5.2	0.9992
Heptachlor	8484	8696	8186	8038	7346	7237	7998	1.2504E-04	542	6.8	0.9988
Aldrin	7996	8318	7796	7573	7029	6884	7599	1.3159E-04	508	6.7	0.9990
B-BHC	3247	2928	2917	2859	2672	2586	2868	3.4866E-04	211	7.4	0.9988
D-BHC	4792	5297	5188	5306	5053	5033	5112	1.9564E-04	178	3.5	0.9997
Heptachlor Epoxide	6824	7255	6777	6686	6152	6030	6621	1.5104E-04	416	6.3	0.9989
Endosulfan-I	5966	6687	6220	5864	5149	5421	5884	1.6994E-04	503	8.5	0.9977
gamma-Chlordane	7324	7542	7125	7163	6795	6267	7036	1.4213E-04	411	5.8	0.9967
alpha-Chlordane	6704	7028	6692	6570	6042	5918	6492	1.5403E-04	389	6.0	0.9988
4,4'-DDE	6347	6517	6441	6355	5714	5692	6178	1.6188E-04	340	5.5	0.9986
Dieldrin	6357	6699	6197	6120	5657	5447	6079	1.6449E-04	419	6.9	0.9984
Endrin	5541	5831	5430	5411	4999	4825	5339	1.8729E-04	336	6.3	0.9985
4,4'-DDD	3714	4178	4047	4052	3810	3734	3922	2.5494E-04	178	4.5	0.9993
Endosulfan-II	4738	5481	5253	5129	4719	4623	4990	2.0038E-04	317	6.3	0.9988
4,4'-DDT	3959	3979	3955	3659	3412	3085	3675	2.7213E-04	334	9.1	0.9952
Endrin Aldehyde	1630	2152	2736	3145	2810	2825	2549	3.9224E-04	506	19.9	0.9981
Methox/Endo Sulfate	2371	2325	2350	2379	2205	2063	2282	4.3815E-04	114	5.0	0.9970
Endrin Ketone	3301	3623	3662	3728	3499	3450	3544	2.8218E-04	144	4.1	0.9994
Decachlorobiphenyl	4181	4321	4240	4126	3920	3744	4089	2.4459E-04	198	4.8	0.9986

Sample Concentration = (Linear Regression Value) x (Analyte Response)

035

Pesticide %RSD

Date Analyzed: 14-Dec-97
Instrument: 3400 Dual Column
Analytical Column: DB-17

COMPOUND	A RF	B RF	C RF	D RF	E RF	F RF	Average RF	Average RF	Stdev.	%RSD	Correlation Coefficient
TCMX	7081	7121	6714	6656	6252	6627	6742	1.4832E-04	294	4.4	0.9987
alpha-BHC	10161	10733	10287	10681	10196	10618	10446	9.5730E-05	237	2.3	0.9994
Lindane	9494	9778	9347	9374	9060	9354	9401	1.0637E-04	213	2.3	0.9996
beta-BHC	4142	4137	3686	3741	3444	3464	3769	2.6533E-04	283	7.5	0.9993
Heptachlor	10386	10804	9889	9887	9281	9510	9960	1.0041E-04	511	5.1	0.9995
D-BHC	7271	8108	7796	7798	7827	7987	7798	1.2824E-04	262	3.4	0.9998
Aldrin	8985	9647	9181	8996	8817	8794	9070	1.1025E-04	288	3.2	0.9999
Heptachlor Epoxide	7299	4982	7854	7919	6748	7550	7059	1.4167E-04	1006	14.3	0.9951
gamma-Chlordane	8560	8621	8047	7933	7515	7564	8040	1.2437E-04	432	5.4	0.9997
alpha-Chlordane	8018	8146	7683	7594	7134	7175	7625	1.3115E-04	382	5.0	0.9996
Endosulfan-I	8673	8304	7767	7575	7141	7144	7767	1.2874E-04	566	7.3	0.9996
4,4'-DDE	6948	7626	7286	7282	7242	7606	7332	1.3640E-04	232	3.2	0.9991
Dieldrin	6664	7193	6735	6980	6816	7172	6927	1.4437E-04	205	3.0	0.9991
Endrin	6095	6423	6032	6138	6011	6113	6135	1.6300E-04	136	2.2	0.9999
4,4'-DDD	4244	4739	4526	4744	4732	4853	4640	2.1553E-04	202	4.4	0.9998
Endosulfan-II	5239	5591	5415	5557	5429	5506	5456	1.8328E-04	116	2.1	0.9999
4,4'-DDT	4742	4471	4451	4774	4732	4925	4683	2.1356E-04	169	3.6	0.9994
Endrin Aldehyde	2891	2934	3134	3331	3193	3239	3120	3.2049E-04	159	5.1	0.9997
Endosulfan Sulfate	3805	4038	4115	4249	4212	4241	4110	2.4331E-04	156	3.8	1.0000
Methoxychlor	2086	2001	2006	2137	2231	2396	2143	4.6667E-04	138	6.4	0.9977
Endrin Ketone	4426	4755	4846	5086	5019	5067	4866	2.0549E-04	230	4.7	0.9999
Decachlorobiphenyl	5070	4971	4933	4801	4555	4461	4798	2.0840E-04	222	4.6	0.9994

Sample Concentration = (Linear Regression Value) x (Analyte Response)

Pesticide %RSD

Date Analyzed: 14-Dec-97
Instrument: 3400 Dual Column
Analytical Column: DB-1701

COMPOUND	A RF	B RF	C RF	D RF	E RF	F RF	Average RF	Average RF	Stdev.	%RSD	Linear Regression
2,4-DDE	4145	5291	4282	3292	3802	3716	4163	2.4024E-04	660	15.8	0.9975
2,4-DDD	3016	4044	3372	2651	4577	7221	3532	2.8312E-04	696	19.7	0.9961
2,4-DDT	3845	4776	4027	3159	3703	7232	3902	2.5629E-04	525	13.4	0.9964

