16702 K.7

Allied Paper, Inc./Portage Creek/ Kalamazoo River Superfund Site Kalamazoo, Michigan

Final Technical Memorandum 14 Biota Investigation

Appendix E Data Quality Review Reports Volume II

January 2002

Technical Memorandum

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# 39026

PCB, PESTICIDE AND
MERCURY ANALYSES

BIOTA - FISH

Analyses performed by:

Aquatec, Inc.
Colchester, Vermont

Review performed by:

Blasland, Bouck & Lee, Inc.
Syracuse, New York

Summary

The following is an assessment of the Pesticide/PCB/PBB and Mercury data for SDG# 39026 for the biota sampling of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and the qualified sample results. Analyses were performed on the following samples:

Sample ID	Lab ID	Species	Description	Sample Location	Analysis	
					Pest/PCB/ Hg	%lipid
K40012F	208295	bass	fillet	Morrow Pond	x	x
K40012R	208296	bass	carcass	Morrow Pond		x
K40013F	208297	bass	fillet	Morrow Pond	x	x
K40013R	208298	bass	carcass	Morrow Pond		x
K40014F	208299	bass	fillet	Morrow Pond	x	x
K40014R	208300	bass	carcass	Morrow Pond		x
K40015F*	208301	bass	fillet	Morrow Pond	x	x
K40015R	208302	bass	carcass	Morrow Pond		x
K40025F	208304	bass	fillet	Morrow Pond	x	x
K40025R	208305	bass	carcass	Morrow Pond		x
K40026F	208306	bass	fillet	Morrow Pond	X	x
K40026R	208307	bass	carcass	Morrow Pond		x
K40027F	208308	bass	fillet	Morrow Pond	x	x
K40027R	208309	bass	carcass	Morrow Pond		x
K40045F	208322	bass	fillet	Below Morrow Dam	x	x
K40045R	208323	bass	carcass	Below Morrow Dam		x
K40046F	208324	bass	fillet	Below Morrow Dam	x	x
K40046R	208325	bass	carcass	Below Morrow Dam		x
K40047F	208326	bass	fillet	Below Morrow Dam	x	x
K40047R	208327	bass	carcass	Below Morrow Dam		x
K40048F	208328	bass	fillet	Below Morrow Dam	x	x
K40048R	208329	bass	carcass	Below Morrow Dam		x
K40049F	208330	bass	fillet	Below Morrow Dam	x	x
K40049R	208331	bass	carcass	Below Morrow Dam		x
K40050F	208332	bass	fillet	Below Morrow Dam	x	x
K40050R	208333	bass	carcass	Below Morrow Dam		x
K40051F	208334	bass	fillet	Below Morrow Dam	x	x
K40051R	208335	bass	carcass	Below Morrow Dam		x

Sample ID	Lab ID	Species	Description	Sample Location	Analysis	
					Pest/PCB/ Hg	%lipid
K40052F	208336	bass	fillet	Below Morrow Dam	x	x
K40052R	208337	bass	carcass	Below Morrow Dam		x
K40053F	208338	bass	fillet	Below Morrow Dam	x	x
K40053R	208339	bass	carcass	Below Morrow Dam		x
K40054F	208318	bass	fillet	Below Morrow Dam	x	x
K40054R	208319	bass	carcass	Below Morrow Dam		x
K40055F	208320	bass	fillet	Below Morrow Dam	x	x
K40055R	208321	bass	carcass	Below Morrow Dam		x

* MS/MSD/DUP performed on sample

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by Aquatec, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

The specified holding time for PCB analyses from extraction is 40 days. All samples were analyzed within the specified holding time.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No Aroclors were detected in the method or instrument blanks.

3. System Performance

The system performance was acceptable for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The %RSD was within acceptable limits for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limits.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for one surrogate in samples K40012F, K40015F, K40015FMS, K40045F, K40047F, K40048F, K40051F and K40053F. No qualifiers were added to these samples based on surrogate performance. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

A review of the sample chromatograms indicate that the Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

All matrix spike recoveries and relative percent differences (RPD) between recoveries were within acceptable control limits. All matrix spike blank recoveries were also within specified control limits.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the samples numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Holding Times			
Have any holding times been exceeded?		X	
Surrogate Recovery			
Are surrogate recovery forms present?	X		
Are all the samples listed on the appropriate surrogate recovery form?	X		
Are the outliers correctly marked with an asterisk?	X		
Were recoveries of TCMX or DCB outside of specified limits for any sample or blank?	X		
If yes, were the samples reanalyzed?		X	
Matrix Spikes			
Is there a matrix spike recovery form present?	X		
Were matrix spikes analyzed at the required frequency?	X		
How many spike recoveries were outside of QC limits?			
0 out of 4			
How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits?			
0 out of 2			
Blanks			
Is a Method Blank Summary Form present?	X		
Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent?	X		
Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration?	X		

	YES	NO	NA
Is the chromatographic performance acceptable for each instrument?	X		
Do any method/reagent/instrument blanks have positive results?		X	
Do any field/rinse blanks have positive results?			X
Are there field/rinse/equipment blanks associated with every sample?		X	
Calibration and GC Performance			
Are the following chromatograms and data printouts present?			
Aroclor 1016/1260	X		
Aroclor 1221	X		
Aroclor 1232	X		
Aroclor 1242	X		
Aroclor 1248	X		
Aroclor 1254	X		
Instrument Blanks	X		
Are Initial Calibration Summary Forms present and complete for each column and analytical sequence?	X		
Are the linearity criteria for the initial analyses within limits for both columns (20% RSD)	X		
Have all samples been injected within a 12 hour period beginning with the injection of an instrument blank?	X		
Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed?	X		
Are %D values for all compounds within limits (less than 15%)?	X		
Analytical Sequence Check			
Is a analytical sequence form present and complete for each column and each period of analyses?	X		
Was the proper analytical sequence followed?	X		

	YES	NO	NA
Cleanup Efficiency Verification			
If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present?	X		
Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits?	X		
PCB Identification			
Is both a combined and single column Aroclor Identification Report present for every sample?	X		
Do the combined column and individual column Aroclor identifications agree?	X		
Were there any false negatives?		X	
Was GC/MS confirmation provided when required?			X
Compound Quantitation and Reported Detection Limits			
Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture?	X		
Chromatogram Quality			
Were the baselines stable?	X		
Were any electronegative displacement (negative peaks) or unusual peaks detected?		X	
Field Duplicates			
Where field duplicates submitted with the samples?		X	

PCB Holding Time and Surrogate Recovery Summary

Sample ID	Holding Time	Surrogates - Column 1		Surrogates - Column 2	
		TCX	DCB	TCX	DCB
K40012F	OK for all samples	↓ (57)		↓ (56)	
K40013F					
K40014F					
K40015F		↓ (58)		↓ (58)	
K40015FMS		↓ (57)			
K40015FMSD					
K40025F					
K40026F					
K40027F					
K40045F		↓ (49)		↓ (50)	
K40046F					
K40047F		↓ (52)		↓ (53)	
K40048F		↓ (55)		↓ (56)	
K40049F					
K40050F					
K40051F		↓ (57)		↓ (57)	
K40052F					
K40053F		↓ (57)		↓ (56)	
K40054F					
K40055F					

Surrogate Standards
TCX Tetrachloro-m-xylene
DCB Decachlorobiphenyl

Qualifiers:
D Surrogates diluted out
↑ Recovery high
↓ Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: HP2618
Column: RTX-35 / RTX-5

Date:	4/30/94 0543	5/2	5/2	5/3	5/3	5/3	5/3
Time:	to 5/1/94 0106	1632	1706	0001	0035	0725	0800
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016	4.2 / 4.4						3.0
Aroclor 1221	5.1 / 6.9						
Aroclor 1232	4.2 / 3.1						
Aroclor 1242	3.1 / 3.4						
Aroclor 1248	3.4 / 3.0	1.5		3.0		1.0	
Aroclor 1254	3.1 / 3.6		6.0				
Aroclor 1260	3.8 / 3.4				4.0		
Tetrachloro-m-xylene	5.2 / 6.4						
Decachlorobiphenyl	7.9 / 8.1						

Affected Samples:

bio39026

PCB Calibration Summary - Page 2

Instrument: HP2618
Column: RTX-35 / RTX-5

Date:		5/3	5/3	5/3	5/3	5/4	5/4
Time:		1342	1416	2100	2145	0434	0509
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016							
Aroclor 1221							
Aroclor 1232							
Aroclor 1242			1.5				
Aroclor 1248		3.0		4.0		3.5	
Aroclor 1254					7.5		
Aroclor 1260							8.0
Tetrachloro-m-xylene							
Decachlorobiphenyl							

Affected Samples:

bio39026

PCB Calibration Summary - Page 3

Instrument: HP2618
Column: RTX-35 / RTX-5

Date:		5/5	5/5	5/5	5/5		
Time:		0250	0324	1014	1048		
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016							
Aroclor 1221							
Aroclor 1232							
Aroclor 1242							
Aroclor 1248		2.0		1.0			
Aroclor 1254			5.0				
Aroclor 1260					1.0		
Tetrachloro-m-xylene							
Decachlorobiphenyl							

Affected Samples:

bio39026

CORRECTED ANALYSIS SUMMARY FORMS

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40012F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208295

Date Received: 08/26/93

Date Extracted: 03/26/94

Date Analyzed: 05/03/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.17	
11096-82-5	Aroclor-1260	0.076	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40013F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208297

Date Received: 08/26/93

Date Extracted: 03/26/94

Date Analyzed: 05/03/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.12	
11096-82-5	Aroclor-1260	0.033	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40014F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208299

Date Received: 08/26/93

Date Extracted: 03/26/94

Date Analyzed: 05/03/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.093	
11096-82-5	Aroclor-1260	0.030	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40015F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208301

Date Received: 08/26/93

Date Extracted: 03/26/94

Date Analyzed: 05/03/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.27	
11096-82-5	Aroclor-1260	0.082	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40025F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208304

Date Received: 08/28/93

Date Extracted: 03/26/94

Date Analyzed: 05/02/94

Sulfur Clean-up: Y (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.17	
11096-82-5	Aroclor-1260	0.074	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40026F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 208306

Date Received: 08/28/93

Date Extracted: 03/26/94

Date Analyzed: 05/02/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	0.53	
11096-82-5	Aroclor-1260	0.14	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40027F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208308

Date Received: 08/28/93

Date Extracted: 03/26/94

Date Analyzed: 05/02/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.20	
11096-82-5	Aroclor-1260	0.067	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40045F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 5.0

Lab Sample ID: 208322

Date Received: 08/28/93

Date Extracted: 03/26/94

Date Analyzed: 05/04/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.25	U
11104-28-2	Aroclor-1221	0.25	U
11141-16-5	Aroclor-1232	0.25	U
53469-21-9	Aroclor-1242	0.25	U
12672-29-6	Aroclor-1248	0.25	U
11097-69-1	Aroclor-1254	2.8	
11096-82-5	Aroclor-1260	0.43	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40046F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 208324

Date Received: 08/28/93

Date Extracted: 03/26/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	0.85	
11096-82-5	Aroclor-1260	0.14	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40047F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 208326

Date Received: 08/28/93

Date Extracted: 03/26/94

Date Analyzed: 05/03/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	1.2	
11096-82-5	Aroclor-1260	0.19	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40048F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 208328

Date Received: 08/28/93

Date Extracted: 03/26/94

Date Analyzed: 05/03/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	1.4	
11096-82-5	Aroclor-1260	0.31	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40049F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208330

Date Received: 08/28/93

Date Extracted: 03/26/94

Date Analyzed: 05/03/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.65	
11096-82-5	Aroclor-1260	0.099	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40050F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208332

Date Received: 08/28/93

Date Extracted: 03/26/94

Date Analyzed: 05/03/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.51	
11096-82-5	Aroclor-1260	0.098	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40051F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208334

Date Received: 08/28/93

Date Extracted: 03/26/94

Date Analyzed: 05/03/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.69	
11096-82-5	Aroclor-1260	0.13	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40052F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208336

Date Received: 08/28/93

Date Extracted: 03/26/94

Date Analyzed: 05/03/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.32	
11096-82-5	Aroclor-1260	0.064	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40053F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208338

Date Received: 08/28/93

Date Extracted: 03/26/94

Date Analyzed: 05/03/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.36	
11096-82-5	Aroclor-1260	0.056	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40054F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 208318

Date Received: 08/28/93

Date Extracted: 03/26/94

Date Analyzed: 05/02/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	0.70	
11096-82-5	Aroclor-1260	0.19	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40055F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39026

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 208320

Date Received: 08/28/93

Date Extracted: 03/26/94

Date Analyzed: 05/02/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	0.65	
11096-82-5	Aroclor-1260	0.10	

PESTICIDE ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 Method 8081.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- C Identification confirmed by GC/MS.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The holding time for pesticide extracts is 40 days from extraction to analysis. No deviations from this holding time were noted.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No target compounds were detected in either the method blanks or instrument blanks.

3. System Performance

The resolution and compound breakdown was within acceptable limits for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

A maximum RSD of 20% is allowed. All initial calibrations were within the specified limit.

4.2 Continuing Calibration

A maximum RPD of 25% is allowed. All continuing calibrations were within the specified limit.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for one surrogate in samples K40047F and K40048F. No qualifiers have been added to the samples based on the surrogate performance.

6. Compound Identification

The retention times of pesticide/PCB compounds must fall within the calculated retention time windows for both the primary and confirmation columns.

The quantitated concentrations between the two columns exceeded the 25% difference limit for the following samples and compounds:

K40026F	trans-Nonachlor	196.3%
K40045F	Aldrin	107.7%
	gamma-Chlordane	128.6%
	trans-Nonachlor	141.2%
	Dieldrin	200.0%
	cis-Nonachlor	59.1%
	4,4'-DDT	742.9%
K40046F	Aldrin	111.8%
K40047F	Aldrin	84.2%
	gamma-Chlordane	97.4%
	trans-Nonachlor	268.4%
	Dieldrin	83.3%
	4,4'-DDD	108.3%
	4,4'-DDT	807.7%
K40048F	Aldrin	84.2%
	gamma-Chlordane	97.4%
	trans-Nonachlor	39.3%
	cis-Nonachlor	35.3%
	4,4'-DDT	766.7%
K40049F	trans-Nonachlor	35.1%
K40050F	4,4'-DDE	34.5%
	cis-Nonachlor	58.6%
K40051F	cis-Nonachlor	44.7%
K40052F	4,4'-DDE	31.6%

K40054F	Heptachlor Epoxide	118.2%
	cis-Nonachlor	31.9%
	4,4'-DDT	800.0%

All data in the samples for the compounds listed has been qualified. Data with %D values between 25 and 50% has been qualified as estimated, J. All data with %D values between 50 and 90% has been qualified as estimated with presumptive evidence of presence, JN. All data with %D values greater than 90% has been rejected.

7. Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

Recoveries for Aldrin were high in both the matrix spike and matrix spike duplicate samples. The elevated recoveries were most likely due to positive interference from PCBs present in the samples. The blank spike associated with the MS/MSD had acceptable recoveries for all compounds. No qualifiers were added to the samples based on matrix spike performance.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

Data Validation Checksheets

Pesticide Data Validation Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the samples numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Holding Times			
Have any holding times been exceeded?		X	
Surrogate Recovery			
Are the surrogate recovery forms present?	X		
Are all the samples listed on the appropriate surrogate recovery form?	X		
Are the outliers correctly marked with an asterisk?	X		
Were recoveries of TCMX or DCB outside of specified limits for any sample or blank?	X		
If yes, were the samples reanalyzed?		X	
Were the method blanks reanalyzed?			X
Matrix Spikes			
Is there a matrix spike recovery form present?	X		
Were matrix spikes analyzed at the required frequency?	X		
How many spike recoveries were outside of QC limits? 2 out of 8			
How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? 0 out of 4			
Blanks			
Is the method blank summary form present?	X		
Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent?	X		
Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration?	X		

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	YES	NO	NA
Is the chromatographic performance acceptable for each instrument?	X		
Do any method/reagent/instrument blanks have positive results?		X	
Do any trip/field/rinse blanks have positive results?			X
Are there field/rinse/equipment blanks associated with every sample?		X	
Calibration and GC Performance			
Are the following chromatograms and data printouts present for all samples, blanks, and MS/MSD?			
peak resolution check	X		
performance evaluation mixtures (BCS)	X		
Toxaphene multipoint calibration	X		
Pesticide/PBB multipoint calibration	X		
Pesticide/PBB mid-point standard	X		
instrument blanks	X		
Are Forms VI 1-4 present and complete for each column and analytical sequence?	X		
Are the linearity criteria for the initial analyses if INDA and INDB within limits for both columns?	X		
Is the resolution between any two adjacent peaks in the resolution check mixture > 60% for both columns?	X		
Is Form VII-1 present for each BCS analyzed for both columns?	X		
Has the individual % breakdown exceeded 20% on either column for 4,4'-DDT		X	
Are all the relative percent difference (RPD) values for all PEM analytes < 25%?	X		
Is Form VII-2 present and complete for each mid-point standard analyzed?	X		
Are RPD values for all compounds < 25%?	X		
Analytical Sequence Check			
Is Form VIII present and complete for each column and each period of analyses?	X		

	YES	NO	NA
Was the proper analytical sequence followed?	X		
Cleanup Efficiency Verification			
Is Form IX-1 present for each lot of Florisil cartridges used?	X		
Are all samples listed on the form?	X		
If GPC cleanup was performed, is Form IX-2 present?			X
Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits for:			
Florisil cartridge check (80-120%)	X		
GPC calibration (80-110%)			X
Pesticide/PBB Identification			
Is a Form X present for every sample in which a pesticide or PCB was detected?	X		
Was GC/MS confirmation provided when required?			X
Is the percent difference (%D) calculated for the positive sample results on the two columns less than 25%?		X	
Were there any false negatives?		X	
Compound Quantitation and Reported Detection Limits			
Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture?	X		
Chromatogram Quality			
Were the baselines stable?	X		
Were any electronegative displacement (negative peaks) or unusual peaks detected?		X	
Field Duplicates			
Where field duplicates submitted with the samples?		X	

Pesticide/PBB Qualifier Summary
Holding Time and Surrogates

Sample ID	Holding Time	Surrogates - Column 1		Surrogates - Column 2	
		TCX	DCB	TCX	DCB
K40012F	OK for all samples	OK	OK		
K40013F					
K40014F					
K40015F					
K40015FMS					
K40015FMSD					
K40025F					
K40026F					
K40027F					
K40045F					
K40046F					
K40047F				↓ (59)	
K40048F				↓ (56)	↓ (59)
K40049F					
K40050F					
K40051F					
K40052F					
K40053F					
K40054F					
K40055F					

Surrogates:
TCX Tetrachloro-m-xylene
DCB Decachlorobiphenyl

Qualifiers:
D Surrogate diluted out
↑ Recovery high
↓ Recovery low

Unless otherwise noted, all samples are within specified limits.

Pesticide/PBB Calibration Summary

Instrument: HP2404
Column: RTX-5

Date:	4/22/94	4/22	4/22	4/22	4/22		
Time:	18:12	17:37	04:19	12:39	20:22		
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok	ok	ok	ok		
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptaclor epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							
Affected Samples:							

Pesticide/PBB Calibration Summary - Page 2

Instrument: HP2404
Column: RTX-35

Date:	4/22/94	4/22	4/22	4/22	4/22		
Time:	18:12	17:37	04:19	12:39	20:22		
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok	ok	ok	ok		
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptaclor epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							
Affected Samples:							

Pesticide/PBB Calibration Summary - Page 3

Instrument: HP2404
Column: RTX-5

Date:	5/6/94	5/8	5/8				
Time:	17:57	00:53	09:13				
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok	ok				
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptaclor epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							
Affected Samples:							

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Pesticide/PBB Calibration Summary - Page 4

Instrument: HP2404
Column: RTX-35

Date:	5/6/94	5/8	5/8				
Time:	17:57	00:53	09:13				
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok	ok				
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptaclor epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							
Affected Samples:							

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Corrected Sample Analysis Data Sheets

1

PESTICIDE, PBB ANALYSIS DATA SHEET

			Client ID No.
Lab Name:	Aquatec, Inc.		K40012F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208295
Phase Type:	Biota	Date Received:	08/26/93
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.014	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

PESTICIDE, PBB ANALYSIS DATA SHEET

Client ID No.: K40013F

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO
SDG: 39026

Lab Sample ID: 208297
Phase Type: Biota
Date Received: 08/26/93
Phase Weight: 10.0 g
Date Extracted: 03/26/94
Extraction: Soxhlet
Date Analyzed: 04/23/94
Dilution Factor: 1.0
Sulfur Clean-up: N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.016	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	
Lab Name:	Aquatec, Inc.		K40014F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208299
Phase Type:	Biota	Date Received:	08/26/93
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.012	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	
Lab Name:	Aquatec, Inc.		K40015F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208301
Phase Type:	Biota	Date Received:	08/26/93
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.046	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40025F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208304
Phase Type:	Biota	Date Received:	08/28/94
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.020	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	
Lab Name:	Aquatec, Inc.		K40026F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208306
Phase Type:	Biota	Date Received:	08/28/94
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
~~39765-80-5~~	~~trans-Nonachlor~~	~~0.0054~~	R
72-55-9	4,4'-DDE	0.055	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.013	
5103-73-1	cis-Nonachlor	0.0092	
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	
Lab Name:	Aquatec, Inc.		K40027F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208308
Phase Type:	Biota	Date Received:	08/28/94
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.011	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050*	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40045F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208322
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.010	U	
2113-57-7	3-Bromobiphenyl	0.010	U	
92-66-0	4-Bromobiphenyl	0.010	U	
118-74-1	Hexachlorobenzene	0.0050	U	
58-89-9	gamma-BHC	0.0050	U	
~~309-00-2~~	~~Aldrin~~	~~0.013~~		R
1024-57-3	Heptachlor Epoxide	0.022		
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.014~~		R
5103-71-9	alpha-Chlordane	0.0074		
~~39765-80-5~~	~~trans-Nonachlor~~	~~0.017~~		R
72-55-9	4,4'-DDE	0.15		
~~60-57-1~~	~~Dieldrin~~	~~0.015~~		R
72-54-8	4,4'-DDD	0.026		
5103-73-1	cis-Nonachlor	0.022	JN	
~~50-29-3~~	~~4,4'-DDT~~	~~0.028~~		R
36355-01-8	Hexabromobiphenyl	0.020	U	
8001-35-2	Toxaphene	0.20	U	

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PESTICIDE, PBB ANALYSIS DATA SHEET

			Client ID No.
Lab Name:	Aquatec, Inc.		K40046F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208324
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
~~309-00-2~~	~~Aldrin~~	~~0.0051~~	R
1024-57-3	Heptachlor Epoxide	0.0083	
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.049	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0098	
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	
Lab Name:	Aquatec, Inc.		K40047F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208326
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.010	U	
2113-57-7	3-Bromobiphenyl	0.010	U	
92-66-0	4-Bromobiphenyl	0.010	U	
118-74-1	Hexachlorobenzene	0.0050	U	
58-89-9	gamma-BHC	0.0050	U	
309-00-2	Aldrin	0.0076	JN	
1024-57-3	Heptachlor Epoxide	0.011		
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.0076~~		R
5103-71-9	alpha-Chlordane	0.0050	U	
~~39765-80-5~~	~~trans-Nonachlor~~	~~0.0076~~		R
72-55-9	4,4'-DDE	0.076		
60-57-1	Dieldrin	0.012	JN	
~~72-54-8~~	~~4,4'-DDD~~	~~0.012~~		R
5103-73-1	cis-Nonachlor	0.014		
~~50-29-3~~	~~4,4'-DDT~~	~~0.013~~		R
36355-01-8	Hexabromobiphenyl	0.020	U	
8001-35-2	Toxaphene	0.20	U	

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PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	
Lab Name:	Aquatec, Inc.		K40048F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208328
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0076	JN
1024-57-3	Heptachlor Epoxide	0.012	
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.0076~~	R
5103-71-9	alpha-Chlordane	0.0060	
39765-80-5	trans-Nonachlor	0.028	J
72-55-9	4,4'-DDE	0.100	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.017	
5103-73-1	cis-Nonachlor	0.017	J
~~50-29-3~~	~~4,4'-DDT~~	~~0.015~~	R
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

			Client ID No.
Lab Name:	Aquatec, Inc.		K40049F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208330
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.038	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0074	J
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40050F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208332
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.029	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0058	JN
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

			Client ID No.
Lab Name:	Aquatec, Inc.		K40051F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208334
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.045	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0076	J
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

			Client ID No.
Lab Name:	Aquatec, Inc.		K40052F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208336
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.019	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	
Lab Name:	Aquatec, Inc.		K40053F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208338
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.022	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

			Client ID No.
Lab Name:	Aquatec, Inc.		K40054F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208318
Phase Type:	Biota	Date Received:	08/28/94
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.010	U	
2113-57-7	3-Bromobiphenyl	0.010	U	
92-66-0	4-Bromobiphenyl	0.010	U	
118-74-1	Hexachlorobenzene	0.0050	U	
58-89-9	gamma-BHC	0.0050	U	
309-00-2	Aldrin	0.0050	U	
~~1024-57-3~~	~~Heptachlor Epoxide~~	~~0.0055~~		R
5103-74-2	gamma-Chlordane	0.0050	U	
5103-71-9	alpha-Chlordane	0.0050	U	
39765-80-5	trans-Nonachlor	0.0050	U	
72-55-9	4,4'-DDE	0.045		
60-57-1	Dieldrin	0.010	U	
72-54-8	4,4'-DDD	0.010	U	
5103-73-1	cis-Nonachlor	0.0091	J	
~~50-29-3~~	~~4,4'-DDT~~	~~0.010~~		R
36355-01-8	Hexabromobiphenyl	0.020	U	
8001-35-2	Toxaphene	0.20	U	

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PESTICIDE, PBB ANALYSIS DATA SHEET

Client ID No.	K40055		
Lab Name:	Aquatec, Inc.		
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39026
		Lab Sample ID:	208320
Phase Type:	Biota	Date Received:	08/28/94
Phase Weight:	10.0 g	Date Extracted:	03/26/94
Extraction:	Soxhlet	Date Analyzed:	04/23/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0051	
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.038	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0084	
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

MERCURY ANALYSES

Introduction

Analyses were performed according to USEPA CLP SOW ILM03.0.

The data validation process is intended to evaluate the data on a technical basis rather than a contract compliance basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission for validation. During the validation process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this valuation, qualifier codes may be added, deleted, or modified by the data validator. Validator qualified results are annotated with the following codes in accordance with National Functional Guidelines:

Concentration (C) qualifiers:

U The analyte was analyzed for but not detected. The associated value is the instrument detection limit.

B The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).

Quantitation (Q) qualifiers:

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

M Duplicate injection precision not met.

N Spiked sample recovery not within control limits.

S Reported value was determined by the method of standard additions (MSA).

W Post-digestion spike for Furnace-AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.

* Duplicate analysis not within control limits.

+ Correlation coefficient for MSA is less than 0.995.

Validation qualifiers:

J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The recommended holding times for mercury analyses is 28 days from tissue homogenization. All samples were analyzed within this holding time.

2. Blank Contamination

Quality assurance blanks, i.e., preparation and calibration blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or analysis. Preparation blanks measure laboratory contamination during preparation. Calibration blanks measure instrument contamination and sample cross-contamination.

All calibration and preparation blanks were found to be acceptable, with no analytes detected above the CRQL.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

3.1 Initial Calibration

The correlation coefficient of the initial calibration was greater than the minimum required 0.995.

3.2 Continuing Calibration

All continuing calibration verification standards were acceptable.

3.3 CRDL Standard

All CRDL standard recoveries were within acceptable limits.

4. Matrix Spike/Laboratory Duplicate

Matrix spike and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 Matrix spike

Recovery for the matrix spike was below acceptable limits. All data have been qualified as estimated based on the deviation.

4.2 Laboratory Duplicate

The laboratory duplicate relative percent difference (RPD) was within acceptable limits.

5. Laboratory Control Sample (LCS)

All recoveries were within the acceptable recovery limits.

6. Serial Dilution

No ICP analyses were performed, therefore no serial dilution was necessary.

7. Furnace QC

No furnace analyses were performed.

8. Method of Standard Additions (MSA)

No MSA were performed.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviation specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

Data Validation Checksheets

Inorganic Data Validation Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the sample numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Form I to IX			
Are all the Form I through Form IX labeled with:			
Laboratory name?	X		
Sample No.?	X		
SDG No.?	X		
Correct units?	X		
Matrix?	X		
Raw Data			
Is the digestion log for flame AA/ICP present?			X
Is the digestion log for furnace AA present?			X
Is the distillation log for mercury present?	X		
Is the distillation log for cyanides present?			X
Are preparation dates present on sample preparation logs/bench sheets?	X		
Are the measurement read out records present for:			
ICP			X
Flame AA			X
Furnace AA			X
Mercury	X		
Cyanides			X
Is the data legible?	X		
Is the data properly labeled?	X		
Holding Times			
Were mercury analyses performed within 28 days?	X		

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	YES	NO	NA
Were cyanide distillations performed within 14 days?			X
Were other metal analysis performed within 6 months?			X
Form I (Final Data)			
Are all forms complete?	X		
Are correct units indicated on Form I's?	X		
Are all "less than IDL" values properly coded with "U"?	X		
Are the correct concentration qualifiers used with final data?	X		
Was a brief physical description of samples given on Form I's?		X	
Calibration			
Is a record of at least 2 point calibration present for ICP analysis?			X
Is a record of 5 point calibration present for Hg analysis?	X		
Is a record of 4 point calibration present for:			
Flame AA?			X
Furnace AA?			X
Cyanides?			X
Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?			X
Is correlation coefficient less than .995 for:			
Mercury Analysis?	X		
Cyanide Analysis?			X
Atomic Absorption Analysis?			X
Form II A (Initial and Continuing Calibration Verification)			
Present and complete for every metal and cyanide?	X		
Are all calibration standards (initial and continuing) within control limits for:			
Metals (90-110 %R)?			X
Hg (80-120 %R)?	X		
Cyanides (85-115 %R)?			X

	YES	NO	NA
Was continuing calibration performed every 10 samples or every 2 hours?	X		
Was the ICV for cyanides distilled?			X
Form II B (CRDL Standards for AA and ICP)			
Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?			X
Was a mid-range calibration verification standard distilled and analyzed for cyanide analysis?			X
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run?			X
Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?			X
Are CRA and CRI standards within control limits for metals (60-120 %R)?	X		
Is mid-range standard within control limits for cyanide (80-120 %R)			X
Form III (Initial and Continuing Calibration Blanks)			
Present and complete?	X		
Was an initial calibration blank analyzed?	X		
Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	X		
Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	X		
Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?			X
Form III (Preparation Blank)			
Was one prep. blank analyzed for:			
each Sample Delivery Group SDG)?	X		
each batch of digested samples?	X		
each matrix type?	X		
Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?		X	

	YES	NO	NA
If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank?			X
Is concentration of prep. blank value less than two times IDL, when IDL is greater than CRDL?			X
Is concentration of prep. blank below the negative CRDL?		X	
Form IV (ICP Interference Check Sample)			
Present and complete?			X
Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?			X
Are all Interference Check Sample results inside the control limits (±20%)?			X
If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?			X
Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)			
Present and complete for:			
each SDG?	X		
each matrix type?	X		
Was field blank used for spiked sample?		X	
Are all recoveries within control limits (75-125)?		X	
If no, is sample concentration greater than or equal to four times spike concentration?		X	
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	X		
Are any spike recoveries:			
less than 10%?		X	
between 10-74%?	X		
between 126-200%?		X	
greater than 200%?		X	
Form VI (Lab Duplicates)			
Present and complete for:			
each SDG?	X		

	YES	NO	NA
each matrix type?	X		
Was field blank used for duplicate analysis?		X	
Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	X		
If no, are all results outside the control limits flagged with an * on Form I's and VI?			X
Is any RPD (where sample and duplicate are both greater than or equal to 5 times CRDL) > 100%?		X	
Is any difference between sample and duplicate (where sample and/or duplicate is less than 5xCRDL) > 2xCRDL?			X
Form VII (Laboratory Control Sample)			
Was one LCS prepared and analyzed for:			
each SDG?	X		
each batch samples digested/distilled?	X		
Is LLCS "Found" value higher than the control limits on Form VII?		X	
Is LCS "Found" lower than the control limits on Form VII?		X	
Form IX (ICP Serial Dilution)			
Was Serial Dilution analysis performed for:			
each SDG?			X
each matrix type?			X
Was field blank(s) used for Serial Dilution Analysis?			X
Are results outside control limit flagged with an "E"" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.			X
Are any % difference values:			
> 10%?			X
≥100%?			X
Furnace Atomic Absorbtion (AA) QC Analysis			
Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed be GFAA?			X

	YES	NO	NA
Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or coefficient of Variation (CV) for concentration greater than CRDL?			X
Was a dilution analyzed for sample with analytical spike recovery less than 40%?			X
Is analytical spike recovery outside the control limits (85-115%) for any sample?			X
Form VIII (Method of Standard Addition Results)			
Present?		X	
If no, is any Form I result coded with "S" or a "+"?		X	
Is coefficient of correlation for MSA less than 0.990 for any sample?			X
Was MSA required for any sample but not performed?		X	
Is coefficient of correlation for MSA less than 0.995?			X
Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?			X
Was proper quantitation procedure followed as outlined in the SOW on page E-23?			X
Field Blank			
Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?			X
If no, was field blank value already rejected due to other QC criteria?			X
Form X, XI, XII (Verification of Instrumental Parameters)			
Is verification report present for :			
Instrument Detection Limits (quarterly)?	X		
ICP Interelement Correlation Factors (annually)?			X
ICP Linear Ranges (quarterly)?			X
Form X (Instrument Detection Limits)			
Are IDLs present for:			
all the analytes?	X		
all the instruments used?	X		

	YES	NO	NA
Is IDL greater than CRDL for any analyte?		X	
If yes, is the concentration of Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.			X
Was any sample result higher linear range of ICP.			X
Was any sample result higher than the highest calibration standard for non-ICP parameters?		X	
If yes for any of the above, was the sample diluted to obtain the result on Form I?			X

Corrected Sample Analysis Data Sheets

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40012F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208295

Level (low/med): LOW Date Received: 08/26/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.21		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40013F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208297

Level (low/med): LOW Date Received: 08/26/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.11		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40014F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208299

Level (low/med): LOW Date Received: 08/26/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.10		IN	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40015F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208301

Level (low/med): LOW Date Received: 08/26/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.14		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40026F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208306

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.07		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40027F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208308

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.89		N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40045F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208322

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.07		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40046F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208324

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.07		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40047F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208326

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.08		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40048F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208328

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.10		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40049F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208330

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.08		N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40050F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208332

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.07		N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40051F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208334

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.05		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40052F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208336

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.05		N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40053F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208338

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.06		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40054F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208318

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.04		IN	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40055F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39026

Matrix (soil/water): FISH Lab Sample ID: 208320

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.05		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

MISCELLANEOUS PARAMETERS

MISCELLANEOUS PARAMETERS

Sample ID	Description	Sex	Fillet Weight	% Lipids	
				Fillet	Remaining Carcass
K40012	Small Mouth Bass	female	453g	0.47	2.90
K40013	Small Mouth Bass	female	359g	1.52	7.30
K40014	Small Mouth Bass	male	212g	0.67	2.20
K40015	Small Mouth Bass	male	173g	0.79	3.90
K40025	Small Mouth Bass	female	264g	0.62	0.94
K40026	Small Mouth Bass	female	273g	1.90	5.90
K40027	Small Mouth Bass	female	170g	0.44	2.00
K40045	Small Mouth Bass	male	289g	2.62	14.0
K40046	Small Mouth Bass	female	286g	1.36	3.40
K40047	Small Mouth Bass	male	218g	1.49	3.50
K40048	Small Mouth Bass	female	255g	2.68	3.50
K40049	Small Mouth Bass	female	184g	0.90	5.30
K40050	Small Mouth Bass	female	187g	0.97	3.60
K40051	Small Mouth Bass	female	140g	0.67	3.50
K40052	Small Mouth Bass	male	141g	0.52	2.80
K40053	Small Mouth Bass	male	144g	1.04	3.90
K40054	Small Mouth Bass	female	152g	1.13	4.10
K40055	Small Mouth Bass	male	133g	0.56	3.00

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# 39029

PCB, PESTICIDE AND
MERCURY ANALYSES

BIOTA - FISH

Analyses performed by:

Aquatec, Inc.
Colchester, Vermont

Review performed by:

Blasland, Bouck & Lee, Inc.
Syracuse, New York

Summary

The following is an assessment of the Pesticide/PCB/PBB and Mercury data for SDG# 39029 for the Biota sampling of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and corrected sample results. Analyses were performed on the following samples:

Sample ID	Lab ID	Species	Description	Sample Location	Analysis	
					Pest/PCB/ Hg	%lipid
K40016W	195015	Sucker	whole body	Morrow Pond	x	x
K40017W	195016	Sucker	whole body	Morrow Pond	x	x
K40018W	195017	Sucker	whole body	Morrow Pond	x	x
K40019W	195018	Sucker	whole body	Morrow Pond	x	x
K40020W	195019	Sucker	whole body	Morrow Pond	x	x
K40021W	218273	Sucker	whole body	Morrow Pond	x	x
K40022W	195020	Sucker	whole body	Morrow Pond	x	x
K40023W	195021	Sucker	whole body	Morrow Pond	x	x
K40024W	195087	Sucker	whole body	Morrow Pond	x	x
K40032W	195764	Sucker	whole body	Morrow Pond	x	x
K40033W	195765	Sucker	whole body	Morrow Pond	x	x
K40075W	196084	Sucker	whole body	Otsego City Dam	x	x
K40076W*	196085	Sucker	whole body	Otsego City Dam	x	x
K40077W	196086	Sucker	whole body	Otsego City Dam	x	x
K40078W	196087	Sucker	whole body	Otsego City Dam	x	x
K40079W	196088	Sucker	whole body	Otsego City Dam	x	x
K40080W	196089	Sucker	whole body	Otsego City Dam	x	x
K40081W	196090	Sucker	whole body	Otsego City Dam	x	x

* MS/MSD/DUP performed on sample

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by Aquatec, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

The specified holding time for PCB analyses from extraction is 40 days. All samples were analyzed within the specified holding time.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No Aroclors were detected in the method or instrument blanks.

3. System Performance

The system performance was acceptable for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The %RSD was within acceptable limits for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limits with the following exceptions:

Instrument 2087 5/17/94 10:02

Aroclor 1254 19.5%

Aroclor 1254 data in the associated samples K40016W, K40077W, K40078W, K40079W, K40080W and K40081W, have been qualified as estimated.

Instrument 2087 5/22/94 00:11

Aroclor 1248 18.0%

Aroclor 1248 data in the associated sample K40023W, have been qualified as estimated.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for one surrogate in sample K40033W. No qualifiers were added to this sample based on surrogate performance. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

A review of the sample chromatograms indicate that the Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

All matrix spike recoveries and relative percent differences (RPD) between recoveries were within acceptable control limits. All matrix spike blank recoveries were also within specified control limits.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the samples numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Holding Times			
Have any holding times been exceeded?		X	
Surrogate Recovery			
Are surrogate recovery forms present?	X		
Are all the samples listed on the appropriate surrogate recovery form?	X		
Are the outliers correctly marked with an asterisk?	X		
Were recoveries of TCMX or DCB outside of specified limits for any sample or blank?	X		
If yes, were the samples reanalyzed?		X	
Matrix Spikes			
Is there a matrix spike recovery form present?	X		
Were matrix spikes analyzed at the required frequency?	X		
How many spike recoveries were outside of QC limits?			
0 out of 4			
How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits?			
0 out of 2			
Blanks			
Is a Method Blank Summary Form present?	X		
Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent?	X		
Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration?	X		

	YES	NO	NA
Is the chromatographic performance acceptable for each instrument?	X		
Do any method/reagent/instrument blanks have positive results?		X	
Do any field/rinse blanks have positive results?			X
Are there field/rinse/equipment blanks associated with every sample?		X	
Calibration and GC Performance			
Are the following chromatograms and data printouts present?			
Aroclor 1016/1260	X		
Aroclor 1221	X		
Aroclor 1232	X		
Aroclor 1242	X		
Aroclor 1248	X		
Aroclor 1254	X		
Instrument Blanks	X		
Are Initial Calibration Summary Forms present and complete for each column and analytical sequence?	X		
Are the linearity criteria for the initial analyses within limits for both columns (20% RSD)	X		
Have all samples been injected within a 12 hour period beginning with the injection of an instrument blank?	X		
Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed?	X		
Are %D values for all compounds within limits (less than 15%)?		X	
Analytical Sequence Check			
Is a analytical sequence form present and complete for each column and each period of analyses?	X		
Was the proper analytical sequence followed?	X		

	YES	NO	NA
Cleanup Efficiency Verification			
If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present?	X		
Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits?	X		
PCB Identification			
Is both a combined and single column Aroclor Identification Report present for every sample?	X		
Do the combined column and individual column Aroclor identifications agree?	X		
Were there any false negatives?		X	
Was GC/MS confirmation provided when required?			X
Compound Quantitation and Reported Detection Limits			
Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture?	X		
Chromatogram Quality			
Were the baselines stable?	X		
Were any electronegative displacement (negative peaks) or unusual peaks detected?		X	
Field Duplicates			
Where field duplicates submitted with the samples?		X	

PCB Holding Time and Surrogate Recovery Summary

Sample ID	Holding Time	Surrogates - Column 1		Surrogates - Column 2	
		TCX	DCB	TCX	DCB
K40016W	OK for all samples	ok	ok		ok
K40017W					
K40018W					
K40019W					
K40020W					
K40021W					
K40022W					
K40023W					
K40024W					
K40032W					
K40033W				↓ (58)	
K40075W					
K40076W					
K40076WMS					
K40076WMSD					
K40077W					
K40078W					
K40079W					
K40080W					
K40081W					

Surrogate Standards
TCX Tetrachloro-m-xylene
DCB Decachlorobiphenyl

Qualifiers:
D Surrogates diluted out
↑ Recovery high
↓ Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: HP2087
Column: RTX-35 / RTX-5

Date:	5/15/94 2146	5/16	5/16	5/17	5/17	5/17	5/17
Time:	to 5/16/94 1736	1900	1933	0214	0247	0928	1002
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016	5.7 / 6.0		0.5				19.5
Aroclor 1221	5.6 / 7.6						
Aroclor 1232	4.2 / 5.3						
Aroclor 1242	5.8 / 5.1				6.0		
Aroclor 1248	4.2 / 4.0	3.0		5.0		7.5	
Aroclor 1254	10.6 / 7.6						
Aroclor 1260	5.1 / 5.5						
Tetrachloro-m-xylene	9.0 / 7.0						
Decachlorobiphenyl	7.4 / 10.8						
Affected Samples:							K40016W
							K40077W
							K40078W
							K40079W
							K40080W
							K40081W

bio39029

PCB Calibration Summary - Page 2

Instrument: HP2087
Column: RTX-35 / RTX-5

Date:	5/18/94 1800	5/19	5/19	5/20	5/20	5/20	5/20
Time:	to 5/19/94 1254	2320	2352	0634	0708	0848	0922
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016	3.9 / 4.3						
Aroclor 1221	4.6 / 5.5						
Aroclor 1232	2.9 / 3.2						
Aroclor 1242	3.6 / 3.3		1.5				
Aroclor 1248	3.1 / 3.0	0.5		4.5		3.0	
Aroclor 1254	3.0 / 3.0				4.0		
Aroclor 1260	3.2 / 2.3						4.0
Tetrachloro-m-xylene	7.7 / 5.0						
Decachlorobiphenyl	7.2 / 8.8						

Affected Samples:

bio39029

PCB Calibration Summary - Page 3

Instrument: HP2087
Column: RTX-35 / RTX-5

Date:		5/21	5/21	5/22	5/22		
Time:		1944	2017	0011	0044		
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016					14.0		
Aroclor 1221							
Aroclor 1232							
Aroclor 1242							
Aroclor 1248		10.5		18.0			
Aroclor 1254							
Aroclor 1260			2.5				
Tetrachloro-m-xylene							
Decachlorobiphenyl							
Affected Samples:				K40023W			

bio39029

CORRECTED ANALYSIS SUMMARY FORMS

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40016W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 195015

Date Received: 08/26/93

Date Extracted: 04/19/94

Date Analyzed: 05/17/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U J
11104-28-2	Aroclor-1221	0.050	U J
11141-16-5	Aroclor-1232	0.050	U J
53469-21-9	Aroclor-1242	0.050	U J
12672-29-6	Aroclor-1248	0.050	U J
11097-69-1	Aroclor-1254	0.55	J
11096-82-5	Aroclor-1260	0.080	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40017W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 3.52 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 195016

Date Received: 08/26/93

Date Extracted: 04/19/94

Date Analyzed: 05/20/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.14	U
11104-28-2	Aroclor-1221	0.14	U
11141-16-5	Aroclor-1232	0.14	U
53469-21-9	Aroclor-1242	0.14	U
12672-29-6	Aroclor-1248	0.14	U
11097-69-1	Aroclor-1254	0.44	
11096-82-5	Aroclor-1260	0.14	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40018W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 195017

Date Received: 08/26/93

Date Extracted: 04/19/94

Date Analyzed: 05/20/94

Sulfur Clean-up: Y (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.48	
11096-82-5	Aroclor-1260	0.22	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40019W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 195018

Date Received: 08/26/93

Date Extracted: 04/19/94

Date Analyzed: 05/20/94

Sulfur Clean-up: Y (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.54	
11096-82-5	Aroclor-1260	0.059	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40020W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 9.20 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 195019

Date Received: 08/26/93

Date Extracted: 04/19/94

Date Analyzed: 05/20/94

Sulfur Clean-up: Y (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.054	U
11104-28-2	Aroclor-1221	0.054	U
11141-16-5	Aroclor-1232	0.054	U
53469-21-9	Aroclor-1242	0.054	U
12672-29-6	Aroclor-1248	0.054	U
11097-69-1	Aroclor-1254	0.30	
11096-82-5	Aroclor-1260	0.16	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40021W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208273

Date Received: 08/26/93

Date Extracted: 04/19/94

Date Analyzed: 05/20/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.49	
11096-82-5	Aroclor-1260	0.057	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40022W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 195020

Date Received: 08/26/93

Date Extracted: 04/18/94

Date Analyzed: 05/20/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.17	
11096-82-5	Aroclor-1260	0.068	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40023W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 3.3 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 195021

Date Received: 08/26/93

Date Extracted: 05/20/94

Date Analyzed: 05/21/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.15	U J
11104-28-2	Aroclor-1221	0.15	U J
11141-16-5	Aroclor-1232	0.15	U J
53469-21-9	Aroclor-1242	0.15	U J
12672-29-6	Aroclor-1248	0.15	U J
11097-69-1	Aroclor-1254	0.71	J
11096-82-5	Aroclor-1260	0.085	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40024W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 10.2 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 195087

Date Received: 08/26/93

Date Extracted: 04/18/94

Date Analyzed: 05/20/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.049	U
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.28	
11096-82-5	Aroclor-1260	0.056	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40032W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 195764

Date Received: 08/28/93

Date Extracted: 04/18/94

Date Analyzed: 05/16/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.65	
11096-82-5	Aroclor-1260	0.050	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40033W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 10.2 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 195765

Date Received: 08/28/93

Date Extracted: 04/18/94

Date Analyzed: 05/16/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.049	U
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.46	
11096-82-5	Aroclor-1260	0.054	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40075W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 5.0

Lab Sample ID: 196084

Date Received: 09/01/93

Date Extracted: 04/18/94

Date Analyzed: 05/16/94

Sulfur Clean-up: Y (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	1.2	
11104-28-2	Aroclor-1221	0.25	U
11141-16-5	Aroclor-1232	0.25	U
53469-21-9	Aroclor-1242	0.25	U
12672-29-6	Aroclor-1248	1.5	
11097-69-1	Aroclor-1254	1.9	
11096-82-5	Aroclor-1260	0.25	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40076W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 196085

Date Received: 09/01/93

Date Extracted: 04/18/94

Date Analyzed: 05/16/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.52	
11104-28-2	Aroclor-1221	0.099	U
11141-16-5	Aroclor-1232	0.099	U
53469-21-9	Aroclor-1242	0.099	U
12672-29-6	Aroclor-1248	0.87	
11097-69-1	Aroclor-1254	0.95	
11096-82-5	Aroclor-1260	0.099	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40077W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 196086

Date Received: 09/01/93

Date Extracted: 04/18/94

Date Analyzed: 05/17/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.36	J
11104-28-2	Aroclor-1221	0.10	U J
11141-16-5	Aroclor-1232	0.10	U J
53469-21-9	Aroclor-1242	0.10	U J
12672-29-6	Aroclor-1248	0.69	J
11097-69-1	Aroclor-1254	1.1	J
11096-82-5	Aroclor-1260	0.10	U J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40078W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 196087

Date Received: 09/01/93

Date Extracted: 04/18/94

Date Analyzed: 05/17/94

Sulfur Clean-up: Y (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.59	J
11104-28-2	Aroclor-1221	0.099	UJ
11141-16-5	Aroclor-1232	0.099	UJ
53469-21-9	Aroclor-1242	0.099	UJ
12672-29-6	Aroclor-1248	0.70	J
11097-69-1	Aroclor-1254	1.2	J
11096-82-5	Aroclor-1260	0.12	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40079W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 196088

Date Received: 09/01/93

Date Extracted: 04/18/94

Date Analyzed: 05/17/94

Sulfur Clean-up: Y (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.41	J
11104-28-2	Aroclor-1221	0.10	U J
11141-16-5	Aroclor-1232	0.10	U J
53469-21-9	Aroclor-1242	0.10	U J
12672-29-6	Aroclor-1248	0.78	J
11097-69-1	Aroclor-1254	0.98	J
11096-82-5	Aroclor-1260	0.089	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40080W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 10.2 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 196089

Date Received: 09/01/93

Date Extracted: 04/18/94

Date Analyzed: 05/17/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.098	U J
11104-28-2	Aroclor-1221	0.098	U J
11141-16-5	Aroclor-1232	0.098	U J
53469-21-9	Aroclor-1242	0.098	U J
12672-29-6	Aroclor-1248	1.2	J
11097-69-1	Aroclor-1254	1.1	J
11096-82-5	Aroclor-1260	0.14	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40081W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39029

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 196090

Date Received: 09/01/93

Date Extracted: 04/18/94

Date Analyzed: 05/17/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.39	J
11104-28-2	Aroclor-1221	0.099	U J
11141-16-5	Aroclor-1232	0.099	U J
53469-21-9	Aroclor-1242	0.099	U J
12672-29-6	Aroclor-1248	0.85	J
11097-69-1	Aroclor-1254	1.1	J
11096-82-5	Aroclor-1260	0.12	J

PESTICIDE ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 Method 8081.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- C Identification confirmed by GC/MS.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The holding time for pesticide extracts is 40 days from extraction to analysis. No deviations from this holding time were noted.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No target compounds were detected in either the method blanks or instrument blanks.