Date Analyzed: 14-Dec-97
Instrument: 3400 Dual Column
Analytical Column: DB-17

COMPOUND	A RF	B RF	C RF	D RF	E RF	F RF	Average RF	Average RF	Stdev.	%RSD	Linear Regression
2,4-DDE	5462	6091	4929	3875	4519	4623	4975	2.0100E-04	762	15.3	0.9982
2,4-DDD	3870	4753	3874	3043	3694	7440	3847	2.5995E-04	546	14.2	0.9978
2,4-DDT	5289	5425	4402	3505	4311	8684	4586	2.1803E-04	704	15.3	0.9993

Sample Concentration = (Linear Regression Value) x (Analyte Response)

CONTINUING CALIBRATION DATA

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 12149728
Date Analyzed: 12/15/97

DB-1701

Compound	Response (Area)
4,4'-DDE	13606
4,4'-DDD	13390
4,4'-DDT	444490
Endrin Aldehyde	0
Endrin Ketone	8040
Endrin	296087

DDT % Breakdown	5.7%
Endrin % Breakdown	2.6%
Total % Breakdown	8.4%

DB-17

Compound	Response (Area)
4,4'-DDE	14214
4,4'-DDD	17344
4,4'-DDT	562586
Endrin Aldehyde	0
Endrin Ketone	0
Endrin	342654

DDT % Breakdown	5.3%
Endrin % Breakdown	0.0%
Total % Breakdown	5.3%

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 12149729
Date Analyzed: 12/15/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	53.0	6.0%	OK
alpha-BHC	25	27.5	10.1%	OK
Lindane	25	27.2	8.7%	OK
Heptachlor	25	27.4	9.4%	OK
Aldrin	25	27.6	10.3%	OK
B-BHC	25	27.3	9.4%	OK
D-BHC	25	28.4	13.4%	OK
Heptachlor Epoxide	25	27.3	9.4%	OK
Endosulfan-I	25	26.0	4.0%	OK
gamma-Chlordane	25	28.7	14.7%	OK
alpha-Chlordane	25	27.4	9.6%	OK
4,4'-DDE	50	55.4	10.7%	OK
Dieldrin	50	55.5	11.0%	OK
Endrin	50	55.7	11.4%	OK
4,4'-DDD	50	55.5	11.1%	OK
Endosulfan-II	50	55.0	10.0%	OK
4,4'-DDT	50	56.3	12.6%	OK
Endrin Aldehyde	50	54.1	8.3%	OK
Methoxychlor	250	244.1	2.4%	OK
Endosulfan Sulfate	50	52.5	5.0%	OK
Endrin Ketone	50	54.1	8.2%	OK
Decachlorobiphenyl	100	106.8	6.8%	OK

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 12149730
Date Analyzed: 12/15/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	22.6	12.8%	OK
2,4-DDD	20	22.1	10.6%	OK
2,4-DDT	20	21.8	9.1%	OK

041

SOUND ANALYTICAL SERVICES, INC.

DDT/Endrin Evaluation Standard

File Name: 12149742
Date Analyzed: 12/15/97

DB-1701

Compound	Response (Area)
4,4'-DDE	22440
4,4'-DDD	17252
4,4'-DDT	473431
Endrin Aldehyde	0
Endrin Ketone	7729
Endrin	306574
DDT % Breakdown	7.7%
Endrin % Breakdown	2.5%
Total % Breakdown	10.2%

DB-17

Compound	Response (Area)
4,4'-DDE	44798
4,4'-DDD	26948
4,4'-DDT	612782
Endrin Aldehyde	0
Endrin Ketone	0
Endrin	359126
DDT % Breakdown	10.5%
Endrin % Breakdown	0.0%
Total % Breakdown	10.5%

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 12149743
Date Analyzed: 12/15/97

Compound	True Value	Instrument Value	% Difference	OK
TCMX	50	53.7	7.4%	OK
alpha-BHC	25	26.5	6.0%	OK
Lindane	25	27.0	8.1%	OK
Heptachlor	25	28.5	13.8%	OK
Aldrin	25	28.2	12.7%	OK
B-BHC	25	28.4	13.6%	OK
D-BHC	25	27.2	8.6%	OK
Heptachlor Epoxide	25	27.4	9.5%	OK
Endosulfan-I	25	26.6	6.5%	OK
gamma-Chlordane	25	27.6	10.3%	OK
alpha-Chlordane	25	28.3	13.1%	OK
4,4'-DDE	50	55.1	10.2%	OK
Dieldrin	50	53.2	6.4%	OK
Endrin	50	53.3	6.6%	OK
4,4'-DDD	50	55.8	11.7%	OK
Endosulfan-II	50	57.0	14.0%	OK
4,4'-DDT	50	55.9	11.8%	OK
Endrin Aldehyde	50	56.3	12.5%	OK
Methoxychlor	250	257.2	2.9%	OK
Endosulfan Sulfate	50	55.7	11.5%	OK
Endrin Ketone	50	57.3	14.6%	OK
Decachlorobiphenyl	100	111.2	11.2%	OK

043

SOUND ANALYTICAL SERVICES, INC.

Pesticide Continuing Calibration Verification

File Name: 12149744
Date Analyzed: 12/15/97

Compound	True Value	Instrument Value	% Difference	OK
2,4-DDE	20	21.6	8.2%	OK
2,4-DDD	20	22.1	10.5%	OK
2,4-DDT	20	22.8	13.8%	OK

044