3. System Performance

The resolution and compound breakdown was within acceptable limits for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

A maximum RSD of 20% is allowed. All initial calibrations were within the specified limit.

4.2 Continuing Calibration

A maximum RPD of 25% is allowed. All continuing calibrations were within the specified limit with the following exceptions:

Instrument HP2404-RTX5 5/20/94 1:18

2-Bromobiphenyl 55.4%

All data for this compound in the associated samples K40032W and K40033W have been qualified as estimated.

Instrument HP2404-RTX5 5/21/94 02:18

2-Bromobiphenyl 65.1%

All data for this compound in the associated samples K40022W, K40076W, K40077W, K40078W, K40079W, K40080W, and K40081W have been qualified as estimated.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for both surrogates in sample K40033W. All data for this sample have been qualified as estimated due to the deviation. Recoveries were belowacceptable control limits for one surrogate in sample K40032W. No qualifiers have been added to the sample based on surrogate performance. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The retention times of pesticide/PCB compounds must fall within the calculated retention time windows for both the primary and confirmation columns.

The quantitated concentrations between the two columns exceeded the 25% difference limit for the following samples and compounds:

K40016W	Heptachlor Epoxide	269.8%
	4,4'-DDE	39.8%
K40017W	4,4'-DDE	25.9%
K40018W	Aldrin	31.0%
	Heptachlor Epoxide	224.5%
	gamma-Chlordane	82.8%
	4,4'-DDE	32.9%
K40019W	Heptachlor Epoxide	2110.2%
	gamma-Chlordane	89.3%
	4,4'-DDE	29.2%
	4,4'-DDD	43.5%
K40021W	Heptachlor Epoxide	104.8%
	4,4'-DDE	33.6%

K40075W	2-Bromobiphenyl	32.8%
	Aldrin	36.1%
	gamma-Chlordane	135.4%
	trans-Nonachlor	330.1%
	4,4'-DDT	424.8%
K40076W	2-Bromobiphenyl	69.8%
	Aldrin	32.8%
	gamma-Chlordane	107.7%
	4,4'-DDE	57.5%
K40077W	gamma-Chlordane	164.9%
	alpha-Chlordane	59.6%
	trans-Nonachlor	560.8%
	4,4'-DDE	47.4%
	4,4'-DDD	52.6%
	4,4'-DDT	399.0%
K40078W	Aldrin	40.0%
	Heptachlor Epoxide	286.2%
	gamma-Chlordane	128.8%
	4,4'-DDE	50.4%
	4,4'-DDT	606.7%
K40079W	2-Bromobiphenyl	38.9%
	Aldrin	31.8%
	Heptachlor Epoxide	299.8%
	gamma-Chlordane	108.3%
	alpha-Chlordane	55.0%
	4,4'-DDE	62.8%
K40080W	2-Bromobiphenyl	59.6%
	Aldrin	31.3%
	gamma-Chlordane	114.3%
	4,4'-DDE	59.7%
K40081W	Aldrin	35.2%
	gamma-Chlordane	105.4%
	alpha-Chlordane	31.8%
	4,4'-DDE	49.5%

All data in the samples for the compounds listed has been qualified. Data with %D values between 25 and 50% has been qualified as estimated, J. All data with %D values between 50 and 90% has been qualified as estimated with presumptive evidence of presence, JN. All data with %D values greater than 90% has been rejected.

7. Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

Recoveries for Aldrin and 4,4'DDT were above the acceptable control limits in both the matrix spike and matrix spike duplicate samples. Recoveries for Lindane and Dieldrin were also above the control limit in the matrix spike. The elevated recoveries were most likely due to positive interference from PCBs present in the samples. The blank spike associated with the MS/MSD had acceptable recoveries for all compounds. No qualifiers have been added to the samples based on matrix spike performance.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

Data Validation Checksheets

Pesticide Data Validation Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the samples numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Holding Times			
Have any holding times been exceeded?		X	
Surrogate Recovery			
Are the surrogate recovery forms present?	X		
Are all the samples listed on the appropriate surrogate recovery form?	X		
Are the outliers correctly marked with an asterisk?	X		
Were recoveries of TCMX or DCB outside of specified limits for any sample or blank?	X		
If yes, were the samples reanalyzed?		X	
Were the method blanks reanalyzed?			X
Matrix Spikes			
Is there a matrix spike recovery form present?	X		
Were matrix spikes analyzed at the required frequency?	X		
How many spike recoveries were outside of QC limits? 6 out of 8			
How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? 0 out of 4			
Blanks			
Is the method blank summary form present?	X		
Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent?	X		
Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration?	X		

	YES	NO	NA
Is the chromatographic performance acceptable for each instrument?	X		
Do any method/reagent/instrument blanks have positive results?		X	
Do any trip/field/rinse blanks have positive results?			X
Are there field/rinse/equipment blanks associated with every sample?		X	
Calibration and GC Performance			
Are the following chromatograms and data printouts present for all samples, blanks, and MS/MSD?			
peak resolution check	X		
performance evaluation mixtures (BCS)	X		
Toxaphene multipoint calibration	X		
Pesticide/PBB multipoint calibration	X		
Pesticide/PBB mid-point standard	X		
instrument blanks	X		
Are Forms VI 1-4 present and complete for each column and analytical sequence?	X		
Are the linearity criteria for the initial analyses if INDA and INDB within limits for both columns?	X		
Is the resolution between any two adjacent peaks in the resolution check mixture > 60% for both columns?	X		
Is Form VII-1 present for each BCS analyzed for both columns?	X		
Has the individual % breakdown exceeded 20% on either column for 4,4'-DDT		X	
Are all the relative percent difference (RPD) values for all PEM analytes < 25%?		X	
Is Form VII-2 present and complete for each mid-point standard analyzed?	X		
Are RPD values for all compounds < 25%?		X	
Analytical Sequence Check			

	YES	NO	NA
Is Form VIII present and complete for each column and each period of analyses?	X		
Was the proper analytical sequence followed?	X		
Cleanup Efficiency Verification			
Is Form IX-1 present for each lot of Florisil cartridges used?	X		
Are all samples listed on the form?	X		
If GPC cleanup was performed, is Form IX-2 present?			X
Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits for:			
Florisil cartridge check (80-120%)	X		
GPC calibration (80-110%)			X
Pesticide/PBB Identification			
Is a Form X present for every sample in which a pesticide or PCB was detected?	X		
Was GC/MS confirmation provided when required?			X
Is the percent difference (%D) calculated for the positive sample results on the two columns less than 25%?		X	
Were there any false negatives?		X	
Compound Quantitation and Reported Detection Limits			
Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture?	X		
Chromatogram Quality			
Were the baselines stable?	X		
Were any electronegative displacement (negative peaks) or unusual peaks detected?		X	
Field Duplicates			
Where field duplicates submitted with the samples?		X	

Pesticide/PBB Qualifier Summary
Holding Time and Surrogates

Sample ID	Holding Time	Surrogates - Column 1		Surrogates - Column 2	
		TCX	DCB	TCX	DCB
K40016W	OK for all samples			ok	
K40017W					
K40018W					
K40019W					
K40020W					
K40021W					
K40022W					
K40023W					
K40024W					
K40032W		↓ (58)			
K40033W		↓ (52)	↓ (56)		↓ (55)
K40075W					
K40076W					
K40076WMS					
K40076WMSD					
K40077W					
K40078W					
K40079W					
K40080W					
K40081W					

Surrogates:
TCX Tetrachloro-m-xylene
DCB Decachlorobiphenyl

Qualifiers:
D Surrogate diluted out
↑ Recovery high
↓ Recovery low

Unless otherwise noted, all samples are within specified limits.

Pesticide/PBB Calibration Summary

Instrument: HP2404
Column: RTX-5

Date:	5/17/94	5/20	5/20	5/20	5/21	5/21
Time:	17:19	01:18	09:38	17:58	02:18	10:37
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	55.4	ok	ok	65.1	ok
3-Bromobiphenyl						
4-Bromobiphenyl						
Hexachlorobenzene						
gamma-BHC (Lindane)						
Aldrin						
Heptacior epoxide						
gamma-Chlordane						
alpha-Chlordane						
trans-Nonachlor						
4,4'-DDE						
Dieldrin						
4,4'-DDD						
cis-Nonachlor						
4,4'-DDT						
Hexabromobiphenyl (BP-6)						
Toxaphene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Affected Samples:		K40032W			K40022W	
		K40033W			K40024W	
					K40075W	
					K40076W	
					K40077W	
					K40078W	
					K40079W	
					K40080W	
					K40081W	

bio39029

Pesticide/PBB Calibration Summary - Page 2

Instrument: HP2404
Column: RTX-35

Date:	5/17/94	5/20	5/20	5/20	5/21	5/21
Time:	17:19	01:18	09:38	17:58	02:18	10:37
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok	ok	ok	ok	ok
3-Bromobiphenyl						
4-Bromobiphenyl						
Hexachlorobenzene						
gamma-BHC (Lindane)						
Aldrin						
Heptacior epoxide						
gamma-Chlordane						
alpha-Chlordane						
trans-Nonachlor						
4,4'-DDE						
Dieldrin						
4,4'-DDD						
cis-Nonachlor						
4,4'-DDT						
Hexabromobiphenyl (BP-6)						
Toxaphene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Affected Samples:						

bio39029

Corrected Sample Analysis Data Sheets

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40016W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	195015
Phase Type:	Biota	Date Received:	08/26/93
Phase Weight:	10.0 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
~~1024-57-3~~	~~Heptachlor Epoxide~~	~~0.0063~~	R
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.029	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.011	
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	
Lab Name:	Aquatec, Inc.		K40017W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	195016
Phase Type:	Biota	Date Received:	08/26/93
Phase Weight:	3.5 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.029	U
2113-57-7	3-Bromobiphenyl	0.029	U
92-66-0	4-Bromobiphenyl	0.029	U
118-74-1	Hexachlorobenzene	0.015	U
58-89-9	gamma-BHC	0.015	U
309-00-2	Aldrin	0.015	U
1024-57-3	Heptachlor Epoxide	0.015	U
5103-74-2	gamma-Chlordane	0.015	U
5103-71-9	alpha-Chlordane	0.015	U
39765-80-5	trans-Nonachlor	0.015	U
72-55-9	4,4'-DDE	0.011	J
60-57-1	Dieldrin	0.029	U
72-54-8	4,4'-DDD	0.029	U
5103-73-1	cis-Nonachlor	0.015	U
50-29-3	4,4'-DDT	0.029	U
36355-01-8	Hexabromobiphenyl	0.058	U
8001-35-2	Toxaphene	0.58	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40018W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	195017
Phase Type:	Biota	Date Received:	08/26/93
Phase Weight:	10.1 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0071	J
~~1024-57-3~~	~~Heptachlor Epoxide~~	~~0.0094~~	R
5103-74-2	gamma-Chlordane	0.0064	JN
5103-71-9	alpha-Chlordane	0.0055	
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.038	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.020	
5103-73-1	cis-Nonachlor	0.0077	
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40019W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	195018
Phase Type:	Biota	Date Received:	08/26/93
Phase Weight:	10.0 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0074	
~~1024-57-3~~	~~Heptachlor Epoxide~~	~~0.0088~~	R
5103-74-2	gamma-Chlordane	0.0056	JN
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.040	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.018	J
5103-73-1	cis-Nonachlor	0.0062	
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	
Lab Name:	Aquatec, Inc.		K40020W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	195019
Phase Type:	Biota	Date Received:	08/26/93
Phase Weight:	9.2 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.011	U
2113-57-7	3-Bromobiphenyl	0.011	U
92-66-0	4-Bromobiphenyl	0.011	U
118-74-1	Hexachlorobenzene	0.0055	U
58-89-9	gamma-BHC	0.0055	U
309-00-2	Aldrin	0.0055	U
1024-57-3	Heptachlor Epoxide	0.0055	U
5103-74-2	gamma-Chlordane	0.0055	U
5103-71-9	alpha-Chlordane	0.0055	U
39765-80-5	trans-Nonachlor	0.0055	U
72-55-9	4,4'-DDE	0.020	
60-57-1	Dieldrin	0.011	U
72-54-8	4,4'-DDD	0.011	U
5103-73-1	cis-Nonachlor	0.0055	U
50-29-3	4,4'-DDT	0.011	U
36355-01-8	Hexabromobiphenyl	0.022	U
8001-35-2	Toxaphene	0.22	U

1

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40021W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	208273
Phase Type:	Biota	Date Received:	08/26/93
Phase Weight:	10.0 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
~~1024-57-3~~	~~Heptachlor Epoxide~~	~~0.0062~~	R
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.029	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0051	
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

1

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40022W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	195020
Phase Type:	Biota	Date Received:	08/26/93
Phase Weight:	10.1 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U J
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.030	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.014	
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40023W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	195021
Phase Type:	Biota	Date Received:	08/26/93
Phase Weight:	10.0 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.010	U
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40024W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	195087
Phase Type:	Biota	Date Received:	08/26/93
Phase Weight:	10.2 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U J
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.031	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.015	
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40032W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	195764
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U J
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0053	JN
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0066	
5103-74-2	gamma-Chlordane	0.0052	JN
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.029	JN
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.016	
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40033W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	195765
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.2 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U UJ
2113-57-7	3-Bromobiphenyl	0.010	U UJ
92-66-0	4-Bromobiphenyl	0.010	U UJ
118-74-1	Hexachlorobenzene	0.0050	U UJ
58-89-9	gamma-BHC	0.0050	U UJ
309-00-2	Aldrin	0.0050	U UJ
1024-57-3	Heptachlor Epoxide	0.0050	U UJ
5103-74-2	gamma-Chlordane	0.0050	U UJ
5103-71-9	alpha-Chlordane	0.0050	U UJ
39765-80-5	trans-Nonachlor	0.0050	U UJ
72-55-9	4,4'-DDE	0.019	J
60-57-1	Dieldrin	0.010	U UJ
72-54-8	4,4'-DDD	0.010	U UJ
5103-73-1	cis-Nonachlor	0.0050	U UJ
50-29-3	4,4'-DDT	0.010	U UJ
36355-01-8	Hexabromobiphenyl	0.020	U UJ
8001-35-2	Toxaphene	0.20	U UJ

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40075W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	196084
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.1 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.15	J	
2113-57-7	3-Bromobiphenyl	0.010	U	
92-66-0	4-Bromobiphenyl	0.010	U	
118-74-1	Hexachlorobenzene	0.0050	U	
58-89-9	gamma-BHC	0.0050	U	
309-00-2	Aldrin	0.068	J	
1024-57-3	Heptachlor Epoxide	0.056		
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.021~~		R
5103-71-9	alpha-Chlordane	0.0050	U	
~~39765-80-5~~	~~trans-Nonachlor~~	~~0.011~~		R
72-55-9	4,4'-DDE	0.060		
60-57-1	Dieldrin	0.010	U	
72-54-8	4,4'-DDD	0.026		
5103-73-1	cis-Nonachlor	0.0050	U	
~~50-29-3~~	~~4,4'-DDT~~	~~0.021~~		R
36355-01-8	Hexabromobiphenyl	0.020	U	
8001-35-2	Toxaphene	0.20	U	

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40076W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	196085
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.1 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.076	JN
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.040	J
1024-57-3	Heptachlor Epoxide	0.033	
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.013~~	R
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.030	JN
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.015	
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40077W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	196086
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/28/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U J
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.030	
1024-57-3	Heptachlor Epoxide	0.0050	U
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.0094~~	R
5103-71-9	alpha-Chlordane	0.0052	JN
~~39765-80-5~~	~~trans-Nonachlor~~	~~0.0051~~	R
72-55-9	4,4'-DDE	0.032	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.014	JN
5103-73-1	cis-Nonachlor	0.0050	U
~~50-29-3~~	~~4,4'-DDT~~	~~0.011~~	R
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40078W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	196087
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.1 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/21/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U J
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.045	J
~~1024-57-3~~	~~Heptachlor Epoxide~~	~~0.036~~	R
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.014~~	R
5103-71-9	alpha-Chlordane	0.0069	
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.039	JN
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.014	
5103-73-1	cis-Nonachlor	0.0050	U
~~50-29-3~~	~~4,4'-DDT~~	~~0.012~~	R
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40079W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	196088
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/21/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.12	J
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.049	J
~~1024-57-3~~	~~Heptachlor Epoxide~~	~~0.044~~	R
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.017~~	R
5103-71-9	alpha-Chlordane	0.010	JN
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.037	JN
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.017	
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40080W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	196089
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.2 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/21/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.088	JN
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.045	J
1024-57-3	Heptachlor Epoxide	0.038	
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.015~~	R
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.039	JN
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.015	
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40081W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39029
		Lab Sample ID:	196090
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.1 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/21/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U J
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.044	J
1024-57-3	Heptachlor Epoxide	0.037	
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.015~~	R
5103-71-9	alpha-Chlordane	0.0063	J
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.039	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.012	
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

INORGANIC ANALYSES

Introduction

Analyses were performed according to USEPA CLP SOW ILM03.0.

The data validation process is intended to evaluate the data on a technical basis rather than a contract compliance basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission for validation. During the validation process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this valuation, qualifier codes may be added, deleted, or modified by the data validator. Validator qualified results are annotated with the following codes in accordance with National Functional Guidelines:

Concentration (C) qualifiers:

U The analyte was analyzed for but not detected. The associated value is the instrument detection limit.

B The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).

Quantitation (Q) qualifiers:

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

M Duplicate injection precision not met.

N Spiked sample recovery not within control limits.

S Reported value was determined by the method of standard additions (MSA).

W Post-digestion spike for Furnace-AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.

* Duplicate analysis not within control limits.

+ Correlation coefficient for MSA is less than 0.995.

Validation qualifiers:

J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The recommended holding times for mercury analyses is 28 days from tissue homogenization. All samples were analyzed within this holding time.

2. Blank Contamination

Quality assurance blanks, i.e., preparation and calibration blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Preparation blanks measure laboratory contamination during preparation. Calibration blanks measure instrument contamination and sample cross-contamination.

All calibration and preparation blanks were found to be acceptable, with no analytes detected above the CRQL.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

3.1 Initial Calibration

The correlation coefficient of the initial calibration was greater than the minimum required 0.995.

3.2 Continuing Calibration

All continuing calibration verification standards were acceptable.

3.3 CRDL Standard

The CRDL standard recovery was within acceptable limits.

4. Matrix Spike/Laboratory Duplicate

Matrix spike and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 Matrix spike

Recovery for the matrix spike was below acceptable limits. All data have been qualified as estimated based on the deviation.

4.2 Laboratory Duplicate

The difference between laboratory duplicates was witin acceptable limits.

5. Laboratory Control Sample (LCS)

All recoveries were within the acceptable recovery limits.

6. Serial Dilution

No ICP analyses were performed, therefore no serial dilution was necessary.

7. Furnace QC

No furnace analyses were performed.

8. Method of Standard Additions (MSA)

No MSA were performed.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviation specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

Data Validation Checksheets

Inorganic Data Validation Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the sample numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Form I to IX			
Are all the Form I through Form IX labeled with:			
Laboratory name?	X		
Sample No.?	X		
SDG No.?	X		
Correct units?	X		
Matrix?	X		
Raw Data			
Is the digestion log for flame AA/ICP present?			X
Is the digestion log for furnace AA present?			X
Is the distillation log for mercury present?	X		
Is the distillation log for cyanides present?			X
Are preparation dates present on sample preparation logs/bench sheets?	X		
Are the measurement read out records present for:			
ICP			X
Flame AA			X
Furnace AA			X
Mercury	X		
Cyanides			X
Is the data legible?	X		
Is the data properly labeled?	X		
Holding Times			
Were mercury analyses performed within 28 days?	X		

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	YES	NO	NA
Were cyanide distillations performed within 14 days?			X
Were other metal analysis performed within 6 months?			X
Form I (Final Data)			
Are all forms complete?	X		
Are correct units indicated on Form I's?	X		
Are all "less than IDL" values properly coded with "U"?	X		
Are the correct concentration qualifiers used with final data?	X		
Was a brief physical description of samples given on Form I's?		X	
Calibration			
Is a record of at least 2 point calibration present for ICP analysis?			X
Is a record of 5 point calibration present for Hg analysis?	X		
Is a record of 4 point calibration present for:			
Flame AA?			X
Furnace AA?			X
Cyanides?			X
Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?			X
Is correlation coefficient less than .995 for:			
Mercury Analysis?	X		
Cyanide Analysis?			X
Atomic Absorption Analysis?			X
Form II A (Initial and Continuing Calibration Verification)			
Present and complete for every metal and cyanide?	X		
Are all calibration standards (initial and continuing) within control limits for:			
Metals (90-110 %R)?			X
Hg (80-120 %R)?	X		
Cyanides (85-115 %R)?			X

	YES	NO	NA
Was continuing calibration performed every 10 samples or every 2 hours?	X		
Was the ICV for cyanides distilled?			X
Form II B (CRDL Standards for AA and ICP)			
Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?			X
Was a mid-range calibration verification standard distilled and analyzed for cyanide analysis?			X
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run?			X
Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?			X
Are CRA and CRI standards within control limits for metals (60-120 %R)?	X		
Is mid-range standard within control limits for cyanide (80-120 %R)			X
Form III (Initial and Continuing Calibration Blanks)			
Present and complete?	X		
Was an initial calibration blank analyzed?	X		
Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	X		
Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	X		
Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?			X
Form III (Preparation Blank)			
Was one prep. blank analyzed for:			
each Sample Delivery Group SDG)?	X		
each batch of digested samples?	X		
each matrix type?	X		
Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?		X	

	YES	NO	NA
If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank?			X
Is concentration of prep. blank value less than two times IDL, when IDL is greater than CRDL?			X
Is concentration of prep. blank below the negative CRDL?		X	
Form IV (ICP Interference Check Sample)			
Present and complete?			X
Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?			X
Are all Interference Check Sample results inside the control limits (±20%)?			X
If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?			X
Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)			
Present and complete for:			
each SDG?	X		
each matrix type?	X		
Was field blank used for spiked sample?		X	
Are all recoveries within control limits (75-125)?		X	
If no, is sample concentration greater than or equal to four times spike concentration?		X	
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	X		
Are any spike recoveries:			
less than 10%?		X	
between 10-74%?	X		
between 126-200%?		X	
greater than 200%?		X	
Form VI (Lab Duplicates)			
Present and complete for:			
each SDG?	X		

	YES	NO	NA
each matrix type?	X		
Was field blank used for duplicate analysis?		X	
Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	X		
If no, are all results outside the control limits flagged with an * on Form I's and VI?			X
Is any RPD (where sample and duplicate are both greater than or equal to 5 times CRDL) > 100%?		X	
Is any difference between sample and duplicate (where sample and/or duplicate is less than 5xCRDL) > 2xCRDL?			X
Form VII (Laboratory Control Sample)			
Was one LCS prepared and analyzed for:			
each SDG?	X		
each batch samples digested/distilled?	X		
Is LLCS "Found" value higher than the control limits on Form VII?		X	
Is LCS "Found" lower than the control limits on Form VII?		X	
Form IX (ICP Serial Dilution)			
Was Serial Dilution analysis performed for:			
each SDG?			X
each matrix type?			X
Was field blank(s) used for Serial Dilution Analysis?			X
Are results outside control limit flagged with an "E"" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.			X
Are any % difference values:			
> 10%?			X
≥100%?			X
Furnace Atomic Absorbtion (AA) QC Analysis			
Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed be GFAA?			X

	YES	NO	NA
Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or coefficient of Variation (CV) for concentration greater than CRDL?			X
Was a dilution analyzed for sample with analytical spike recovery less than 40%?			X
Is analytical spike recovery outside the control limits (85-115%) for any sample?			X
Form VIII (Method of Standard Addition Results)			
Present?		X	
If no, is any Form I result coded with "S" or a "+"?		X	
Is coefficient of correlation for MSA less than 0.990 for any sample?			X
Was MSA required for any sample but not performed?		X	
Is coefficient of correlation for MSA less than 0.995?			X
Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?			X
Was proper quantitation procedure followed as outlined in the SOW on page E-23?			X
Field Blank			
Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?			X
If no, was field blank value already rejected due to other QC criteria?			X
Form X, XI, XII (Verification of Instrumental Parameters)			
Is verification report present for :			
Instrument Detection Limits (quarterly)?	X		
ICP Interelement Correlation Factors (annually)?			X
ICP Linear Ranges (quarterly)?			X
Form X (Instrument Detection Limits)			
Are IDLs present for:			
all the analytes?	X		
all the instruments used?	X		

	YES	NO	NA
Is IDL greater than CRDL for any analyte?		X	
If yes, is the concentration of Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.			X
Was any sample result higher linear range of ICP.			X
Was any sample result higher than the highest calibration standard for non-ICP parameters?		X	
If yes for any of the above, was the sample diluted to obtain the result on Form I?			X

Corrected Sample Analysis Data Sheets

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40016W

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 195015

Level (low/med): LOW Date Received: 08/26/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	≤N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40017W

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 195016

Level (low/med): LOW Date Received: 08/26/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN ILM02.1

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40018W

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 195017

Level (low/med): LOW Date Received: 08/26/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40019W

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 195018

Level (low/med): LOW Date Received: 08/26/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40020W

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 195019

Level (low/med): LOW Date Received: 08/26/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40021W

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 208273

Level (low/med): LOW Date Received: 08/26/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40022W

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 195020

Level (low/med): LOW Date Received: 08/26/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.02	B	N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40023W

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 195021

Level (low/med): LOW Date Received: 08/26/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40024W

b Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 195087

Level (low/med): LOW Date Received: 08/26/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.02	B	J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40032W

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 195764

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40033W

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 195765

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40075W

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 196084

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.03		N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40076W

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 196085

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.03		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40077W

b Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 196086

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.03		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40078W

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 196087

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.03		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40079W

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 196088

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.03		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN ILM02.1

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40080W

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 196089

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.03		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40081W

b Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39029

Matrix (soil/water): FISH Lab Sample ID: 196090

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.03		J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

MISCELLANEOUS PARAMETERS

MISCELLANEOUS PARAMETERS

Sample ID	Description	Sex	% Lipids
K40016W	Golden Redhorse Sucker	male	2.52
K40017W	Golden Redhorse Sucker	male	1.25
K40018W	Golden Redhorse Sucker	male	3.27
K40019W	Golden Redhorse Sucker	male	2.71
K40020W	Golden Redhorse Sucker	male	2.00
K40021W	Golden Redhorse Sucker	female	2.05
K40022W	Golden Redhorse Sucker	male	2.63
K40023W	Golden Redhorse Sucker	male	2.30
K40024W	Golden Redhorse Sucker	male	3.51
K40032W	Golden Redhorse Sucker	male	3.98
K40033W	Golden Redhorse Sucker	male	2.88
K40075W	Golden Redhorse Sucker	male	4.94
K40076W	Golden Redhorse Sucker	female	5.64
K40077W	Golden Redhorse Sucker	male	3.31
K40078W	Golden Redhorse Sucker	male	2.05
K40079W	Golden Redhorse Sucker	male	4.02
K40080W	Golden Redhorse Sucker	female	4.28
K40081W	Golden Redhorse Sucker	male	3.11

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# 39058

PCB ANALYSES

BIOTA - TURTLES

Analyses performed by:

Aquatec, Inc.
Colchester, Vermont

Review performed by:

Blasland, Bouck & Lee, Inc.
Syracuse, New York

Summary

The following is an assessment of the PCB data package for SDG # 39058 for the Biota sampling of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and sample results for PCB and lipids analyses. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Description	Sample Location	Date of Collection
K42001M	208372	turtle	muscle	Plainwell Dam	8/27/93
K42002W	195411	turtle	whole body	Plainwell Dam	8/27/93
K42003M	208373	turtle	muscle	Plainwell Dam	8/31/93
K42004M	208374	turtle	muscle	Plainwell Dam	8/31/93
K42005W	196018	turtle	whole body	Plainwell Dam	8/31/93
K42006W	196357	turtle	whole body	Plainwell Dam	9/3/93
K42007M*	208378	turtle	muscle	Plainwell Dam	9/17/93
K42008M	208375	turtle	muscle	Plainwell Dam	9/27/93
K42008W	208376	turtle	whole body	Plainwell Dam	9/27/93
K42009M	208377	turtle	muscle	Plainwell Dam	9/27/93
K42010W	198648	turtle	whole body	Plainwell Dam	9/24/93

* MS/MSD performed on sample

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by Aquatec, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

There is no specified holding time to extraction for PCBs in biota samples. The specified holding time for PCB analysis is 40 days from extraction. All samples were originally analyzed within the specified holding time. The dilutions of samples K42001M, K42004M and K42010W were, however, performed outside the specified holding time. All data for the dilutions have been qualified as estimated.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No target compounds were detected in the method blanks or instrument blanks.

3. System Performance

The system performance was acceptable for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The %RSD was within acceptable limits for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limits.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

All surrogate recoveries were within acceptable control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

A review of the sample chromatograms indicate that the Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

Recoveries of Aroclor 1254 in the matrix spike and matrix spike duplicate samples were above control limits. The high recoveries can be attributed to positive interference from the biologically altered Aroclor 1260 present in the samples. No qualifiers have been added to the data based on the deviation. All relative percent differences (RPD) between spike recoveries were within acceptable control limits. All matrix spike blank recoveries were also within acceptable control limits.

8. General Comments

The recommended data usage for the sample dilutions and reanalyses is as follows:

K42001M, K42001M-RE and K42001M-DL

Due to possible contamination in the original analysis, data from the reanalyzed sample K42001M-RE should be used for all compounds except Aroclor 1260. Data from the diluted analysis K42001M-DL should be used for Aroclor 1260 only.

K42004M, K42004M-RE and K42004M-DL

Due to possible contamination in the original analysis, data from the reanalyzed sample K42004M-RE should be used for all compounds except Aroclor 1260. Data from the diluted analysis K42004M-DL should be used for Aroclor 1260 only.

K42008W and K42008M-RE

Due to possible contamination in the original analysis, data from the reanalyzed sample K42008W-RE should be used for all compounds.

K42010W, K42010W-RE and K42010W-DL

Due to possible contamination in the original analysis, data from the reanalyzed sample K42010W-RE should be used for all compounds except Aroclor 1260. Data from the diluted analysis K42010W-DL should be used for Aroclor 1260 only.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the samples numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Holding Times			
Have any holding times been exceeded?	X		
Surrogate Recovery			
Are surrogate recovery forms present?	X		
Are all the samples listed on the appropriate surrogate recovery form?	X		
Are the outliers correctly marked with an asterisk?			X
Were recoveries of TCMX or DCB outside of specified limits for any sample or blank?		X	
If yes, were the samples reanalyzed?			X
Matrix Spikes			
Is there a matrix spike recovery form present?	X		
Were matrix spikes analyzed at the required frequency?	X		
How many spike recoveries were outside of QC limits?			
2 out of 4			
How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits?			
0 out of 2			
Blanks			
Is a Method Blank Summary Form present?	X		
Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent?	X		
Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration?	X		

bio39058

	YES	NO	NA
Is the chromatographic performance acceptable for each instrument?	X		
Do any method/reagent/instrument blanks have positive results?		X	
Do any field/rinse blanks have positive results?			X
Are there field/rinse/equipment blanks associated with every sample?		X	
Calibration and GC Performance			
Are the following chromatograms and data printouts present?			
Aroclor 1016/1260	X		
Aroclor 1221	X		
Aroclor 1232	X		
Aroclor 1242	X		
Aroclor 1248	X		
Aroclor 1254	X		
Instrument Blanks	X		
Are Initial Calibration Summary Forms present and complete for each column and analytical sequence?	X		
Are the linearity criteria for the initial analyses within limits for both columns (20% RSD)	X		
Have all samples been injected within a 12 hour period beginning with the injection of an instrument blank?	X		
Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed?	X		
Are %D values for all compounds within limits (less than 15%)?	X		
Analytical Sequence Check			
Is a analytical sequence form present and complete for each column and each period of analyses?	X		
Was the proper analytical sequence followed?	X		

	YES	NO	NA
Cleanup Efficiency Verification			
If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present?	X		
Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits?	X		
PCB Identification			
Is both a combined and single column Aroclor Identification Report present for every sample?	X		
Do the combined column and individual column Aroclor identifications agree?	X		
Were there any false negatives?		X	
Was GC/MS confirmation provided when required?			X
Compound Quantitation and Reported Detection Limits			
Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture?	X		
Chromatogram Quality			
Were the baselines stable?	X		
Were any electronegative displacement (negative peaks) or unusual peaks detected?		X	
Field Duplicates			
Where field duplicates submitted with the samples?		X	

PCB Holding Time and Surrogate Recovery Summary

Sample ID	Holding Time	Surrogates - Column 1		Surrogates - Column 2	
		TCX	DCB	TCX	DCB
K42001M	OK for all samples	OK	OK	OK	OK
K42001MRE					
K42001MDL					
K42002W					
K42003M					
K42004M					
K42004MRE					
K42004MDL					
K42005W					
K42006W					
K42007M					
K42007MMS					
K42007MMSD					
K42008M					
K42008W					
K42008WRE					
K42009M					
K42010W					
K42010WRE					
K42010WDL					

Surrogate Standards
TCX Tetrachloro-m-xylene
DCB Decachlorobiphenyl

Qualifiers:
D Surrogates diluted out
↑ Recovery high
↓ Recovery low

Unless otherwise noted, all parameters are within specified limits.

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PCB Calibration Summary

Instrument: HP2618
Column: RTX-35 / RTX-5

Date:	3/10/94 1354	3/11	3/11	3/11	3/11	3/12	3/12
Time:	to 3/11/94 0917	1332	1406	2134	2208	0459	0533
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016	3.7 / 4.9		8.0				
Aroclor 1221	4.5 / 3.6						
Aroclor 1232	5.3 / 5.0						
Aroclor 1242	4.0 / 4.6				12.0		
Aroclor 1248	5.2 / 4.2	3.5		2.5		8.5	
Aroclor 1254	4.0 / 3.5						14.0
Aroclor 1260	3.1 / 2.4						
Tetrachloro-m-xylene	5.9 / 7.1						
Decachlorobiphenyl	6.2 / 7.3						

Affected Samples:

bio39058

PCB Calibration Summary - Page 2

Instrument: HP2618
Column: RTX-35 / RTX-5

Date:		3/12	3/12				
Time:		1223	1258				
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016							
Aroclor 1221							
Aroclor 1232							
Aroclor 1242							
Aroclor 1248		15.0					
Aroclor 1254							
Aroclor 1260			11.0				
Tetrachloro-m-xylene							
Decachlorobiphenyl							

Affected Samples:

bio39056

PCB Calibration Summary - Page 3

Instrument: HP2087
Column: RTX-35 / RTX-5

Date:	3/12/94 1720	3/14	3/14	3/15	3/15		
Time:	to 3/13/94 1339	2323	2359	0710	0746		
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016	5.5 / 4.5		5.0				
Aroclor 1221	9.9 / 3.0						
Aroclor 1232	5.4 / 5.7						
Aroclor 1242	4.1 / 3.4				1.0		
Aroclor 1248	3.6 / 2.9	2.0		3.0			
Aroclor 1254	3.6 / 3.2						
Aroclor 1260	2.8 / 2.7						
Tetrachloro-m-xylene	7.5 / 4.5						
Decachlorobiphenyl	9.1 / 11.4						

Affected Samples:

bio39058

PCB Calibration Summary - Page 4

Instrument: HP2618
Column: RTX-35 / RTX-5

Date:	3/16/94 2042	3/22	3/22	3/223	3/23	3/23	3/23
Time:	to 3/17/94 1610	2025	2059	0350	0425	0859	0933
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016	4.0 / 4.1				0.0		
Aroclor 1221	5.1 / 4.0						
Aroclor 1232	5.9 / 4.3						
Aroclor 1242	3.4 / 6.7						0.0
Aroclor 1248	3.7 / 3.4	7.5		3.0		1.5	
Aroclor 1254	2.7 / 2.4						
Aroclor 1260	3.1 / 3.3		8.5				
Tetrachloro-m-xylene	5.0 / 4.5						
Decachlorobiphenyl	6.7 / 7.6						

Affected Samples:

bio39058

PCB Calibration Summary - Page 5

Instrument: HP2087
Column: RTX-35 / RTX-5

Date:	3/29/94 1224	3/31	3/31	3/31	3/31	4/1	4/1
Time:	to 3/30/94 0844	0653	0729	1959	2035	0346	0422
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016	4.4 / 4.1				7.0		
Aroclor 1221	5.2 / 4.5						
Aroclor 1232	6.9 / 7.0						
Aroclor 1242	4.2 / 4.4						8.0
Aroclor 1248	4.0 / 4.2	11.0		15.0		12.0	
Aroclor 1254	3.7 / 3.1						
Aroclor 1260	3.1 / 3.0		6.0				
Tetrachloro-m-xylene	6.0 / 3.0						
Decachlorobiphenyl	9.0 / 10.6						

Affected Samples:

bio39058

CORRECTED ANALYSIS SUMMARY FORMS

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K42001M~~BE~~

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39058

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208372R1

Date Received: 10/27/93

Date Extracted: 02/15/94

Date Analyzed: 03/23/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	1.9 ~~1.7~~	~~*~~ D J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K42002W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39058

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 195411

Date Received: 10/27/93

Date Extracted: 02/19/94

Date Analyzed: 03/11/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.42	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K42003M

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39058

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208373

Date Received: 09/01/93

Date Extracted: 02/15/94

Date Analyzed: 03/11/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.35	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K42004M~~DE~~

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39058

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208374R1

Date Received: 09/01/93

Date Extracted: 02/15/94

Date Analyzed: 03/23/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	1.3 ~~1.0~~	~~X~~ D J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K42005W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39058

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 196018

Date Received: 09/01/93

Date Extracted: 02/22/94

Date Analyzed: 03/12/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.53	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K42006W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39058

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 5.0

Lab Sample ID: 196357

Date Received: 09/04/93

Date Extracted: 02/23/94

Date Analyzed: 03/15/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.25	U
11104-28-2	Aroclor-1221	0.25	U
11141-16-5	Aroclor-1232	0.25	U
53469-21-9	Aroclor-1242	0.25	U
12672-29-6	Aroclor-1248	0.25	U
11097-69-1	Aroclor-1254	0.25	U
11096-82-5	Aroclor-1260	1.5	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K42007M

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39058

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208378

Date Received: 09/18/93

Date Extracted: 02/15/94

Date Analyzed: 03/11/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.36	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K42008M

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39058

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208375

Date Received: 09/23/93

Date Extracted: 02/19/94

Date Analyzed: 03/11/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.36	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K42008W~~BE~~

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39058

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208376R1

Date Received: 09/23/93

Date Extracted: 02/19/94

Date Analyzed: 03/23/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.092	L
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.65	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K42009M

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39058

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 208377

Date Received: 09/23/93

Date Extracted: 02/19/94

Date Analyzed: 03/11/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.23	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K42010W~~RE~~

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39058

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 198648R1

Date Received: 09/25/93

Date Extracted: 02/17/94

Date Analyzed: 03/23/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	1.2 ~~0.98~~	~~X~~ D

MISCELLANEOUS PARAMETERS

MISCELLANEOUS PARAMETERS

Sample ID	Description	% Lipid
K42001M	Plainwell Dam - Snapping Turtle	0.50
K42002W	Plainwell Dam - Snapping Turtle	0.48
K42003M	Plainwell Dam - Snapping Turtle	0.68
K42004M	Plainwell Dam - Snapping Turtle	1.02
K42005W	Plainwell Dam - Snapping Turtle	0.84
K42006W	Plainwell Dam - Snapping Turtle	1.79
K42007M	Plainwell Dam - Snapping Turtle	0.49
K42008M	Plainwell Dam - Snapping Turtle	0.44
K42008W	Plainwell Dam - Snapping Turtle	0.86
K42009M	Plainwell Dam - Snapping Turtle	0.55
K42010W	Plainwell Dam - Snapping Turtle	0.81

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# 39060

PCB, PESTICIDE AND MERCURY ANALYSES

BIOTA - FISH

Analyses performed by:

Aquatec, Inc.
Colchester, Vermont

Review performed by:

Blasland, Bouck & Lee, Inc.
Syracuse, New York

Summary

The following is an assessment of the Pesticide/PCB/PBB and Mercury data for SDG# 39060 for the Biota sampling of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and corrected sample results. Analyses were performed on the following samples:

Sample ID	Lab ID	Species	Description	Sample Location	Analysis	
					PCB	%Lipid
K40043F	215633	carp	fillet	Below Morrow Dam	x	x
K40043R	215634	carp	carcass	Below Morrow Dam		x
K40044F	215635	carp	fillet	Below Morrow Dam	x	x
K40044R	215636	carp	carcass	Below Morrow Dam		x
K40064F	215637	carp	fillet	Otsego City Dam	x	x
K40064R	215638	carp	carcass	Otsego City Dam		x
K40065F	215639	carp	fillet	Otsego City Dam	x	x
K40065R	215640	carp	carcass	Otsego City Dam		x
K40066F	215641	carp	fillet	Otsego City Dam	x	x
K40066R	215642	carp	carcass	Otsego City Dam		x
K40067F	215643	carp	fillet	Otsego City Dam	x	x
K40067R	215644	carp	carcass	Otsego City Dam		x
K40068F	215645	carp	fillet	Otsego City Dam	x	x
K40068R	215646	carp	carcass	Otsego City Dam		x
K40069F	215647	carp	fillet	Otsego City Dam	x	x
K40069R	215648	carp	carcass	Otsego City Dam		x
K40092F	215649	carp	fillet	Mosel Ave.	x	x
K40092R	215650	carp	carcass	Mosel Ave.		x
K40093F	215651	carp	fillet	Mosel Ave.	x	x
K40093R	215652	carp	carcass	Mosel Ave.		x
K40094F	215653	carp	fillet	Mosel Ave.	x	x
K40094R	215654	carp	carcass	Mosel Ave.		x
K40095F	215655	carp	fillet	Mosel Ave.	x	x
K40095R	215656	carp	carcass	Mosel Ave.		x
K40096F	215657	carp	fillet	Mosel Ave.	x	x
K40096R	215658	carp	carcass	Mosel Ave.		x
K40097F	215659	carp	fillet	Mosel Ave.	x	x
K40097R	215660	carp	carcass	Mosel Ave.		x
K40099F	215661	carp	fillet	Mosel Ave.	x	x

Sample ID	Lab ID	Species	Description	Sample Location	Analysis	
					PCB	%Lipid
K40099R	215662	carp	carcass	Mosel Ave.		x
K40100F	215663	carp	fillet	Mosel Ave.	x	x
K40100R	215664	carp	carcass	Mosel Ave.		x
K40101F	215665	carp	fillet	Mosel Ave.	x	x
K40101R	215666	carp	carcass	Mosel Ave.		x
K40102F*	215667	carp	fillet	Mosel Ave.	x	x
K40102R	215668	carp	carcass	Mosel Ave.		x

* MS/MSD/DUP performed on sample

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by Aquatec, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

The specified holding time for PCB analyses from extraction is 40 days. All samples were analyzed within the specified holding time.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No Aroclors were detected in the method or instrument blanks.

3. System Performance

The system performance was acceptable for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The %RSD was within acceptable limits for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limits.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for one surrogate in samples K40044F, K40065F, K40068F, K40069F, K40092F, K40093F,

K40094F, K40095F, K40096F, K40097F, K40099F, K40100F, K40102F and K40102FMS. No qualifiers were added to these samples based on surrogate performance. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

A review of the sample chromatograms indicate that the Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

All matrix spike and matrix spike duplicate recoveries and the relative percent difference between recoveries (RPD) were within acceptable control limits. All spike recoveries in the matrix spike blank were within acceptable control limits.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the samples numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Holding Times			
Have any holding times been exceeded?		X	
Surrogate Recovery			
Are surrogate recovery forms present?	X		
Are all the samples listed on the appropriate surrogate recovery form?	X		
Are the outliers correctly marked with an asterisk?	X		
Were recoveries of TCMX or DCB outside of specified limits for any sample or blank?	X		
If yes, were the samples reanalyzed?		X	
Matrix Spikes			
Is there a matrix spike recovery form present?		X	
Were matrix spikes analyzed at the required frequency?			X
How many spike recoveries were outside of QC limits? 0 out of 4			
How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? 0 out of 2			
Blanks			
Is a Method Blank Summary Form present?	X		
Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent?	X		
Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration?	X		

	YES	NO	NA
Is the chromatographic performance acceptable for each instrument?	X		
Do any method/reagent/instrument blanks have positive results?		X	
Do any field/rinse blanks have positive results?			X
Are there field/rinse/equipment blanks associated with every sample?		X	
Calibration and GC Performance			
Are the following chromatograms and data printouts present?			
Aroclor 1016/1260	X		
Aroclor 1221	X		
Aroclor 1232	X		
Aroclor 1242	X		
Aroclor 1248	X		
Aroclor 1254	X		
Instrument Blanks	X		
Are Initial Calibration Summary Forms present and complete for each column and analytical sequence?	X		
Are the linearity criteria for the initial analyses within limits for both columns (20% RSD)	X		
Have all samples been injected within a 12 hour period beginning with the injection of an instrument blank?	X		
Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed?	X		
Are %D values for all compounds within limits (less than 15%)?	X		
Analytical Sequence Check			
Is a analytical sequence form present and complete for each column and each period of analyses?	X		
Was the proper analytical sequence followed?	X		

	YES	NO	NA
Cleanup Efficiency Verification			
If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present?	X		
Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits?	X		
PCB Identification			
Is both a combined and single column Aroclor Identification Report present for every sample?	X		
Do the combined column and individual column Aroclor identifications agree?	X		
Were there any false negatives?		X	
Was GC/MS confirmation provided when required?			X
Compound Quantitation and Reported Detection Limits			
Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture?	X		
Chromatogram Quality			
Were the baselines stable?	X		
Were any electronegative displacement (negative peaks) or unusual peaks detected?		X	
Field Duplicates			
Where field duplicates submitted with the samples?		X	

PCB Holding Time and Surrogate Recovery Summary

Sample ID	Holding Time	Surrogates - Column 1		Surrogates - Column 2	
		TCX	DCB	TCX	DCB
K40043F	OK for all samples				
K40044F		↓ (58)		↓ (59)	
K40064F					
K40065F		↓ (57)		↓ (57)	
K40066F					
K40067F					
K40068F		↓ (57)		↓ (58)	
K40069F		↓ (55)		↓ (56)	
K40092F		↓ (52)		↓ (52)	
K40093F		↓ (56)		↓ (56)	
K40094F		↓ (52)		↓ (53)	
K40095F		↓ (51)		↓ (52)	
K40096F		↓ (54)		↓ (55)	
K40097F		↓ (53)		↓ (54)	
K40099F		↓ (58)		↓ (59)	
K40100F		↓ (52)		↓ (53)	
K40101F					
K40102F		↓ (55)		↓ (55)	
K40102FMS		↓ (59)		↓ (59)	
K40102FMSD					

Surrogate Standards
TCX Tetrachloro-m-xylene
DCB Decachlorobiphenyl

Qualifiers:
D Surrogates diluted out
↑ Recovery high
↓ Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: HP2618
Column: RTX-35 / RTX-5

Date:	4/30/94 0543	5/5	5/5	5/5	5/5	5/6	5/6
Time:	to 5/1/94 0106	1014	1048	2309	2343	0634	0709
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016	4.2 / 4.4				6.0		
Aroclor 1221	5.1 / 6.9						
Aroclor 1232	4.2 / 3.1						
Aroclor 1242	3.1 / 3.4						2.5
Aroclor 1248	3.4 / 3.0	1.0		0.5		0.5	
Aroclor 1254	3.1 / 3.6						
Aroclor 1260	3.8 / 3.4		1.0				
Tetrachloro-m-xylene	5.2 / 6.4						
Decachlorobiphenyl	7.9 / 8.1						
Affected Samples:							

bio39060

PCB Calibration Summary - Page 2

Instrument: HP2618
Column: RTX-35 / RTX-5

Date:		5/6	5/6	5/7	5/7	5/9	5/9
Time:		1401	1435	0044	0118	1255	1330
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016							
Aroclor 1221							
Aroclor 1232							
Aroclor 1242							
Aroclor 1248		0.5		3.0		3.0	
Aroclor 1254			0.5				
Aroclor 1260					6.0		3.0
Tetrachloro-m-xylene							
Decachlorobiphenyl							

Affected Samples:

bio39060

PCB Calibration Summary - Page 3

Instrument: HP2618
Column: RTX-35 / RTX-5

Date:		5/10	5/10				
Time:		0423	0457				
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016			0.5				
Aroclor 1221							
Aroclor 1232							
Aroclor 1242							
Aroclor 1248		5.0					
Aroclor 1254							
Aroclor 1260							
Tetrachloro-m-xylene							
Decachlorobiphenyl							

Affected Samples:

bio39060

CORRECTED ANALYSIS SUMMARY FORMS

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40043F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 10.0

Lab Sample ID: 215633

Date Received: 08/28/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	2.0	
11096-82-5	Aroclor-1260	0.72	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40044F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 10.0

Lab Sample ID: 215635

Date Received: 08/28/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	2.9	
11096-82-5	Aroclor-1260	0.61	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40064F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215637

Date Received: 09/01/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.25	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.56	
11096-82-5	Aroclor-1260	0.24	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40065F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 10.0

Lab Sample ID: 215639

Date Received: 09/01/93

Date Extracted: 04/07/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	1.1	
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	3.5	
11096-82-5	Aroclor-1260	0.37	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40066F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 215641

Date Received: 09/01/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.34	
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	0.93	
11096-82-5	Aroclor-1260	0.14	

1

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40043F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215633
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0087	JN
1024-57-3	Heptachlor Epoxide	0.0075	
5103-74-2	gamma-Chlordane	0.012	JN
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.13	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.021	
5103-73-1	cis-Nonachlor	0.0050	U
~~50-29-3~~	~~4,4'-DDT~~	~~0.025~~	R
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

1

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40044F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215635
Phase Type:	Biota	Date Received:	08/28/94
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/16/94
Dilution Factor:	2.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.020	U
2113-57-7	3-Bromobiphenyl	0.020	U
92-66-0	4-Bromobiphenyl	0.020	U
118-74-1	Hexachlorobenzene	0.010	U
58-89-9	gamma-BHC	0.010	U
309-00-2	Aldrin	0.020	JN
1024-57-3	Heptachlor Epoxide	0.016	
5103-74-2	gamma-Chlordane	0.023	JN
5103-71-9	alpha-Chlordane	0.012	
39765-80-5	trans-Nonachlor	0.010	U
72-55-9	4,4'-DDE	0.17	J
60-57-1	Dieldrin	0.020	U
72-54-8	4,4'-DDD	0.057	
5103-73-1	cis-Nonachlor	0.034	J
~~50-29-3~~	~~4,4'-DDT~~	~~0.036~~	R
36355-01-8	Hexabromobiphenyl	0.040	U
8001-35-2	Toxaphene	0.40	U

1

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40064F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215637
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.019	J
1024-57-3	Heptachlor Epoxide	0.0071	JN
5103-74-2	gamma-Chlordane	0.0056	JN
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.033	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

1

PESTICIDE, PBB ANALYSIS DATA SHEET

			Client ID No.
Lab Name:	Aquatec, Inc.		K40065F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215639
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.072	JN
1024-57-3	Heptachlor Epoxide	0.030	J
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.029~~	R
5103-71-9	alpha-Chlordane	0.013	
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.097	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.023	J
5103-73-1	cis-Nonachlor	0.0090	U
~~50-29-3~~	~~4,4'-DDT~~	~~0.026~~	R
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

1

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40066F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215641
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.027	J
1024-57-3	Heptachlor Epoxide	0.013	
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.0066~~	R
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.025	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0071	JN
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

1

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40067F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215643
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.017	JN
1024-57-3	Heptachlor Epoxide	0.0065	J
5103-74-2	gamma-Chlordane	0.0064	JN
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.053	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.0083	J
5103-73-1	cis-Nonachlor	0.0067	JN
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

1

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40068F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215645
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.010	U	
2113-57-7	3-Bromobiphenyl	0.010	U	
92-66-0	4-Bromobiphenyl	0.010	U	
118-74-1	Hexachlorobenzene	0.0050	U	
58-89-9	gamma-BHC	0.0050	U	
309-00-2	Aldrin	0.064	J	
1024-57-3	Heptachlor Epoxide	0.028	J	
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.022~~		R
5103-71-9	alpha-Chlordane	0.013		
39765-80-5	trans-Nonachlor	0.0050	U	
72-55-9	4,4'-DDE	0.079	J	
60-57-1	Dieldrin	0.010	U	
72-54-8	4,4'-DDD	0.031		
5103-73-1	cis-Nonachlor	0.016		
~~50-29-3~~	~~4,4'-DDT~~	~~0.015~~		R
36355-01-8	Hexabromobiphenyl	0.020	U	
8001-35-2	Toxaphene	0.20	U	

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40069F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215647
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.032	J
1024-57-3	Heptachlor Epoxide	0.012	J
5103-74-2	gamma-Chlordane	0.014	JN
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.10	
~~60-57-1~~	~~Dieldrin~~	~~0.012~~	R
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.022	J
~~50-29-3~~	~~4,4'-DDT~~	~~0.024~~	R
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

1

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40092F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215649
Phase Type:	Biota	Date Received:	09/03/94
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/16/94
Dilution Factor:	4.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.040	U
2113-57-7	3-Bromobiphenyl	0.040	U
92-66-0	4-Bromobiphenyl	0.040	U
118-74-1	Hexachlorobenzene	0.020	U
58-89-9	gamma-BHC	0.020	U
309-00-2	Aldrin	0.17	J
1024-57-3	Heptachlor Epoxide	0.065	
5103-74-2	gamma-Chlordane	0.10	JN
5103-71-9	alpha-Chlordane	0.13	
39765-80-5	trans-Nonachlor	0.020	U
72-55-9	4,4'-DDE	0.37	J
60-57-1	Dieldrin	0.040	U
72-54-8	4,4'-DDD	0.24	
5103-73-1	cis-Nonachlor	0.10	
~~50-29-3~~	~~4,4'-DDT~~	~~0.067~~	R
36355-01-8	Hexabromobiphenyl	0.080	U
8001-35-2	Toxaphene	0.80	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40067F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 215643

Date Received: 09/01/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	0.96	
11096-82-5	Aroclor-1260	0.19	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40068F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 10.0

Lab Sample ID: 215645

Date Received: 09/01/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	3.5	
11096-82-5	Aroclor-1260	0.66	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40069F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 10.0

Lab Sample ID: 215647

Date Received: 09/01/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	2.1	
11097-69-1	Aroclor-1254	1.4	
11096-82-5	Aroclor-1260	0.50	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40092F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 20.0

Lab Sample ID: 215649

Date Received: 09/03/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	7.5	
11096-82-5	Aroclor-1260	0.85	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40093F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 10.0

Lab Sample ID: 215651

Date Received: 09/03/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	1.2	
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	3.3	
11096-82-5	Aroclor-1260	0.48	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40094F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 15.0

Lab Sample ID: 215653

Date Received: 09/03/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.75	U
11104-28-2	Aroclor-1221	0.75	U
11141-16-5	Aroclor-1232	0.75	U
53469-21-9	Aroclor-1242	0.75	U
12672-29-6	Aroclor-1248	0.75	U
11097-69-1	Aroclor-1254	4.6	
11096-82-5	Aroclor-1260	0.61	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40095F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 20.0

Lab Sample ID: 215655

Date Received: 09/03/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	3.0	
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	9.6	
11096-82-5	Aroclor-1260	1.0	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40096F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 15.0

Lab Sample ID: 215657

Date Received: 09/03/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.75	U
11104-28-2	Aroclor-1221	0.75	U
11141-16-5	Aroclor-1232	0.75	U
53469-21-9	Aroclor-1242	2.6	
12672-29-6	Aroclor-1248	0.75	U
11097-69-1	Aroclor-1254	4.7	
11096-82-5	Aroclor-1260	0.75	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40097F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 15.0

Lab Sample ID: 215659

Date Received: 09/03/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	2.3	
11104-28-2	Aroclor-1221	0.75	U
11141-16-5	Aroclor-1232	0.75	U
53469-21-9	Aroclor-1242	0.75	U
12672-29-6	Aroclor-1248	0.75	U
11097-69-1	Aroclor-1254	4.9	
11096-82-5	Aroclor-1260	0.75	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40099F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 10.0

Lab Sample ID: 215661

Date Received: 09/03/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.90	
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	2.8	
11096-82-5	Aroclor-1260	0.39	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40100F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 20.0

Lab Sample ID: 215663

Date Received: 09/03/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	3.2	
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	7.3	
11096-82-5	Aroclor-1260	0.86	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40101F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 215665

Date Received: 09/03/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	0.83	
11096-82-5	Aroclor-1260	0.34	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40102F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39060

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 15.0

Lab Sample ID: 215667

Date Received: 09/03/93

Date Extracted: 04/07/94

Date Analyzed: 05/06/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	1.9	
11104-28-2	Aroclor-1221	0.75	U
11141-16-5	Aroclor-1232	0.75	U
53469-21-9	Aroclor-1242	0.75	U
12672-29-6	Aroclor-1248	0.75	U
11097-69-1	Aroclor-1254	4.8	
11096-82-5	Aroclor-1260	0.53	J

PESTICIDE ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 Method 8081.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- C Identification confirmed by GC/MS.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The holding time for pesticide extracts is 40 days from extraction to analysis. No deviations from this holding time were noted.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No target compounds were detected in either the method blanks or instrument blanks.

3. System Performance

The resolution and compound breakdown was within acceptable limits for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

A maximum RSD of 20% is allowed. All initial calibrations were within the specified limit.

4.2 Continuing Calibration

A maximum RPD of 25% is allowed. All continuing calibrations were within the specified limit.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

All surrogate recoveries were within acceptable control limits.

6. Compound Identification

The retention times of pesticide/PBB compounds must fall within the calculated retention time windows for both the primary and confirmation columns.

The quantitated concentrations between the two columns exceeded the 25% difference limit for the following samples and compounds:

K40043F	Aldrin	72.4%
	gamma-Chlordane	75.0%
	4,4'-DDT	776.0%
K40044F	Aldrin	60.0%
	gamma-Chlordane	69.6%
	4,4'-DDE	30.2%
	cis-Nonachlor	26.5%
	4,4'-DDT	708.3%
K40064F	Aldrin	26.3%
	Heptachlor Epoxide	54.9%
	gamma-Chlordane	69.6%
K40065F	Aldrin	58.3%
	Heptachlor Epoxide	33.3%
	gamma-Chlordane	96.6%
	4,4'-DDE	39.4%
	4,4'-DDD	34.8%
	4,4'-DDT	719.2%
K40066F	Aldrin	40.7%
	gamma-Chlordane	127.3%
	4,4'-DDE	40.0%
	cis-Nonachlor	54.9%
K40067F	Aldrin	52.9%
	Heptachlor Epoxide	30.8%
	gamma-Chlordane	71.9%
	4,4'-DDE	44.6%
	4,4'-DDD	44.6%
	cis-Nonachlor	79.1%

K40068F	Aldrin	43.8%
	Heptachlor Epoxide	28.6%
	gamma-Chlordane	90.9%
	4,4'-DDE	29.1%
	4,4'-DDT	746.7%
K40069F	Aldrin	34.4%
	Heptachlor Epoxide	33.3%
	gamma-Chlordane	85.7%
	Dieldrin	183.3%
	cis-Nonachlor	31.8%
	4,4'-DDT	779.2%
K40092F	Aldrin	30.6%
	gamma-Chlordane	55.4%
	4,4'-DDE	26.7%
	4,4'-DDT	656.7%
K40093F	Aldrin	33.3%
	Heptachlor Epoxide	47.4%
	gamma-Chlordane	61.3%
	4,4'-DDE	25.9%
	cis-Nonachlor	34.5%
	4,4'-DDT	178.0%
K40094F	Aldrin	42.4%
	gamma-Chlordane	71.7%
	4,4'-DDE	37.3%
	cis-Nonachlor	36.4%
	4,4'-DDT	681.1%
K40095F	Aldrin	29.0%
	gamma-Chlordane	71.0%
	4,4'-DDE	26.9%
	cis-Nonachlor	41.2%
	4,4'-DDT	629.2%
K40096F	gamma-Chlordane	83.7%
	4,4'-DDE	31.9%
	cis-Nonachlor	46.9%
	4,4'-DDT	591.4%
K40097F	gamma-Chlordane	76.1%
	alpha-Chlordane	46.4%
	4,4'-DDE	38.5%
	cis-Nonachlor	33.3%
	4,4'-DDT	654.5%

K40099F	Aldrin	35.4%
	Heptachlor Epoxide	42.1%
	gamma-Chlordane	50.0%
	4,4'-DDE	31.9%
	cis-Nonachlor	28.0%
	4,4'-DDT	735.0%
K40100F	gamma-Chlordane	81.7%
	4,4'-DDE	28.1%
	cis-Nonachlor	29.3%
	4,4'-DDT	664.9%
K40101F	Aldrin	66.7%
	gamma-Chlordane	66.7%
	4,4'-DDE	25.7%
K40102F	Aldrin	29.7%
	gamma-Chlordane	79.2%
	alpha-Chlordane	28.1%
	4,4'-DDE	31.2%
	cis-Nonachlor	35.3%
	4,4'-DDT	645.9%

All data in the samples for the compounds listed has been qualified. Data with %D values between 25 and 50% has been qualified as estimated, J. All data with %D values between 50 and 90% has been qualified as estimated with presumptive evidence of presence, JN. All data with %D values greater than 90% has been rejected.

7. Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

Recoveries for Aldrin were above the acceptable control limit in both the matrix spike and matrix spike duplicate samples. Recovery of Dieldrin was also above the acceptable control limit in the matrix spike sample. The elevated recoveries were most likely due to positive interference from PCBs present in the samples. The blank spike associated with the MS/MSD had acceptable recoveries for all compounds. No qualifiers were added to the samples based on matrix spike performance.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

Data Validation Checksheets

Pesticide Data Validation Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the samples numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Holding Times			
Have any holding times been exceeded?		X	
Surrogate Recovery			
Are the surrogate recovery forms present?	X		
Are all the samples listed on the appropriate surrogate recovery form?	X		
Are the outliers correctly marked with an asterisk?			X
Were recoveries of TCMX or DCB outside of specified limits for any sample or blank?		X	
If yes, were the samples reanalyzed?			X
Were the method blanks reanalyzed?			X
Matrix Spikes			
Is there a matrix spike recovery form present?	X		
Were matrix spikes analyzed at the required frequency?	X		
How many spike recoveries were outside of QC limits? 3 out of 8			
How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? 0 out of 4			
Blanks			
Is the method blank summary form present?	X		
Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent?	X		
Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration?	X		

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PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	
Lab Name:	Aquatec, Inc.		K40044F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215635
Phase Type:	Biota	Date Received:	08/28/94
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/16/94
Dilution Factor:	2.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.020	U
2113-57-7	3-Bromobiphenyl	0.020	U
92-66-0	4-Bromobiphenyl	0.020	U
118-74-1	Hexachlorobenzene	0.010	U
58-89-9	gamma-BHC	0.010	U
309-00-2	Aldrin	0.020	JN
1024-57-3	Heptachlor Epoxide	0.016	
5103-74-2	gamma-Chlordane	0.023	JN
5103-71-9	alpha-Chlordane	0.012	
39765-80-5	trans-Nonachlor	0.010	U
72-55-9	4,4'-DDE	0.17	J
60-57-1	Dieldrin	0.020	U
72-54-8	4,4'-DDD	0.057	
5103-73-1	cis-Nonachlor	0.034	J
~~50-29-3~~	~~4,4'-DDT~~	~~0.036~~	R
36355-01-8	Hexabromobiphenyl	0.040	U
8001-35-2	Toxaphene	0.40	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40064F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215637
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.019	J
1024-57-3	Heptachlor Epoxide	0.0071	JN
5103-74-2	gamma-Chlordane	0.0056	JN
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.033	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

			Client ID No.
Lab Name:	Aquatec, Inc.		K40065F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215639
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.010	U	
2113-57-7	3-Bromobiphenyl	0.010	U	
92-66-0	4-Bromobiphenyl	0.010	U	
118-74-1	Hexachlorobenzene	0.0050	U	
58-89-9	gamma-BHC	0.0050	U	
309-00-2	Aldrin	0.072	JN	
1024-57-3	Heptachlor Epoxide	0.030	J	
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.029~~		R
5103-71-9	alpha-Chlordane	0.013		
39765-80-5	trans-Nonachlor	0.0050	U	
72-55-9	4,4'-DDE	0.097	J	
60-57-1	Dieldrin	0.010	U	
72-54-8	4,4'-DDD	0.023	J	
5103-73-1	cis-Nonachlor	0.0090	U	
~~50-29-3~~	~~4,4'-DDT~~	~~0.026~~		R
36355-01-8	Hexabromobiphenyl	0.020	U	
8001-35-2	Toxaphene	0.20	U	

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40066F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215641
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.027	J
1024-57-3	Heptachlor Epoxide	0.013	
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.0066~~	R
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.025	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0071	JN
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

			Client ID No.
Lab Name:	Aquatec, Inc.		K40067F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215643
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.017	JN
1024-57-3	Heptachlor Epoxide	0.0065	J
5103-74-2	gamma-Chlordane	0.0064	JN
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.053	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.0083	J
5103-73-1	cis-Nonachlor	0.0067	JN
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

1

PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	K40068F
Lab Name:	Aquatec, Inc.		
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215645
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.010	U	
2113-57-7	3-Bromobiphenyl	0.010	U	
92-66-0	4-Bromobiphenyl	0.010	U	
118-74-1	Hexachlorobenzene	0.0050	U	
58-89-9	gamma-BHC	0.0050	U	
309-00-2	Aldrin	0.064	J	
1024-57-3	Heptachlor Epoxide	0.028	J	
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.022~~		R
5103-71-9	alpha-Chlordane	0.013		
39765-80-5	trans-Nonachlor	0.0050	U	
72-55-9	4,4'-DDE	0.079	J	
60-57-1	Dieldrin	0.010	U	
72-54-8	4,4'-DDD	0.031		
5103-73-1	cis-Nonachlor	0.016		
~~50-29-3~~	~~4,4'-DDT~~	~~0.015~~		R
36355-01-8	Hexabromobiphenyl	0.020	U	
8001-35-2	Toxaphene	0.20	U	

PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	K40069F
Lab Name:	Aquatec, Inc.		
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215647
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.032	J
1024-57-3	Heptachlor Epoxide	0.012	J
5103-74-2	gamma-Chlordane	0.014	JN
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.10	
~~60-57-1~~	~~Dieldrin~~	~~0.012~~	R
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.022	J
~~50-29-3~~	~~4,4'-DDT~~	~~0.024~~	R
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

1

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40092F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215649
Phase Type:	Biota	Date Received:	09/03/94
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/16/94
Dilution Factor:	4.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.040	U
2113-57-7	3-Bromobiphenyl	0.040	U
92-66-0	4-Bromobiphenyl	0.040	U
118-74-1	Hexachlorobenzene	0.020	U
58-89-9	gamma-BHC	0.020	U
309-00-2	Aldrin	0.17	J
1024-57-3	Heptachlor Epoxide	0.065	
5103-74-2	gamma-Chlordane	0.10	JN
5103-71-9	alpha-Chlordane	0.13	
39765-80-5	trans-Nonachlor	0.020	U
72-55-9	4,4'-DDE	0.37	J
60-57-1	Dieldrin	0.040	U
72-54-8	4,4'-DDD	0.24	
5103-73-1	cis-Nonachlor	0.10	
~~50-29-3~~	~~4,4' DDT~~	~~0.067~~	R
36355-01-8	Hexabromobiphenyl	0.080	U
8001-35-2	Toxaphene	0.80	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40093F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215651
Phase Type:	Biota	Date Received:	09/03/94
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.069	J
1024-57-3	Heptachlor Epoxide	0.019	J
5103-74-2	gamma-Chlordane	0.031	JN
5103-71-9	alpha-Chlordane	0.028	
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.12	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.051	
5103-73-1	cis-Nonachlor	0.029	J
~~50-29-3~~	~~4,4'-DDT~~	~~0.024~~	R
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40094F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215653
Phase Type:	Biota	Date Received:	09/03/94
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/16/94
Dilution Factor:	2.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.020	U
2113-57-7	3-Bromobiphenyl	0.020	U
92-66-0	4-Bromobiphenyl	0.020	U
118-74-1	Hexachlorobenzene	0.010	U
58-89-9	gamma-BHC	0.010	U
309-00-2	Aldrin	0.099	J
1024-57-3	Heptachlor Epoxide	0.031	
5103-74-2	gamma-Chlordane	0.046	JN
5103-71-9	alpha-Chlordane	0.038	
39765-80-5	trans-Nonachlor	0.010	U
72-55-9	4,4'-DDE	0.16	J
60-57-1	Dieldrin	0.020	U
72-54-8	4,4'-DDD	0.079	
5103-73-1	cis-Nonachlor	0.056	J
~~50-29-3~~	~~4,4' DDT~~	~~0.037~~	R
36355-01-8	Hexabromobiphenyl	0.040	U
8001-35-2	Toxaphene	0.40	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40095F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215655
Phase Type:	Biota	Date Received:	09/03/94
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/16/94
Dilution Factor:	4.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.040	U
2113-57-7	3-Bromobiphenyl	0.040	U
92-66-0	4-Bromobiphenyl	0.040	U
118-74-1	Hexachlorobenzene	0.020	U
58-89-9	gamma-BHC	0.020	U
309-00-2	Aldrin	0.22	J
1024-57-3	Heptachlor Epoxide	0.12	
5103-74-2	gamma-Chlordane	0.11	JN
5103-71-9	alpha-Chlordane	0.11	
39765-80-5	trans-Nonachlor	0.020	U
72-55-9	4,4'-DDE	0.39	J
60-57-1	Dieldrin	0.040	U
72-54-8	4,4'-DDD	0.19	
5103-73-1	cis-Nonachlor	0.10	J
~~50-29-3~~	~~4,4'-DDT~~	~~0.072~~	R
36355-01-8	Hexabromobiphenyl	0.080	U
8001-35-2	Toxaphene	0.80	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40096F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215657
Phase Type:	Biota	Date Received:	09/03/94
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/16/94
Dilution Factor:	2.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.020	U
2113-57-7	3-Bromobiphenyl	0.020	U
92-66-0	4-Bromobiphenyl	0.020	U
118-74-1	Hexachlorobenzene	0.010	U
58-89-9	gamma-BHC	0.010	U
309-00-2	Aldrin	0.11	
1024-57-3	Heptachlor Epoxide	0.060	
5103-74-2	gamma-Chlordane	0.049	JN
5103-71-9	alpha-Chlordane	0.047	
39765-80-5	trans-Nonachlor	0.010	U
72-55-9	4,4'-DDE	0.19	J
60-57-1	Dieldrin	0.020	U
72-54-8	4,4'-DDD	0.077	
5103-73-1	cis-Nonachlor	0.049	J
~~50-29-3~~	~~4,4'-DDT~~	~~0.035~~	R
36355-01-8	Hexabromobiphenyl	0.040	U
8001-35-2	Toxaphene	0.40	U

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40097F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215659
Phase Type:	Biota	Date Received:	09/03/94
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/17/94
Dilution Factor:	2.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.020	U
2113-57-7	3-Bromobiphenyl	0.020	U
92-66-0	4-Bromobiphenyl	0.020	U
118-74-1	Hexachlorobenzene	0.010	U
58-89-9	gamma-BHC	0.010	U
309-00-2	Aldrin	0.13	
1024-57-3	Heptachlor Epoxide	0.041	
5103-74-2	gamma-Chlordane	0.046	JN
5103-71-9	alpha-Chlordane	0.028	J
39765-80-5	trans-Nonachlor	0.010	U
72-55-9	4,4'-DDE	0.14	J
60-57-1	Dieldrin	0.020	U
72-54-8	4,4'-DDD	0.069	
5103-73-1	cis-Nonachlor	0.048	J
~~50-29-3~~	~~4,4'-DDT~~	~~0.033~~	R
36355-01-8	Hexabromobiphenyl	0.040	U
8001-35-2	Toxaphene	0.40	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40099F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215661
Phase Type:	Biota	Date Received:	09/03/94
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.065	J
1024-57-3	Heptachlor Epoxide	0.019	J
5103-74-2	gamma-Chlordane	0.032	J
5103-71-9	alpha-Chlordane	0.033	
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.094	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.037	
5103-73-1	cis-Nonachlor	0.025	J
~~50-29-3~~	~~4,4' DDT~~	~~0.020~~	R
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40100F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215663
Phase Type:	Biota	Date Received:	09/03/94
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/17/94
Dilution Factor:	2.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.020	U
2113-57-7	3-Bromobiphenyl	0.020	U
92-66-0	4-Bromobiphenyl	0.020	U
118-74-1	Hexachlorobenzene	0.010	U
58-89-9	gamma-BHC	0.010	U
309-00-2	Aldrin	0.16	
1024-57-3	Heptachlor Epoxide	0.057	
5103-74-2	gamma-Chlordane	0.066	JN
5103-71-9	alpha-Chlordane	0.054	
39765-80-5	trans-Nonachlor	0.010	U
72-55-9	4,4'-DDE	0.26	J
60-57-1	Dieldrin	0.020	U
72-54-8	4,4'-DDD	0.11	
5103-73-1	cis-Nonachlor	0.082	J
~~50-29-3~~	~~4,4'-DDT~~	~~0.057~~	R
36355-01-8	Hexabromobiphenyl	0.040	U
8001-35-2	Toxaphene	0.40	U

PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	
Lab Name:	Aquatec, Inc.		K40101F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215665
Phase Type:	Biota	Date Received:	09/03/94
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.012	JN
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0060	JN
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.035	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.012	
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

			Client ID No.
Lab Name:	Aquatec, Inc.		K40102F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39060
		Lab Sample ID:	215667
Phase Type:	Biota	Date Received:	09/03/94
Phase Weight:	10.0 g	Date Extracted:	04/07/94
Extraction:	Soxhlet	Date Analyzed:	05/17/94
Dilution Factor:	2.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.020	U
2113-57-7	3-Bromobiphenyl	0.020	U
92-66-0	4-Bromobiphenyl	0.020	U
118-74-1	Hexachlorobenzene	0.010	U
58-89-9	gamma-BHC	0.010	U
309-00-2	Aldrin	0.11	J
1024-57-3	Heptachlor Epoxide	0.050	
5103-74-2	gamma-Chlordane	0.048	JN
5103-71-9	alpha-Chlordane	0.032	J
39765-80-5	trans-Nonachlor	0.010	U
72-55-9	4,4'-DDE	0.17	J
60-57-1	Dieldrin	0.020	U
72-54-8	4,4'-DDD	0.074	
5103-73-1	cis-Nonachlor	0.051	J
~~50-29-3~~	~~4,4'-DDT~~	~~0.037~~	R
36355-01-8	Hexabromobiphenyl	0.040	U
8001-35-2	Toxaphene	0.40	U

MERCURY ANALYSES

Introduction

Analyses were performed according to USEPA CLP SOW ILM03.0.

The data validation process is intended to evaluate the data on a technical basis rather than a contract compliance basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission for validation. During the validation process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this valuation, qualifier codes may be added, deleted, or modified by the data validator. Validator qualified results are annotated with the following codes in accordance with National Functional Guidelines:

Concentration (C) qualifiers:

- U The analyte was analyzed for but not detected. The associated value is the instrument detection limit.
- B The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).

Quantitation (Q) qualifiers:

- E The reported value is estimated due to the presence of interference.
- M Duplicate injection precision not met.
- N Spiked sample recovery not within control limits.
- S Reported value was determined by the method of standard additions (MSA).
- W Post-digestion spike for Furnace-AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- * Duplicate analysis not within control limits.
- + Correlation coefficient for MSA is less than 0.995.

Validation qualifiers:

- J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
- UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The recommended holding times for mercury analyses is 28 days from tissue homogenization. All samples were analyzed within this holding time.

2. Blank Contamination

Quality assurance blanks, i.e., preparation and calibration blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Preparation blanks measure laboratory contamination during preparation. Calibration blanks measure instrument contamination and sample cross-contamination.

All calibration and preparation blanks were found to be acceptable, with no analytes detected above the CRQL.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

3.1 Initial Calibration

The correlation coefficient of the initial calibration was greater than the minimum required 0.995.

3.2 Continuing Calibration

All continuing calibration verification standards were acceptable.

3.3 CRDL Standard

All CRDL standard recoveries were within acceptable limits.

4. Matrix Spike/Laboratory Duplicate

Matrix spike and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 Matrix spike

Recovery for the matrix spike was within acceptable limits.

4.2 Laboratory Duplicate

The laboratory duplicate relative percent difference (RPD) was within acceptable limits.

5. Laboratory Control Sample (LCS)

All recoveries were within the acceptable recovery limits.

6. Serial Dilution

No ICP analyses were performed, therefore no serial dilution was necessary.

7. Furnace QC

No furnace analyses were performed.

8. Method of Standard Additions (MSA)

No MSA were performed.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviation specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

Data Validation Checksheets

Inorganic Data Validation Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the sample numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Form I to IX			
Are all the Form I through Form IX labeled with:			
Laboratory name?	X		
Sample No.?	X		
SDG No.?	X		
Correct units?	X		
Matrix?	X		
Raw Data			
Is the digestion log for flame AA/ICP present?			X
Is the digestion log for furnace AA present?			X
Is the distillation log for mercury present?	X		
Is the distillation log for cyanides present?			X
Are preparation dates present on sample preparation logs/bench sheets?	X		
Are the measurement read out records present for:			
ICP			X
Flame AA			X
Furnace AA			X
Mercury	X		
Cyanides			X
Is the data legible?	X		
Is the data properly labeled?	X		
Holding Times			
Were mercury analyses performed within 28 days?	X		

	YES	NO	NA
Were cyanide distillations performed within 14 days?			X
Were other metal analysis performed within 6 months?			X
Form I (Final Data)			
Are all forms complete?	X		
Are correct units indicated on Form I's?	X		
Are all "less than IDL" values properly coded with "U"?	X		
Are the correct concentration qualifiers used with final data?	X		
Was a brief physical description of samples given on Form I's?		X	
Calibration			
Is a record of at least 2 point calibration present for ICP analysis?			X
Is a record of 5 point calibration present for Hg analysis?	X		
Is a record of 4 point calibration present for:			
Flame AA?			X
Furnace AA?			X
Cyanides?			X
Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?			X
Is correlation coefficient less than .995 for:			
Mercury Analysis?	X		
Cyanide Analysis?			X
Atomic Absorption Analysis?			X
Form II A (Initial and Continuing Calibration Verification)			
Present and complete for every metal and cyanide?	X		
Are all calibration standards (initial and continuing) within control limits for:			
Metals (90-110 %R)?			X
Hg (80-120 %R)?	X		
Cyanides (85-115 %R)?			X

	YES	NO	NA
Was continuing calibration performed every 10 samples or every 2 hours?	X		
Was the ICV for cyanides distilled?			X
Form II B (CRDL Standards for AA and ICP)			
Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?			X
Was a mid-range calibration verification standard distilled and analyzed fcr cyanide analysis?			X
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run?			X
Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?			X
Are CRA and CRI standards within control limits for metals (60-120 %R)?	X		
Is mid-range standard within control limits for cyanide (80-120 %R)			X
Form III (Initial and Continuing Calibration Blanks)			
Present and complete?	X		
Was an initial calibration blank analyzed?	X		
Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	X		
Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	X		
Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?			X
Form III (Preparation Blank)			
Was one prep. blank analyzed for:			
each Sample Delivery Group SDG)?	X		
each batch of digested samples?	X		
each matrix type?	X		
Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?		X	

	YES	NO	NA
If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank?			X
Is concentration of prep. blank value less than two times IDL, when IDL is greater than CRDL?			X
Is concentration of prep. blank below the negative CRDL?		X	
Form IV (ICP Interference Check Sample)			
Present and complete?			X
Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?			X
Are all Interference Check Sample results inside the control limits (±20%)?			X
If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?			X
Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)			
Present and complete for:			
each SDG?	X		
each matrix type?	X		
Was field blank used for spiked sample?		X	
Are all recoveries within control limits (75-125)?	X		
If no, is sample concentration greater than or equal to four times spike concentration?			X
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?			X
Are any spike recoveries:			
less than 10%?		X	
between 10-74%?		X	
between 126-200%?		X	
greater than 200%?		X	
Form VI (Lab Duplicates)			
Present and complete for:			
each SDG?	X		

	YES	NO	NA
each matrix type?	X		
Was field blank used for duplicate analysis?		X	
Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	X		
If no, are all results outside the control limits flagged with an * on Form I's and VI?			X
Is any RPD (where sample and duplicate are both greater than or equal to 5 times CRDL) > 100%?		X	
Is any difference between sample and duplicate (where sample and/or duplicate is less than 5xCRDL) > 2xCRDL?			X
Form VII (Laboratory Control Sample)			
Was one LCS prepared and analyzed for:			
each SDG?	X		
each batch samples digested/distilled?	X		
Is LLCS "Found" value higher than the control limits on Form VII?		X	
Is LCS "Found" lower than the control limits on Form VII?		X	
Form IX (ICP Serial Dilution)			
Was Serial Dilution analysis performed for:			
each SDG?			X
each matrix type?			X
Was field blank(s) used for Serial Dilution Analysis?			X
Are results outside control limit flagged with an "E"" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.			X
Are any % difference values:			
> 10%?			X
≥100%?			X
Furnace Atomic Absorption (AA) QC Analysis			
Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed be GFAA?			X

	YES	NO	NA
Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or coefficient of Variation (CV) for concentration greater than CRDL?			X
Was a dilution analyzed for sample with analytical spike recovery less than 40%?			X
Is analytical spike recovery outside the control limits (85-115%) for any sample?			X
Form VIII (Method of Standard Addition Results)			
Present?		X	
If no, is any Form I result coded with "S" or a "+"?		X	
Is coefficient of correlation for MSA less than 0.990 for any sample?			X
Was MSA required for any sample but not performed?		X	
Is coefficient of correlation for MSA less than 0.995?			X
Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?			X
Was proper quantitation procedure followed as outlined in the SOW on page E-23?			X
Field Blank			
Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?			X
If no, was field blank value already rejected due to other QC criteria?			X
Form X, XI, XII (Verification of Instrumental Parameters)			
Is verification report present for :			
Instrument Detection Limits (quarterly)?	X		
ICP Interelement Correlation Factors (annually)?			X
ICP Linear Ranges (quarterly)?			X
Form X (Instrument Detection Limits)			
Are IDLs present for:			
all the analytes?	X		
all the instruments used?	X		

	YES	NO	NA
Is IDL greater than CRDL for any analyte?		X	
If yes, is the concentration of Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.			X
Was any sample result higher linear range of ICP.			X
Was any sample result higher than the highest calibration standard for non-ICP parameters?		X	
If yes for any of the above, was the sample diluted to obtain the result on Form I?			X

Corrected Sample Analysis Data Sheets

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40043F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215633

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.12			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40044F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215635

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.09			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40064F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215637

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.17			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40065F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215639

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.18			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

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Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40066F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215641

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.15			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40067F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215643

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.20			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40068F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215645

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.18			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40069F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215647

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.14			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40092F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215649

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.09			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40093F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215651

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.11			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40094F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215653

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.11			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40095F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215655

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.15			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40096F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215657

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.10			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40097F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215659

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.09			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40099F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215661

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.12			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40100F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215663

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.11			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40101F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215665

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.16			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40102F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39060

Matrix (soil/water): SOIL Lab Sample ID: 215667

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.10			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

MISCELLANEOUS PARAMETERS

MISCELLANEOUS PARAMETERS

Sample ID	Description	Sex	Fillet Weight	% Lipids	
				Fillet	Remaining Carcass
K40043	Carp	male	470g	1.85	6.66
K40044	Carp	male	567g	3.60	10.55
K40064	Carp	female	741g	1.18	3.56
K40065	Carp	male	517g	1.57	4.25
K40066	Carp	male	407g	0.89	1.36
K40067	Carp	male	457g	0.81	2.18
K40068	Carp	male	701g	1.33	4.66
K40069	Carp	male	464g	1.86	3.17
K40092	Carp	female	689g	8.88	11.40
K40093	Carp	female	989g	3.76	10.00
K40094	Carp	male	784g	2.84	5.90
K40095	Carp	female	951g	13.83	23.10
K40096	Carp	female	929g	8.56	20.10
K40097	Carp	female	866g	5.07	12.40
K40099	Carp	female	708g	2.22	6.70
K40100	Carp	female	843g	9.10	14.10
K40101	Carp	female	583g	0.74	1.70
K40102	Carp	male	545g	7.73	16.10

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# 39101

PCB, PESTICIDE AND
MERCURY ANALYSES

BIOTA - FISH

Analyses performed by:

Aquatec, Inc.
Colchester, Vermont

Review performed by:

Blasland, Bouck & Lee, Inc.
Syracuse, New York

Summary

The following is an assessment of the Pesticide/PCB/PBB and Mercury data for SDG# 39101 for the Biota sampling of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and the corrected sample results. Analyses were performed on the following samples:

Sample ID	Lab ID	Species	Description	Sample Location	Analysis	
					Pest/PCB/Hg	%Lipid
K40057W	195767	Sucker	whole body	Below Morrow Dam	x	x
K40058W	215633	Sucker	whole body	Below Morrow Dam	x	x
K40059W	215634	Sucker	whole body	Below Morrow Dam	x	x
K40060W	195408	Sucker	whole body	Below Morrow Dam	x	x
K40061W	215635	Sucker	whole body	Below Morrow Dam	x	x
K40062W	215636	Sucker	whole body	Below Morrow Dam	x	x
K40063W	196072	Sucker	whole body	Below Morrow Dam	x	x
K40432W	215637	Sucker	whole body	Below Morrow Dam	x	x
K40433W	215638	Sucker	whole body	Below Morrow Dam	x	x
K40434W	196073	Sucker	whole body	Below Morrow Dam	x	x
K40435W*	215639	Sucker	whole body	Below Morrow Dam	x	x

* MS/MSD/DUP performed on sample

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by Aquatec, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

The specified holding time for PCB analyses from extraction is 40 days. All samples were analyzed within the specified holding time.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No Aroclors were detected in the method or instrument blanks.

3. System Performance

The system performance was acceptable for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The %RSD was within acceptable limits for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limits.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for both surrogates in samples K40058W, K40060W, K40434W and K40435W. All data for these

samples have been qualified as estimated. Recoveries were below acceptable control limits for one surrogate in samples K40057W, K40059W, K40061W, K40062W, K40063W, K40432W, K40433W K40435WMS, and K40435WMSD. No qualifiers were added to these samples based on surrogate performance. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

A review of the sample chromatograms indicate that the Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

All matrix spike and matrix spike duplicate recoveries and the relative percent difference between recoveries (RPD) were within acceptable control limits. All spike recoveries in the matrix spike blank were within acceptable control limits.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the samples numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Holding Times			
Have any holding times been exceeded?		X	
Surrogate Recovery			
Are surrogate recovery forms present?	X		
Are all the samples listed on the appropriate surrogate recovery form?	X		
Are the outliers correctly marked with an asterisk?	X		
Were recoveries of TCMX or DCB outside of specified limits for any sample or blank?	X		
If yes, were the samples reanalyzed?		X	
Matrix Spikes			
Is there a matrix spike recovery form present?		X	
Were matrix spikes analyzed at the required frequency?			X
How many spike recoveries were outside of QC limits? 0 out of 4			
How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? 0 out of 2			
Blanks			
Is a Method Blank Summary Form present?	X		
Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent?	X		
Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration?	X		

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	YES	NO	NA
Is the chromatographic performance acceptable for each instrument?	X		
Do any method/reagent/instrument blanks have positive results?		X	
Do any field/rinse blanks have positive results?			X
Are there field/rinse/equipment blanks associated with every sample?		X	
Calibration and GC Performance			
Are the following chromatograms and data printouts present?			
Aroclor 1016/1260	X		
Aroclor 1221	X		
Aroclor 1232	X		
Aroclor 1242	X		
Aroclor 1248	X		
Aroclor 1254	X		
Instrument Blanks	X		
Are Initial Calibration Summary Forms present and complete for each column and analytical sequence?	X		
Are the linearity criteria for the initial analyses within limits for both columns (20% RSD)	X		
Have all samples been injected within a 12 hour period beginning with the injection of an instrument blank?	X		
Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed?	X		
Are %D values for all compounds within limits (less than 15%)?	X		
Analytical Sequence Check			
Is a analytical sequence form present and complete for each column and each period of analyses?	X		
Was the proper analytical sequence followed?	X		

	YES	NO	NA
Cleanup Efficiency Verification			
If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present?	X		
Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits?	X		
PCB Identification			
Is both a combined and single column Aroclor Identification Report present for every sample?	X		
Do the combined column and individual column Aroclor identifications agree?	X		
Were there any false negatives?		X	
Was GC/MS confirmation provided when required?			X
Compound Quantitation and Reported Detection Limits			
Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture?	X		
Chromatogram Quality			
Were the baselines stable?	X		
Were any electronegative displacement (negative peaks) or unusual peaks detected?		X	
Field Duplicates			
Where field duplicates submitted with the samples?		X	

PCB Holding Time and Surrogate Recovery Summary

Sample ID	Holding Time	Surrogates - Column 1		Surrogates - Column 2	
		TCX	DCB	TCX	DCB
K40057W	OK for all samples	↓ (49)		↓ (51)	
K40058W		↓ (45)	↓ (56)	↓ (47)	↓ (58)
K40059W		↓ (53)		↓ (55)	
K40060W		↓ (45)	↓ (57)	↓ (47)	
K40061W		↓ (49)		↓ (50)	
K40062W		↓ (57)		↓ (59)	
K40063W		↓ (54)		↓ (56)	
K40432W		↓ (57)		↓ (58)	
K40433W		↓ (50)		↓ (52)	
K40434W		↓ (53)		↓ (54)	↓ (59)
K40435W		↓ (48)	↓ (59)	↓ (49)	
K40435WMS		↓ (57)			
K40435WMSD		↓ (51)		↓ (55)	

Surrogate Standards
TCX Tetrachloro-m-xylene
DCB Decachlorobiphenyl

Qualifiers:
D Surrogates diluted out
↑ Recovery high
↓ Recovery low

Unless otherwise noted, all parameters are within specified limits.

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PCB Calibration Summary

Instrument: HP2618
Column: RTX-35 / RTX-5

Date:	5/10/94 1845	5/12	5/12	5/13	5/13	5/13	5/13
Time:	to 5/11/94 1334	1353	1426	0347	0420	1059	1132
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016	4.6 / 4.6						7.5
Aroclor 1221	3.9 / 3.9						
Aroclor 1232	3.2 / 3.7						
Aroclor 1242	2.7 / 2.8						
Aroclor 1248	3.2 / 2.7	4.0		1.0		0.0	
Aroclor 1254	2.8 / 2.8		1.0				
Aroclor 1260	3.5 / 2.7				4.0		
Tetrachloro-m-xylene	4.9 / 3.6						
Decachlorobiphenyl	8.6 / 9.2						

Affected Samples:

bio39101

PCB Calibration Summary - Page 2

Instrument: HP2618
Column: RTX-35 / RTX-5

Date:		5/13	5/13				
Time:		1811	1845				
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016							
Aroclor 1221							
Aroclor 1232							
Aroclor 1242			0.0				
Aroclor 1248		0.5					
Aroclor 1254							
Aroclor 1260							
Tetrachloro-m-xylene							
Decachlorobiphenyl							

Affected Samples:

bio39101

CORRECTED ANALYSIS SUMMARY FORMS

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40057W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39101

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 195767

Date Received: 08/28/93

Date Extracted: 04/18/94

Date Analyzed: 05/13/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	0.83	
11096-82-5	Aroclor-1260	0.083	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40058W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39101

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 195768

Date Received: 08/28/93

Date Extracted: 04/18/94

Date Analyzed: 05/13/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.099	U J
11104-28-2	Aroclor-1221	0.099	U J
11141-16-5	Aroclor-1232	0.099	U J
53469-21-9	Aroclor-1242	0.099	U J
12672-29-6	Aroclor-1248	0.099	U J
11097-69-1	Aroclor-1254	0.74	J
11096-82-5	Aroclor-1260	0.082	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40059W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39101

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 195769

Date Received: 08/28/93

Date Extracted: 04/18/94

Date Analyzed: 05/13/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.45	
11096-82-5	Aroclor-1260	0.039	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40060W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39101

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 195770

Date Received: 08/28/93

Date Extracted: 04/18/94

Date Analyzed: 05/13/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U J
11104-28-2	Aroclor-1221	0.10	U J
11141-16-5	Aroclor-1232	0.10	U J
53469-21-9	Aroclor-1242	0.10	U J
12672-29-6	Aroclor-1248	0.10	U J
11097-69-1	Aroclor-1254	0.73	J
11096-82-5	Aroclor-1260	0.074	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40061W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39101

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 195771

Date Received: 08/28/93

Date Extracted: 04/18/94

Date Analyzed: 05/13/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	0.84	
11096-82-5	Aroclor-1260	0.10	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40062W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39101

Phase Type: BIOTA

Phase Weight: 10.2 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 195772

Date Received: 08/28/93

Date Extracted: 04/18/94

Date Analyzed: 05/13/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.049	U
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.64	
11096-82-5	Aroclor-1260	0.065	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40063W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39101

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 195773

Date Received: 08/28/93

Date Extracted: 04/18/94

Date Analyzed: 05/13/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.69	
11096-82-5	Aroclor-1260	0.070	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40432W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39101

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 217062

Date Received: 01/15/94

Date Extracted: 04/18/94

Date Analyzed: 05/13/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.74	
11096-82-5	Aroclor-1260	0.063	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40433W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39101

Phase Type: BIOTA

Phase Weight: 10.1 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 217063

Date Received: 01/15/94

Date Extracted: 04/18/94

Date Analyzed: 05/13/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.099	U
11104-28-2	Aroclor-1221	0.099	U
11141-16-5	Aroclor-1232	0.099	U
53469-21-9	Aroclor-1242	0.099	U
12672-29-6	Aroclor-1248	0.099	U
11097-69-1	Aroclor-1254	0.92	
11096-82-5	Aroclor-1260	0.076	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40434W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39101

Phase Type: BIOTA

Phase Weight: 10.2 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 217064

Date Received: 01/15/94

Date Extracted: 04/18/94

Date Analyzed: 05/13/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.049	U J
11104-28-2	Aroclor-1221	0.049	U J
11141-16-5	Aroclor-1232	0.049	U J
53469-21-9	Aroclor-1242	0.049	U J
12672-29-6	Aroclor-1248	0.049	U J
11097-69-1	Aroclor-1254	0.58	J
11096-82-5	Aroclor-1260	0.042	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40435W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39101

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 217065

Date Received: 01/15/94

Date Extracted: 04/18/94

Date Analyzed: 05/13/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U J
11104-28-2	Aroclor-1221	0.10	U J
11141-16-5	Aroclor-1232	0.10	U J
53469-21-9	Aroclor-1242	0.10	U J
12672-29-6	Aroclor-1248	0.10	U J
11097-69-1	Aroclor-1254	0.93	J
11096-82-5	Aroclor-1260	0.076	J

PESTICIDE ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 Method 8081.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- C Identification confirmed by GC/MS.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The holding time for pesticide extracts is 40 days from extraction to analysis. No deviations from this holding time were noted.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No target compounds were detected in either the method blanks or instrument blanks.

3. System Performance

The resolution and compound breakdown was within acceptable limits for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

A maximum RSD of 20% is allowed. All initial calibrations were within the specified limit.

4.2 Continuing Calibration

A maximum RPD of 25% is allowed. All continuing calibrations were within the specified limit.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for both surrogates in samples K40057W, K40058W, K40060W, K40061W, K40062W, K40063W, K40433W, K40434W and K40435W. All data in these samples have been qualified as estimated. Recoveries were below acceptable control limits for one surrogate in samples K40059W, K40432W, K40435WMS, and K40435WMSD. No qualifiers were added to these samples based on the deviation. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The retention times of pesticide/PCB compounds must fall within the calculated retention time windows for both the primary and confirmation columns.

The quantitated concentrations between the two columns exceeded the 25% difference limit for the following samples and compounds:

K40057F	3-Bromobiphenyl	42.2%
	4,4'-DDE	42.6%
	4,4'-DDD	39.8%
	cis-Nonachlor	313.5%
K40358F	4,4'-DDE	45.1%
	4,4'-DDD	42.6%
	cis-Nonachlor	319.5%
K40059F	2-Bromobiphenyl	658.0%
	4,4'-DDE	48.7%
	cic-Nonachlor	106.2%
K40060F	2-Brombiphenyl	443.5%
	4,4'-DDE	43.5%
	4,4'-DDD	100.9%
	Cis-Nonachlor	180.9%
K40061F	2-Bromobiphenyl	885.7%
	Heptachlor Expoxide	87.0%
	4,4'-DDE	48.6%
	4,4'-DDD	48.6%
	cis-Nonachlor	304.4%
K40062F	2-Bromobiphenyl	594.4%
	gamma-Chlordane	45.3%
	4,4'-DDE	51.5%
	cis-Nonachlor	280.3%

K40063F	2-Bromobiphenyl	403.5%
	4,4'-DDE	52.0%
	4,4'-DDD	55.6%
	cis-Nonachlor	253.0%
K40432F	3-Bromobiphenyl	42.3%
	4,4'-DDE	45.8%
	4,4'-DDD	80.0%
	cis-Nonachlor	331.3%
K40433F	4,4'-DDE	42.7%
	4,4'-DDD	53.1%
	cis-Nonachlor	317.9%
K40434F	4,4'-DDE	49.2%
	4,4'-DDD	48.4%
	cis-Nonachlor	326.7%
K40435F	2-Bromobiphenyl	525.6%
	3-Bromobiphenyl	46.4%
	Heptachlor Expoxide	113.0%
	4,4'-DDE	41.8%
	4,4'-DDD	48.7%
	cis-Nonachlor	180.0%

All data in the samples for the compounds listed has been qualified. Data with %D values between 25 and 50% has been qualified as estimated, J. All data with %D values between 50 and 90% has been qualified as estimated with presumptive evidence of presence, JN. All data with %D values greater than 90% has been rejected.

7. Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

All matrix spike and matrix spike duplicate recoveries and the relative percent difference (RPD) between recoveries were within acceptable control limits. All matrix spike recoveries in the MS blank samples were also within acceptable control limits.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

Data Validation Checksheets

Pesticide Data Validation Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the samples numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Holding Times			
Have any holding times been exceeded?		X	
Surrogate Recovery			
Are the surrogate recovery forms present?	X		
Are all the samples listed on the appropriate surrogate recovery form?	X		
Are the outliers correctly marked with an asterisk?	X		
Were recoveries of TCMX or DCB outside of specified limits for any sample or blank?	X		
If yes, were the samples reanalyzed?		X	
ere the method blanks reanalyzed?			X
Matrix Spikes			
Is there a matrix spike recovery form present?	X		
Were matrix spikes analyzed at the required frequency?	X		
How many spike recoveries were outside of QC limits? 0 out of 8			
How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? 0 out of 4			
Blanks			
Is the method blank summary form present?	X		
Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent?	X		
Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration?	X		

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	YES	NO	NA
Is the chromatographic performance acceptable for each instrument?	X		
Do any method/reagent/instrument blanks have positive results?		X	
Do any trip/field/rinse blanks have positive results?			X
Are there field/rinse/equipment blanks associated with every sample?		X	
Calibration and GC Performance			
Are the following chromatograms and data printouts present for all samples, blanks, and MS/MSD?			
peak resolution check	X		
performance evaluation mixtures (BCS)	X		
Toxaphene multipoint calibration	X		
Pesticide/PBB multipoint calibration	X		
Pesticide/PBB mid-point standard	X		
instrument blanks	X		
Are Forms VI 1-4 present and complete for each column and analytical sequence?	X		
Are the linearity criteria for the initial analyses if INDA and INDB within limits for both columns?	X		
Is the resolution between any two adjacent peaks in the resolution check mixture > 60% for both columns?	X		
Is Form VII-1 present for each BCS analyzed for both columns?	X		
Has the individual % breakdown exceeded 20% on either column for 4,4'-DDT		X	
Are all the relative percent difference (RPD) values for all PEM analytes < 25%?	X		
Is Form VII-2 present and complete for each mid-point standard analyzed?	X		
Are RPD values for all compounds < 25%?	X		
Analytical Sequence Check			
Is Form VIII present and complete for each column and each period of analyses?	X		

	YES	NO	NA
Was the proper analytical sequence followed?	X		
Cleanup Efficiency Verification			
Is Form IX-1 present for each lot of Florisil cartridges used?	X		
Are all samples listed on the form?	X		
If GPC cleanup was performed, is Form IX-2 present?			X
Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits for:			
Florisil cartridge check (80-120%)	X		
GPC calibration (80-110%)			X
Pesticide/PBB Identification			
Is a Form X present for every sample in which a pesticide or PCB was detected?	X		
Was GC/MS confirmation provided when required?			X
Is the percent difference (%D) calculated for the positive sample results on the two columns less than 25%?		X	
Were there any false negatives?		X	
Compound Quantitation and Reported Detection Limits			
Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture?	X		
Chromatogram Quality			
Were the baselines stable?	X		
Were any electronegative displacement (negative peaks) or unusual peaks detected?		X	
Field Duplicates			
Where field duplicates submitted with the samples?		X	

Pesticide/PBB Qualifier Summary
Holding Time and Surrogates

Sample ID	Holding Time	Surrogates - Column 1		Surrogates - Column 2	
		TCX	DCB	TCX	DCB
K40057F	OK for all samples	↓ (35)	↓ (56)	↓ (36)	↓ (55)
K40058F		↓ (33)	↓ (53)	↓ (34)	↓ (52)
K40059F		↓ (36)		↓ (38)	
K40060F		↓ (37)	↓ (59)	↓ (38)	↓ (59)
K40061F		↓ (36)	↓ (55)	↓ (38)	↓ (56)
K40062F		↓ (34)	↓ (54)	↓ (36)	↓ (55)
K40063F		↓ (34)	↓ (52)	↓ (36)	↓ (53)
K40432F		↓ (43)		↓ (46)	
K40433F		↓ (35)	↓ (51)	↓ (34)	↓ (50)
K40434F		↓ (33)	↓ (52)	↓ (36)	↓ (51)
K40435F		↓ (36)	↓ (59)	↓ (39)	↓ (59)
K40435FMS		↓ (47)		↓ (59)	
K40435FMSD		↓ (48)			

Surrogates:
TCX Tetrachloro-m-xylene
DCB Decachlorobiphenyl

Qualifiers:
D Surrogate diluted out
↑ Recovery high
↓ Recovery low

Unless otherwise noted, all samples are within specified limits.

Pesticide/PBB Calibration Summary

Instrument: HP2404
Column: RTX-5

Date:	5/19/94	5/20	4/20				
Time:	22:08	11:31	19:20				
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok	ok				
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptacior epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							
Affected Samples:							

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Pesticide/PBB Calibration Summary - Page 2

Instrument: HP2404
Column: RTX-35

Date:	5/19/94	5/20	5/20				
Time:	22:08	11:31	19:20				
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok	ok				
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptaclor epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							

Affected Samples:

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Corrected Sample Analysis Data Sheets

PESTICIDE, PBB ANALYSIS DATA SHEET

Client ID No.: K40057W

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO
SDG: 39101

Lab Sample ID: 195767
Phase Type: Biota
Date Received: 08/28/93
Phase Weight: 10.0 g
Date Extracted: 04/18/94
Extraction: Soxhlet
Date Analyzed: 05/20/94
Dilution Factor: 1.0
Sulfur Clean-up: N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	UJ
2113-57-7	3-Bromobiphenyl	0.010	J
92-66-0	4-Bromobiphenyl	0.010	UJ
118-74-1	Hexachlorobenzene	0.0050	UJ
58-89-9	gamma-BHC	0.0050	UJ
309-00-2	Aldrin	0.0050	UJ
1024-57-3	Heptachlor Epoxide	0.0050	UJ
5103-74-2	gamma-Chlordane	0.0089	J
5103-71-9	alpha-Chlordane	0.0050	UJ
39765-80-5	trans-Nonachlor	0.0050	UJ
72-55-9	4,4'-DDE	0.042	J
60-57-1	Dieldrin	0.010	UJ
72-54-8	4,4'-DDD	0.012	J
~~5103-73-1~~	~~cis-Nonachlor~~	~~0.0089~~	R
50-29-3	4,4'-DDT	0.010	UJ
36355-01-8	Hexabromobiphenyl	0.020	UJ
8001-35-2	Toxaphene	0.20	UJ

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40058W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39101
		Lab Sample ID:	195768
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U J
2113-57-7	3-Bromobiphenyl	0.010	U J
92-66-0	4-Bromobiphenyl	0.010	U J
118-74-1	Hexachlorobenzene	0.0050	U J
58-89-9	gamma-BHC	0.0050	U J
309-00-2	Aldrin	0.0050	U J
1024-57-3	Heptachlor Epoxide	0.0050	U J
5103-74-2	gamma-Chlordane	0.0083	J
5103-71-9	alpha-Chlordane	0.0050	U J
39765-80-5	trans-Nonachlor	0.0050	U J
72-55-9	4,4'-DDE	0.038	J
60-57-1	Dieldrin	0.010	U J
72-54-8	4,4'-DDD	0.012	J
~~5103-73-1~~	~~cis-Nonachlor~~	~~0.0082~~	R
50-29-3	4,4'-DDT	0.010	U J
36355-01-8	Hexabromobiphenyl	0.020	U J
8001-35-2	Toxaphene	0.20	U J

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40059W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39101
		Lab Sample ID:	195769
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
~~2052-07-5~~	~~2-Bromobiphenyl~~	~~0.021~~		R
2113-57-7	3-Bromobiphenyl	0.010	U	
92-66-0	4-Bromobiphenyl	0.010	U	
118-74-1	Hexachlorobenzene	0.0050	U	
58-89-9	gamma-BHC	0.0061		
309-00-2	Aldrin	0.0050	U	
1024-57-3	Heptachlor Epoxide	0.0050	U	
5103-74-2	gamma-Chlordane	0.0058		
5103-71-9	alpha-Chlordane	0.0050	U	
39765-80-5	trans-Nonachlor	0.0050	U	
72-55-9	4,4'-DDE	0.026	J	
60-57-1	Dieldrin	0.010	U	
72-54-8	4,4'-DDD	0.010	U	
~~5103-73-1~~	~~cis-Nonachlor~~	~~0.011~~		R
50-29-3	4,4'-DDT	0.010	U	
36355-01-8	Hexabromobiphenyl	0.020	U	
8001-35-2	Toxaphene	0.20	U	

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40060W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39101
		Lab Sample ID:	195770
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
~~2052-07-5~~	~~2-Bromobiphenyl~~	~~0.034~~		R
2113-57-7	3-Bromobiphenyl	0.019	J	
92-66-0	4-Bromobiphenyl	0.010	U J	
118-74-1	Hexachlorobenzene	0.0050	U J	
58-89-9	gamma-BHC	0.0081	J	
309-00-2	Aldrin	0.0050	U J	
1024-57-3	Heptachlor Epoxide	0.0050	U J	
5103-74-2	gamma-Chlordane	0.0072	J	
5103-71-9	alpha-Chlordane	0.0050	U J	
39765-80-5	trans-Nonachlor	0.0050	U J	
72-55-9	4,4'-DDE	0.041	J	
60-57-1	Dieldrin	0.010	U J	
~~72-54-8~~	~~4,4'-DDD~~	~~0.011~~		R
~~5103-73-1~~	~~cis-Nonachlor~~	~~0.013~~		R
50-29-3	4,4'-DDT	0.010	U J	
36355-01-8	Hexabromobiphenyl	0.020	U J	
8001-35-2	Toxaphene	0.20	U J	

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40061W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39101
		Lab Sample ID:	195771
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
~~2052-07-5~~	~~2-Bromobiphenyl~~	~~0.035~~		R
2113-57-7	3-Bromobiphenyl	0.013	J	
92-66-0	4-Bromobiphenyl	0.010	U J	
118-74-1	Hexachlorobenzene	0.0050	U J	
58-89-9	gamma-BHC	0.0050	U J	
309-00-2	Aldrin	0.0050	U J	
1024-57-3	Heptachlor Epoxide	0.0054	J N	
5103-74-2	gamma-Chlordane	0.0097	J	
5103-71-9	alpha-Chlordane	0.0050	U J	
39765-80-5	trans-Nonachlor	0.0050	U J	
72-55-9	4,4'-DDE	0.047	J	
60-57-1	Dieldrin	0.010	U J	
72-54-8	4,4'-DDD	0.014	J	
~~5103-73-1~~	~~cis-Nonachlor~~	~~0.0098~~		R
50-29-3	4,4'-DDT	0.010	U J	
36355-01-8	Hexabromobiphenyl	0.020	U J	
8001-35-2	Toxaphene	0.20	U J	

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40062W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39101
		Lab Sample ID:	195772
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
~~2052-07-5~~	~~2-Bromobiphenyl~~	~~0.018~~	R
2113-57-7	3-Bromobiphenyl	0.010	U J
92-66-0	4-Bromobiphenyl	0.010	U J
118-74-1	Hexachlorobenzene	0.0050	U J
58-89-9	gamma-BHC	0.0050	U J
309-00-2	Aldrin	0.0050	U J
1024-57-3	Heptachlor Epoxide	0.0050	U J
5103-74-2	gamma-Chlordane	0.0065	J
5103-71-9	alpha-Chlordane	0.0050	U J
39765-80-5	trans-Nonachlor	0.0050	U J
72-55-9	4,4'-DDE	0.0029	J N
60-57-1	Dieldrin	0.010	U J
72-54-8	4,4'-DDD	0.010	U J
~~5103-73-1~~	~~cis-Nonachlor~~	~~0.0076~~	R
50-29-3	4,4'-DDT	0.010	U J
36355-01-8	Hexabromobiphenyl	0.020	U J
8001-35-2	Toxaphene	0.20	U J

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40063W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39101
		Lab Sample ID:	195773
Phase Type:	Biota	Date Received:	08/28/93
Phase Weight:	10.0 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
~~2052-07-5~~	~~2-Bromobiphenyl~~	~~0.031~~		R
2113-57-7	3-Bromobiphenyl	0.013	J	
92-66-0	4-Bromobiphenyl	0.010	U J	
118-74-1	Hexachlorobenzene	0.0050	U J	
58-89-9	gamma-BHC	0.0050	U J	
309-00-2	Aldrin	0.0050	U J	
1024-57-3	Heptachlor Epoxide	0.0050	U J	
5103-74-2	gamma-Chlordane	0.0066	J	
5103-71-9	alpha-Chlordane	0.0050	U J	
39765-80-5	trans-Nonachlor	0.0050	U J	
72-55-9	4,4'-DDE	0.0030	J N	
60-57-1	Dieldrin	0.010	U J	
72-54-8	4,4'-DDD	0.011	J N	
~~5103-73-1~~	~~cis-Nonachlor~~	~~0.0083~~		R
50-29-3	4,4'-DDT	0.010	U J	
36355-01-8	Hexabromobiphenyl	0.020	U J	
8001-35-2	Toxaphene	0.20	U J	

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40432W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39101
		Lab Sample ID:	217062
Phase Type:	Biota	Date Received:	01/15/94
Phase Weight:	10.0 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	J
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0054	
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0083	
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.040	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.011	JN
~~5103-73-1~~	~~cis-Nonachlor~~	~~0.0086~~	R
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40433W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39101
		Lab Sample ID:	217063
Phase Type:	Biota	Date Received:	01/15/94
Phase Weight:	10.0 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U J
2113-57-7	3-Bromobiphenyl	0.011	J
92-66-0	4-Bromobiphenyl	0.010	U J
118-74-1	Hexachlorobenzene	0.0050	U J
58-89-9	gamma-BHC	0.0050	U J
309-00-2	Aldrin	0.0050	U J
1024-57-3	Heptachlor Epoxide	0.0050	U J
5103-74-2	gamma-Chlordane	0.0082	J
5103-71-9	alpha-Chlordane	0.0050	U J
39765-80-5	trans-Nonachlor	0.0050	U J
72-55-9	4,4'-DDE	0.039	J
60-57-1	Dieldrin	0.010	U J
72-54-8	4,4'-DDD	0.013	J N
~~5103-73-1~~	~~cis-Nonachlor~~	~~0.0084~~	R
50-29-3	4,4'-DDT	0.010	U J
36355-01-8	Hexabromobiphenyl	0.020	U J
8001-35-2	Toxaphene	0.20	U J

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PESTICIDE, PBB ANALYSIS DATA SHEET

			Client ID No.
Lab Name:	Aquatec, Inc.		K40434W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39101
		Lab Sample ID:	217064
Phase Type:	Biota	Date Received:	01/15/94
Phase Weight:	10.0 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U J
2113-57-7	3-Bromobiphenyl	0.010	U J
92-66-0	4-Bromobiphenyl	0.010	U J
118-74-1	Hexachlorobenzene	0.0050	U J
58-89-9	gamma-BHC	0.0050	U J
309-00-2	Aldrin	0.0050	U J
1024-57-3	Heptachlor Epoxide	0.0050	U J
5103-74-2	gamma-Chlordane	0.0060	J
5103-71-9	alpha-Chlordane	0.0050	U J
39765-80-5	trans-Nonachlor	0.0050	U J
72-55-9	4,4'-DDE	0.026	J
60-57-1	Dieldrin	0.010	U J
72-54-8	4,4'-DDD	0.013	J
~~5103-73-1~~	~~cis-Nonachlor~~	~~0.0060~~	R
50-29-3	4,4'-DDT	0.010	U J
36355-01-8	Hexabromobiphenyl	0.020	U J
8001-35-2	Toxaphene	0.20	U J

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40435W
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39101
		Lab Sample ID:	217065
Phase Type:	Biota	Date Received:	01/15/94
Phase Weight:	10.0 g	Date Extracted:	04/18/94
Extraction:	Soxhlet	Date Analyzed:	05/20/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
~~2052-07-5~~	~~2-Bromobiphenyl~~	~~0.018~~		R
2113-57-7	3-Bromobiphenyl	0.011	J	
92-66-0	4-Bromobiphenyl	0.010	U J	
118-74-1	Hexachlorobenzene	0.0050	U J	
58-89-9	gamma-BHC	0.0050	U J	
309-00-2	Aldrin	0.0050	U J	
~~1024-57-3~~	~~Heptachlor Epoxide~~	~~0.0054~~		R
5103-74-2	gamma-Chlordane	0.010	J	
5103-71-9	alpha-Chlordane	0.0050	U J	
39765-80-5	trans-Nonachlor	0.0050	U J	
72-55-9	4,4'-DDE	0.049	J	
60-57-1	Dieldrin	0.010	U J	
72-54-8	4,4'-DDD	0.015	J	
~~5103-73-1~~	~~cis-Nonachlor~~	~~0.010~~		R
50-29-3	4,4'-DDT	0.010	U J	
36355-01-8	Hexabromobiphenyl	0.020	U J	
8001-35-2	Toxaphene	0.20	U J	

MERCURY ANALYSES

Introduction

Analyses were performed according to USEPA CLP SOW ILM03.0.

The data validation process is intended to evaluate the data on a technical basis rather than a contract compliance basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission for validation. During the validation process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this valuation, qualifier codes may be added, deleted, or modified by the data validator. Validator qualified results are annotated with the following codes in accordance with National Functional Guidelines:

Concentration (C) qualifiers:

U The analyte was analyzed for but not detected. The associated value is the instrument detection limit.

B The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).

Quantitation (Q) qualifiers:

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

M Duplicate injection precision not met.

N Spiked sample recovery not within control limits.

S Reported value was determined by the method of standard additions (MSA).

W Post-digestion spike for Furnace-AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.

* Duplicate analysis not within control limits.

+ Correlation coefficient for MSA is less than 0.995.

Validation qualifiers:

J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The recommended holding times for mercury analyses is 28 days from tissue homogenization. All samples were analyzed within this holding time.

2. Blank Contamination

Quality assurance blanks, i.e., preparation and calibration blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or analysis. Preparation blanks measure laboratory contamination during preparation. Calibration blanks measure instrument contamination and sample cross-contamination.

All calibration and preparation blanks were found to be acceptable, with no analytes detected above the CRQL.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

3.1 Initial Calibration

The correlation coefficient of the initial calibration was greater than the minimum required 0.995.

3.2 Continuing Calibration

All continuing calibration verification standards were acceptable.

3.3 CRDL Standard

All CRDL standard recoveries were within acceptable limits.

4. Matrix Spike/Laboratory Duplicate

Matrix spike and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 Matrix spike

Recovery for the matrix spike was below acceptable limits. All data have been qualified as estimated based on the deviation.

4.2 Laboratory Duplicate

The difference between laboratory duplicates was within acceptable limits.

5. Laboratory Control Sample (LCS)

All recoveries were within the acceptable recovery limits.

6. Serial Dilution

No ICP analyses were performed, therefore no serial dilution was necessary.

7. Furnace QC

No furnace analyses were performed.

8. Method of Standard Additions (MSA)

No MSA were performed.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviation specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

Data Validation Checksheets

Inorganic Data Validation Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the sample numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Form I to IX			
Are all the Form I through Form IX labeled with:			
Laboratory name?	X		
Sample No.?	X		
SDG No.?	X		
Correct units?	X		
Matrix?	X		
Raw Data			
Is the digestion log for flame AA/ICP present?			X
Is the digestion log for furnace AA present?			X
Is the distillation log for mercury present?	X		
Is the distillation log for cyanides present?			X
Are preparation dates present on sample preparation logs/bench sheets?	X		
Are the measurement read out records present for:			
ICP			X
Flame AA			X
Furnace AA			X
Mercury	X		
Cyanides			X
Is the data legible?	X		
Is the data properly labeled?	X		
Holding Times			
Were mercury analyses performed within 28 days?	X		

	YES	NO	NA
Were cyanide distillations performed within 14 days?			X
Were other metal analysis performed within 6 months?			X
Form I (Final Data)			
Are all forms complete?	X		
Are correct units indicated on Form I's?	X		
Are all "less than IDL" values properly coded with "U"?	X		
Are the correct concentration qualifiers used with final data?	X		
Was a brief physical description of samples given on Form I's?		X	
Calibration			
Is a record of at least 2 point calibration present for ICP analysis?			X
Is a record of 5 point calibration present for Hg analysis?	X		
Is a record of 4 point calibration present for:			
Flame AA?			X
Furnace AA?			X
Cyanides?			X
Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?			X
Is correlation coefficient less than .995 for:			
Mercury Analysis?	X		
Cyanide Analysis?			X
Atomic Absorption Analysis?			X
Form II A (Initial and Continuing Calibration Verification)			
Present and complete for every metal and cyanide?	X		
Are all calibration standards (initial and continuing) within control limits for:			
Metals (90-110 %R)?			X
Hg (80-120 %R)?	X		
Cyanides (85-115 %R)?			X

	YES	NO	NA
Was continuing calibration performed every 10 samples or every 2 hours?	X		
Was the ICV for cyanides distilled?			X
Form II B (CRDL Standards for AA and ICP)			
Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?			X
Was a mid-range calibration verification standard distilled and analyzed for cyanide analysis?			X
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run?			X
Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?			X
Are CRA and CRI standards within control limits for metals (60-120 %R)?	X		
Is mid-range standard within control limits for cyanide (80-120 %R)			X
Form III (Initial and Continuing Calibration Blanks)			
Present and complete?	X		
Was an initial calibration blank analyzed?	X		
Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	X		
Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	X		
Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?			X
Form III (Preparation Blank)			
Was one prep. blank analyzed for:			
each Sample Delivery Group SDG)?	X		
each batch of digested samples?	X		
each matrix type?	X		
Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?		X	

	YES	NO	NA
If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank?			X
Is concentration of prep. blank value less than two times IDL, when IDL is greater than CRDL?			X
Is concentration of prep. blank below the negative CRDL?		X	
Form IV (ICP Interference Check Sample)			
Present and complete?			X
Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?			X
Are all Interference Check Sample results inside the control limits (±20%)?			X
If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?			X
Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)			
Present and complete for:			
each SDG?	X		
each matrix type?	X		
Was field blank used for spiked sample?		X	
Are all recoveries within control limits (75-125)?		X	
If no, is sample concentration greater than or equal to four times spike concentration?		X	
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	X		
Are any spike recoveries:			
less than 10%?		X	
between 10-74%?	X		
between 126-200%?		X	
greater than 200%?		X	
Form VI (Lab Duplicates)			
Present and complete for:			
each SDG?	X		

	YES	NO	NA
each matrix type?	X		
Was field blank used for duplicate analysis?		X	
Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	X		
If no, are all results outside the control limits flagged with an * on Form I's and VI?			X
Is any RPD (where sample and duplicate are both greater than or equal to 5 times CRDL) > 100%?		X	
Is any difference between sample and duplicate (where sample and/or duplicate is less than 5xCRDL) > 2xCRDL?			X
Form VII (Laboratory Control Sample)			
Was one LCS prepared and analyzed for:			
each SDG?	X		
each batch samples digested/distilled?	X		
Is LLCS "Found" value higher than the control limits on Form VII?		X	
Is LCS "Found" lower than the control limits on Form VII?		X	
Form IX (ICP Serial Dilution)			
Was Serial Dilution analysis performed for:			
each SDG?			X
each matrix type?			X
Was field blank(s) used for Serial Dilution Analysis?			X
Are results outside control limit flagged with an "E"" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.			X
Are any % difference values:			
> 10%?			X
≥100%?			X
Furnace Atomic Absorption (AA) QC Analysis			
Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed be GFAA?			X

	YES	NO	NA
Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or coefficient of Variation (CV) for concentration greater than CRDL?			X
Was a dilution analyzed for sample with analytical spike recovery less than 40%?			X
Is analytical spike recovery outside the control limits (85-115%) for any sample?			X
Form VIII (Method of Standard Addition Results)			
Present?		X	
If no, is any Form I result coded with "S" or a "+"?		X	
Is coefficient of correlation for MSA less than 0.990 for any sample?			X
Was MSA required for any sample but not performed?		X	
Is coefficient of correlation for MSA less than 0.995?			X
Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?			X
Was proper quantitation procedure followed as outlined in the SOW on page E-23?			X
Field Blank			
Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?			X
If no, was field blank value already rejected due to other QC criteria?			X
Form X, XI, XII (Verification of Instrumental Parameters)			
Is verification report present for :			
Instrument Detection Limits (quarterly)?	X		
ICP Interelement Correlation Factors (annually)?			X
ICP Linear Ranges (quarterly)?			X
Form X (Instrument Detection Limits)			
Are IDLs present for:			
all the analytes?	X		
all the instruments used?	X		

	YES	NO	NA
Is IDL greater than CRDL for any analyte?		X	
If yes, is the concentration of Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.			X
Was any sample result higher linear range of ICP.			X
Was any sample result higher than the highest calibration standard for non-ICP parameters?		X	
If yes for any of the above, was the sample diluted to obtain the result on Form I?			X

Corrected Sample Analysis Data Sheets

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40057W

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39101

Matrix (soil/water): FISH Lab Sample ID: 195767

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40058W

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39101

Matrix (soil/water): FISH Lab Sample ID: 195768

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.02	B	N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40059W

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39101

Matrix (soil/water): FISH Lab Sample ID: 195769

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40060W

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39101

Matrix (soil/water): FISH Lab Sample ID: 195770

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40061W

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39101

Matrix (soil/water): FISH Lab Sample ID: 195771

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40062W

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39101

Matrix (soil/water): FISH Lab Sample ID: 195772

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40063W

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39101

Matrix (soil/water): FISH Lab Sample ID: 195773

Level (low/med): LOW Date Received: 08/28/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40432W

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39101

Matrix (soil/water): FISH Lab Sample ID: 217062

Level (low/med): LOW Date Received: 01/15/94

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40433W

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39101

Matrix (soil/water): FISH Lab Sample ID: 217063

Level (low/med): LOW Date Received: 01/15/94

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40434W

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39101

Matrix (soil/water): FISH Lab Sample ID: 217064

Level (low/med): LOW Date Received: 01/15/94

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	J N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40435W

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39101

Matrix (soil/water): FISH Lab Sample ID: 217065

Level (low/med): LOW Date Received: 01/15/94

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.01	B	≥N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

MISCELLANEOUS PARAMETERS

MISCELLANEOUS PARAMETERS

Sample ID	Description	Sex	%Lipid
K40057W	Below Morrow Dam - Hog Sucker	female	6.31
K40058W	Below Morrow Dam - Hog Sucker	male	6.38
K40059W	Below Morrow Dam - Hog Sucker	male	4.28
K40060W	Below Morrow Dam - Hog Sucker	male	5.63
K40061W	Below Morrow Dam - Hog Sucker	male	6.05
K40062W	Below Morrow Dam - Hog Sucker	female	4.26
K40063W	Below Morrow Dam - Hog Sucker	male	5.36
K40432W	Below Morrow Dam - Hog Sucker	male	5.71
K40433W	Below Morrow Dam - Hog Sucker	male	5.71
K40434W	Below Morrow Dam - Hog Sucker	male	5.00
K40435W	Below Morrow Dam - Hog Sucker	male	7.21

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# 39178

PCB, PESTICIDE AND
MERCURY ANALYSES

BIOTA - FISH

Analyses performed by:

Aquatec, Inc.
Colchester, Vermont

Review performed by:

Blasland, Bouck & Lee, Inc.
Syracuse, New York

Summary

The following is an assessment of the Pesticide/PCB/PBB and Mercury data for SDG# 39178 for the Biota sampling of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and corrected sample results. Analyses were performed on the following samples:

Sample ID	Lab ID	Species	Description	Sample Location	Analysis	
					Pest/PCB/Hg	%Lipid
K40070F	215877	bass	fillet	Otsego City Dam	x	x
K40070R	215878	bass	carcass	Otsego City Dam		x
K40071F	215879	bass	fillet	Otsego City Dam	x	x
K40071R	215880	bass	carcass	Otsego City Dam		x
K40072F	215881	bass	fillet	Otsego City Dam	x	x
K40072R	215882	bass	carcass	Otsego City Dam		x
K40073F	215883	bass	fillet	Otsego City Dam	x	x
K40073R	215884	bass	carcass	Otsego City Dam		x
K40074F	215885	bass	fillet	Otsego City Dam	x	x
K40074R	215886	bass	carcass	Otsego City Dam		x
K40103F	215887	bass	fillet	Mosel Ave.	x	x
K40103R	215888	bass	carcass	Mosel Ave.		x
K40104F	215889	bass	fillet	Mosel Ave.	x	x
K40104R	215890	bass	carcass	Mosel Ave.		x
K40105F	215891	bass	fillet	Mosel Ave.	x	x
K40105R	215892	bass	carcass	Mosel Ave.		x
K40106F	215893	bass	fillet	Mosel Ave.	x	x
K40106R	215894	bass	carcass	Mosel Ave.		x
K40107F	215895	bass	fillet	Mosel Ave.	x	x
K40107R	215896	bass	carcass	Mosel Ave.		x
K40108F	215897	bass	fillet	Mosel Ave.	x	x
K40108R	215898	bass	carcass	Mosel Ave.		x
K40109F	215899	bass	fillet	Mosel Ave.	x	x
K40109R	215900	bass	carcass	Mosel Ave.		x
K40110F	215901	bass	fillet	Mosel Ave.	x	x
K40110R	215902	bass	carcass	Mosel Ave.		x
K40111F	215903	bass	fillet	Mosel Ave.	x	x
K40111R	215904	bass	carcass	Mosel Ave.		x

Sample ID	Lab ID	Species	Description	Sample Location	Analysis	
					Pest/PCB/ Hg	%Lipid
K40112F	215905	bass	fillet	Mosel Ave.	x	x
K40112R	215906	bass	carcass	Mosel Ave.		x
K40113F	215907	bass	fillet	Mosel Ave.	x	x
K40113R	215908	bass	carcass	Mosel Ave.		x
K40130F	215909	bass	fillet	Lake Allegan	x	x
K40130R	215910	bass	carcass	Lake Allegan		x
K40131F	215911	bass	fillet	Lake Allegan	x	x
K40131R	215912	bass	carcass	Lake Allegan		x
K40132F*	215913	bass	fillet	Lake Allegan	x	x
K40132R	215914	bass	carcass	Lake Allegan		x

* MS/MSD/DUP performed on sample

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by Aquatec, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

The specified holding time for PCB analyses from extraction is 40 days. All samples were analyzed within the specified holding time.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No Aroclors were detected in the method or instrument blanks.

3. System Performance

The system performance was acceptable for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The %RSD was within acceptable limits for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limits.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for both surrogates in sample K40109F. All data for this sample has been qualified as estimated. Recoveries were below acceptable control limits for one surrogate in samples K40070F, K40071F, K40072F, K40073F, K40074F, K40104F, K40105F, K40106F, K40108F, K40109F, K40110F, K40111F, K40112F, K40113F, K40131F and K40132F. No qualifiers were added to these samples based on surrogate performance. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

A review of the sample chromatograms indicate that the Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

All matrix spike and matrix spike duplicate recoveries were within acceptable control limits. The relative percent difference between recoveries (RPD) were above the acceptable control limits for Aroclor 1242. No qualifiers were added to the data based on spike performance.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the samples numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Holding Times			
Have any holding times been exceeded?		X	
Surrogate Recovery			
Are surrogate recovery forms present?	X		
Are all the samples listed on the appropriate surrogate recovery form?	X		
Are the outliers correctly marked with an asterisk?	X		
Were recoveries of TCMX or DCB outside of specified limits for any sample or blank?	X		
If yes, were the samples reanalyzed?		X	
Matrix Spikes			
Is there a matrix spike recovery form present?		X	
Were matrix spikes analyzed at the required frequency?			X
How many spike recoveries were outside of QC limits? 0 out of 4			
How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? 1 out of 2			
Blanks			
Is a Method Blank Summary Form present?	X		
Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent?	X		
Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration?	X		

	YES	NO	NA
Is the chromatographic performance acceptable for each instrument?	X		
Do any method/reagent/instrument blanks have positive results?		X	
Do any field/rinse blanks have positive results?			X
Are there field/rinse/equipment blanks associated with every sample?		X	
Calibration and GC Performance			
Are the following chromatograms and data printouts present?			
Aroclor 1016/1260	X		
Aroclor 1221	X		
Aroclor 1232	X		
Aroclor 1242	X		
Aroclor 1248	X		
Aroclor 1254	X		
Instrument Blanks	X		
Are Initial Calibration Summary Forms present and complete for each column and analytical sequence?	X		
Are the linearity criteria for the initial analyses within limits for both columns (20% RSD)	X		
Have all samples been injected within a 12 hour period beginning with the injection of an instrument blank?	X		
Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed?	X		
Are %D values for all compounds within limits (less than 15%)?	X		
Analytical Sequence Check			
Is a analytical sequence form present and complete for each column and each period of analyses?	X		
Was the proper analytical sequence followed?	X		

	YES	NO	NA
Cleanup Efficiency Verification			
If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present?	X		
Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits?	X		
PCB Identification			
Is both a combined and single column Aroclor Identification Report present for every sample?	X		
Do the combined column and individual column Aroclor identifications agree?	X		
Were there any false negatives?		X	
Was GC/MS confirmation provided when required?			X
Compound Quantitation and Reported Detection Limits			
Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture?	X		
Chromatogram Quality			
Were the baselines stable?	X		
Were any electronegative displacement (negative peaks) or unusual peaks detected?		X	
Field Duplicates			
Where field duplicates submitted with the samples?		X	

PCB Holding Time and Surrogate Recovery Summary

Sample ID	Holding Time	Surrogates - Column 1		Surrogates - Column 2	
		TCX	DCB	TCX	DCB
K40070F	OK for all samples	↓ (59)		↓ (51)	
K40071F		↓ (54)		↓ (47)	
K40072F		↓ (53)		↓ (55)	
K40073F		↓ (50)		↓ (47)	
K40074F		↓ (57)		↓ (50)	
K40103F					
K40104F		↓ (58)		↓ (59)	
K40105F		↓ (53)		↓ (53)	
K40106F		↓ (55)		↓ (55)	
K40107F					
K40108F		↓ (55)		↓ (56)	
K40109F		↓ (47)	↓ (58)	↓ (47)	↓ (59)
K40110F		↓ (49)		↓ (49)	
K40111F		↓ (56)		↓ (53)	
K40112F		↓ (51)		↓ (51)	
K40113F		↓ (55)		↓ (55)	
K40130F					
K40131F		↓ (52)		↓ (52)	
K40132F		↓ (49)		↓ (49)	
K40132FMS		↓ (39)		↓ (39)	↓ (59)
K40132FMSD		↓ (42)		↓ (42)	

Surrogate Standards
TCX Tetrachloro-m-xylene
DCB Decachlorobiphenyl

Qualifiers:
D Surrogates diluted out
↑ Recovery high
↓ Recovery low

Unless otherwise noted, all parameters are within specified limits.

bio39178

PCB Calibration Summary

Instrument: HP2618
Column: RTX-35 / RTX-5

Date:	4/30/94 0543	5/8	5/8	5/9	5/9	5/9	5/9
Time:	to 5/1/94 0106	1058	1132	0021	0055	0746	0821
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016	4.2 / 4.4		3.0				
Aroclor 1221	5.1 / 6.9						
Aroclor 1232	4.2 / 3.1						
Aroclor 1242	3.1 / 3.4				4.0		
Aroclor 1248	3.4 / 3.0	1.0		6.0		6.0	
Aroclor 1254	3.1 / 3.6						6.0
Aroclor 1260	3.8 / 3.4						
Tetrachloro-m-xylene	5.2 / 6.4						
Decachlorobiphenyl	7.9 / 8.1						

Affected Samples:

bio39178

PCB Calibration Summary - Page 2

Instrument: HP2618
Column: RTX-35 / RTX-5

Date:		5/9	5/9				
Time:		1255	1330				
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016							
Aroclor 1221							
Aroclor 1232							
Aroclor 1242							
Aroclor 1248		3.0					
Aroclor 1254							
Aroclor 1260			3.0				
Tetrachloro-m-xylene							
Decachlorobiphenyl							

Affected Samples:

bio39178

CORRECTED ANALYSIS SUMMARY FORMS

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40070F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.04 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215877

Date Received: 09/01/93

Date Extracted: 04/19/94

Date Analyzed: 05/08/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.20	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.72	
11096-82-5	Aroclor-1260	0.12	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40071F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.14 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215879

Date Received: 09/01/93

Date Extracted: 04/19/94

Date Analyzed: 05/09/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.049	U
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.52	
11096-82-5	Aroclor-1260	0.11	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40072F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.02 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 215881

Date Received: 09/01/93

Date Extracted: 04/19/94

Date Analyzed: 05/09/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	1.1	
11096-82-5	Aroclor-1260	0.18	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40073F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.08 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 215883

Date Received: 09/01/93

Date Extracted: 04/19/94

Date Analyzed: 05/09/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.099	U
11104-28-2	Aroclor-1221	0.099	U
11141-16-5	Aroclor-1232	0.099	U
53469-21-9	Aroclor-1242	0.099	U
12672-29-6	Aroclor-1248	0.22	
11097-69-1	Aroclor-1254	0.54	
11096-82-5	Aroclor-1260	0.29	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40074F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.05 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215885

Date Received: 09/01/93

Date Extracted: 04/19/94

Date Analyzed: 05/09/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.19	
11096-82-5	Aroclor-1260	0.084	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40103F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.01 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215887

Date Received: 09/03/93

Date Extracted: 04/19/94

Date Analyzed: 05/09/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.12	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.38	
11096-82-5	Aroclor-1260	0.074	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40104F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.06 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215889

Date Received: 09/03/93

Date Extracted: 04/19/94

Date Analyzed: 05/09/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.15	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.41	
11096-82-5	Aroclor-1260	0.065	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40105F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.02 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215891

Date Received: 09/03/93

Date Extracted: 04/19/94

Date Analyzed: 05/09/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.13	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.36	
11096-82-5	Aroclor-1260	0.070	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40106F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.03 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215893

Date Received: 09/03/93

Date Extracted: 04/19/94

Date Analyzed: 05/09/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.049	J
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.21	
11096-82-5	Aroclor-1260	0.059	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40107F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.05 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215895

Date Received: 09/03/93

Date Extracted: 04/19/94

Date Analyzed: 05/09/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.098	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.25	
11096-82-5	Aroclor-1260	0.090	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40108F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.01 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215897

Date Received: 09/03/93

Date Extracted: 04/19/94

Date Analyzed: 05/09/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.038	J
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.085	
11096-82-5	Aroclor-1260	0.040	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40109F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA Lab Sample ID: 215899

Phase Weight: 10.05 (g) Date Received: 09/03/93

Injection Volume: 1.0 (uL) Date Extracted: 04/19/94

Dilution Factor: 1.0 Date Analyzed: 05/09/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U J
11104-28-2	Aroclor-1221	0.050	U J
11141-16-5	Aroclor-1232	0.050	U J
53469-21-9	Aroclor-1242	0.050	U J
12672-29-6	Aroclor-1248	0.050	U J
11097-69-1	Aroclor-1254	0.42	J
11096-82-5	Aroclor-1260	0.13	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40110F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.04 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215901

Date Received: 09/03/93

Date Extracted: 04/19/94

Date Analyzed: 05/09/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.31	
11096-82-5	Aroclor-1260	0.13	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40111F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.08 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215903

Date Received: 09/03/93

Date Extracted: 04/19/94

Date Analyzed: 05/09/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.34	
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.23	
11096-82-5	Aroclor-1260	0.053	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40112F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.05 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215905

Date Received: 09/03/93

Date Extracted: 04/19/94

Date Analyzed: 05/09/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.096	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.14	
11096-82-5	Aroclor-1260	0.047	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40113F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.01 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215907

Date Received: 09/03/93

Date Extracted: 04/19/94

Date Analyzed: 05/09/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.16	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.37	
11096-82-5	Aroclor-1260	0.19	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40130F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 215909

Date Received: 09/18/93

Date Extracted: 04/10/94

Date Analyzed: 05/08/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.50	
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	1.1	
11096-82-5	Aroclor-1260	0.16	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40131F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 5.0

Lab Sample ID: 215911

Date Received: 09/18/93

Date Extracted: 04/10/94

Date Analyzed: 05/08/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.25	U
11104-28-2	Aroclor-1221	0.25	U
11141-16-5	Aroclor-1232	0.25	U
53469-21-9	Aroclor-1242	1.1	
12672-29-6	Aroclor-1248	0.25	U
11097-69-1	Aroclor-1254	2.5	
11096-82-5	Aroclor-1260	0.45	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40132F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39178

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 5.0

Lab Sample ID: 215913

Date Received: 09/18/93

Date Extracted: 04/10/94

Date Analyzed: 05/08/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.25	U
11104-28-2	Aroclor-1221	0.25	U
11141-16-5	Aroclor-1232	0.25	U
53469-21-9	Aroclor-1242	1.6	
12672-29-6	Aroclor-1248	0.25	U
11097-69-1	Aroclor-1254	1.8	
11096-82-5	Aroclor-1260	0.25	U

PESTICIDE ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 Method 8081.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- C Identification confirmed by GC/MS.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The holding time for pesticide extracts is 40 days from extraction to analysis. No deviations from this holding time were noted.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No target compounds were detected in either the method blanks or instrument blanks.

3. System Performance

The resolution and compound breakdown was within acceptable limits for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

A maximum RSD of 20% is allowed. All initial calibrations were within the specified limit.

4.2 Continuing Calibration

A maximum RPD of 25% is allowed. All continuing calibrations were within the specified limit with the following exception:

Instrument HP2404 RTX-5 5/19/94 07:36

2-Bromobiphenyl	27.1%

The data for this compound were qualified as estimated in the associated samples K40132MS and K40132MSD.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for both surrogates in samples K40071F K40072F, K40073F, K40106F, and K40109F. All data for these samples have been qualified as estimated. Recoveries were below acceptable control limits for one surrogate in samples K40074F, K40103F, K40104F, K40105F, K40110F, K40113F, K40132F, and K40132FMSD. No qualifiers were added to these samples based on the deviation. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The retention times of pesticide/PCB compounds must fall within the calculated retention time windows for both the primary and confirmation columns.

The quantitated concentrations between the two columns exceeded the 25% difference limit for the following samples and compounds:

K40070F	Aldrin	64.7%
	Heptachlor Epoxide	200.0%
	4,4'-DDE	51.9%
	cis-Nonachlor	244.3%
	4,4'-DDT	570.0%
K40071F	Aldrin	92.8%
	4,4'-DDE	40.0%
K40072F	2-Bromobiphenyl	65.5%
	Aldrin	54.5%
	trans-Nonachlor	169.8%
	4,4'-DDE	45.2%
	cis-Nonachlor	173.8%
	4,4'-DDT	581.8%
K40073F	Aldrin	60.9%
	trans-Nonachlor	175.4%
	4,4'-DDE	32.8%
	cis-Nonachlor	188.9%
	4,4'-DDT	590.9%
K40074F	gamma-BHC	43.1%
	alpha-Chlordane	35.8%
	4,4'-DDT	62.2%
K40103F	Aldrin	141.4%
	4,4'-DDE	61.5%

K40104F	Aldrin	107.8%
	4,4'-DDE	60.0%
K40105F	Aldrin	130.8%
	4,4'-DDE	53.3%
K40107F	Aldrin	107.5%
	4,4'-DDE	60.0%
K40109F	4,4'-DDE	46.7%
K40111F	Aldrin	150.0%
	4,4'-DDE	72.7%
K40113F	Aldrin	135.3%
	4,4'-DDE	53.3%
K40130F	Aldrin	89.3%
	gamma-Chlordane	132.2%
	cis-Nonachlor	38.7%
	4,4'-DDT	658.1%
K40131F	Aldrin	81.5%
	trans-Nonachlor	392.3%
	Dieldrin	145.9%
	4,4'-DDD	33.3%
	cis-Nonachlor	34.0%
	4,4'-DDT	622.7%
K40132F	Aldrin	55.3%
	gamma-Chlordane	134.8%
	alpha-Chlordane	26.6%
	trans-Nonachlor	283.6%
	Dieldrin	126.5%
	cis-Nonachlor	41.3%
	4,4'-DDT	599.5%

All data in the samples for the compounds listed has been qualified. Data with %D values between 25 and 50% has been qualified as estimated, J. All data with %D values between 50 and 90% has been qualified as estimated with presumptive evidence of presence, JN. All data with %D values greater than 90% has been rejected.

7. Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

Recoveries for Aldrin were above the acceptable control limit in both the matrix spike and matrix spike duplicate samples. The elevated recoveries were most likely due to positive interference from PCBs present in the samples. The blank spike associated with the MS/MSD had acceptable recoveries for all compounds. No qualifiers were added to the samples based on matrix spike performance.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

Data Validation Checksheets

Pesticide Data Validation Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the samples numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Holding Times			
Have any holding times been exceeded?		X	
Surrogate Recovery			
Are the surrogate recovery forms present?	X		
Are all the samples listed on the appropriate surrogate recovery form?	X		
Are the outliers correctly marked with an asterisk?	X		
Were recoveries of TCMX or DCB outside of specified limits for any sample or blank?	X		
If yes, were the samples reanalyzed?		X	
ere the method blanks reanalyzed?			X
Matrix Spikes			
Is there a matrix spike recovery form present?	X		
Were matrix spikes analyzed at the required frequency?	X		
How many spike recoveries were outside of QC limits?			
2 out of 8			
How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits?			
0 out of 4			
Blanks			
Is the method blank summary form present?	X		
Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent?	X		
Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration?	X		

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	YES	NO	NA
Is the chromatographic performance acceptable for each instrument?	X		
Do any method/reagent/instrument blanks have positive results?		X	
Do any trip/field/rinse blanks have positive results?			X
Are there field/rinse/equipment blanks associated with every sample?		X	
Calibration and GC Performance			
Are the following chromatograms and data printouts present for all samples, blanks, and MS/MSD?			
peak resolution check	X		
performance evaluation mixtures (BCS)	X		
Toxaphene multipoint calibration	X		
Pesticide/PBB multipoint calibration	X		
Pesticide/PBB mid-point standard	X		
instrument blanks	X		
Are Forms VI 1-4 present and complete for each column and analytical sequence?	X		
Are the linearity criteria for the initial analyses if INDA and INDB within limits for both columns?	X		
Is the resolution between any two adjacent peaks in the resolution check mixture > 60% for both columns?	X		
Is Form VII-1 present for each BCS analyzed for both columns?	X		
Has the individual % breakdown exceeded 20% on either column for 4,4'-DDT		X	
Are all the relative percent difference (RPD) values for all PEM analytes < 25%?	X		
Is Form VII-2 present and complete for each mid-point standard analyzed?	X		
Are RPD values for all compounds < 25%?	X		
Analytical Sequence Check			
Is Form VIII present and complete for each column and each period of analyses?	X		

	YES	NO	NA
Was the proper analytical sequence followed?	X		
Cleanup Efficiency Verification			
Is Form IX-1 present for each lot of Florisil cartridges used?	X		
Are all samples listed on the form?	X		
If GPC cleanup was performed, is Form IX-2 present?			X
Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits for:			
Florisil cartridge check (80-120%)	X		
GPC calibration (80-110%)			X
Pesticide/PBB Identification			
Is a Form X present for every sample in which a pesticide or PCB was detected?	X		
Was GC/MS confirmation provided when required?			X
Is the percent difference (%D) calculated for the positive sample results on the two columns less than 25%?		X	
Were there any false negatives?		X	
Compound Quantitation and Reported Detection Limits			
Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture?	X		
Chromatogram Quality			
Were the baselines stable?	X		
Were any electronegative displacement (negative peaks) or unusual peaks detected?		X	
Field Duplicates			
Where field duplicates submitted with the samples?		X	

Pesticide/PBB Qualifier Summary
Holding Time and Surrogates

Sample ID	Holding Time	Surrogates - Column 1		Surrogates - Column 2	
		TCX	DCB	TCX	DCB
K40070F	OK for all samples				
K40071F		↓ (52)	↓ (55)	↓ (51)	↓ (49)
K40072F		↓ (55)	↓ (57)		↓ (54)
K40073F		↓ (55)	↓ (55)		↓ (52)
K40074F					↓ (59)
K40103F			↓ (59)		↓ (58)
K40104F			↓ (59)		
K40105F			↓ (56)		↓ (56)
K40106F		↓ (58)	↓ (56)		↓ (56)
K40107F					
K40108F					
K40109F		↓ (53)	↓ (50)	↓ (56)	↓ (49)
K40110F			↓ (55)		↓ (55)
K40111F					
K40112F					
K40113F			↓ (58)		↓ (56)
K40130F					
K40131F					
K40132F		↓ (58)			
K40132FMS					
K40132FMSD		↓ (58)			

TCX Tetrachloro-m-xylene
DCB Decachlorobiphenyl

D Surrogate diluted out
↑ Recovery high
↓ Recovery low

Unless otherwise noted, all samples are within specified limits.

Pesticide/PBB Calibration Summary

Instrument: HP2404
Column: RTX-5

Date:	5/6/94	5/9	5/9	5/9	5/10		
Time:	17:57	01:55	10:15	18:35	02:55		
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok	ok	ok	ok		
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptaclor epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							

Affected Samples:

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Pesticide/PBB Calibration Summary - Page 2

Instrument: HP2404
Column: RTX-35

Date:	5/6/94	5/9	5/9	5/9	5/10		
Time:	17:57	01:55	10:15	18:35	02:55		
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok	ok	ok	ok		
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptaclor epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							
Affected Samples:							

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Pesticide/PBB Calibration Summary - Page 3

Instrument: HP2404
Column: RTX-5

Date:	5/17/94	5/189				
Time:	17:19	07:36				
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	27.1				
3-Bromobiphenyl						
4-Bromobiphenyl						
Hexachlorobenzene						
gamma-BHC (Lindane)						
Aldrin						
Heptaclor epoxide						
gamma-Chlordane						
alpha-Chlordane						
trans-Nonachlor						
4,4'-DDE						
Dieldrin						
4,4'-DDD						
cis-Nonachlor						
4,4'-DDT						
Hexabromobiphenyl (BP-6)						
Toxaphene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Affected Samples:		K40132MS				
		K40132MSD				

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Pesticide/PBB Calibration Summary - Page 4

Instrument: HP2404
Column: RTX-35

Date:	5/17/94	5/18					
Time:	17:19	07:36					
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok					
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptacior epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							
Affected Samples:							

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Corrected Sample Analysis Data Sheets

1

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40070F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215877
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.010	U	
2113-57-7	3-Bromobiphenyl	0.010	U	
92-66-0	4-Bromobiphenyl	0.010	U	
118-74-1	Hexachlorobenzene	0.0050	U	
58-89-9	gamma-BHC	0.0050	U	
309-00-2	Aldrin	0.017	JN	
~~1024-57-3~~	~~Heptachlor Epoxide~~	~~0.015~~		R
5103-74-2	gamma-Chlordane	0.0050	U	
5103-71-9	alpha-Chlordane	0.0050	U	
39765-80-5	trans-Nonachlor	0.0050	U	
72-55-9	4,4'-DDE	0.027	JN	
60-57-1	Dieldrin	0.010	U	
72-54-8	4,4'-DDD	0.010	U	
~~5103-73-1~~	~~cis-Nonachlor~~	~~0.0061~~		R
~~50-29-3~~	~~4,4'-DDT~~	~~0.010~~		R
36355-01-8	Hexabromobiphenyl	0.020	U	
8001-35-2	Toxaphene	0.20	U	

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PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	K40071F
Lab Name:	Aquatec, Inc.		
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215879
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.1 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	UJ
2113-57-7	3-Bromobiphenyl	0.010	UJ
92-66-0	4-Bromobiphenyl	0.010	UJ
118-74-1	Hexachlorobenzene	0.0050	UJ
58-89-9	gamma-BHC	0.0050	UJ
~~309-00-2~~	~~Aldrin~~	~~0.0083~~	R
1024-57-3	Heptachlor Epoxide	0.0072	J
5103-74-2	gamma-Chlordane	0.0050	UJ
5103-71-9	alpha-Chlordane	0.0050	UJ
39765-80-5	trans-Nonachlor	0.0050	UJ
72-55-9	4,4'-DDE	0.020	J
60-57-1	Dieldrin	0.010	UJ
72-54-8	4,4'-DDD	0.010	UJ
5103-73-1	cis-Nonachlor	0.0050	UJ
50-29-3	4,4'-DDT	0.010	UJ
36355-01-8	Hexabromobiphenyl	0.020	UJ
8001-35-2	Toxaphene	0.20	UJ

1

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40072F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215881
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.055	JN	
2113-57-7	3-Bromobiphenyl	0.010	U J	
92-66-0	4-Bromobiphenyl	0.010	U J	
118-74-1	Hexachlorobenzene	0.0050	U J	
58-89-9	gamma-BHC	0.0053	J	
309-00-2	Aldrin	0.022	JN	
1024-57-3	Heptachlor Epoxide	0.020	J	
5103-74-2	gamma-Chlordane	0.0050	U J	
5103-71-9	alpha-Chlordane	0.0050	U J	
~~39765-80-5~~	~~trans-Nonachlor~~	~~0.0063~~		R
72-55-9	4,4'-DDE	0.042	J	
60-57-1	Dieldrin	0.010	U J	
72-54-8	4,4'-DDD	0.010	U J	
~~5103-73-1~~	~~cis-Nonachlor~~	~~0.0084~~		R
~~50-29-3~~	~~4,4'-DDT~~	~~0.011~~		R
36355-01-8	Hexabromobiphenyl	0.020	U J	
8001-35-2	Toxaphene	0.20	U J	

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40073F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215883
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.1 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U J
2113-57-7	3-Bromobiphenyl	0.010	U J
92-66-0	4-Bromobiphenyl	0.010	U J
118-74-1	Hexachlorobenzene	0.0050	U J
58-89-9	gamma-BHC	0.0050	U J
309-00-2	Aldrin	0.023	J N
1024-57-3	Heptachlor Epoxide	0.021	J
5103-74-2	gamma-Chlordane	0.0050	U J
5103-71-9	alpha-Chlordane	0.0050	U J
~~39765-80-5~~	~~trans-Nonachlor~~	~~0.0069~~	R
72-55-9	4,4'-DDE	0.061	J
60-57-1	Dieldrin	0.010	U J
72-54-8	4,4'-DDD	0.011	J
~~5103-73-1~~	~~cis-Nonachlor~~	~~0.0090~~	R
~~50-29-3~~	~~4,4'-DDT~~	~~0.011~~	R
36355-01-8	Hexabromobiphenyl	0.020	U J
8001-35-2	Toxaphene	0.20	U J

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PESTICIDE, PBB ANALYSIS DATA SHEET

			Client ID No.
Lab Name:	Aquatec, Inc.		K40074F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215885
Phase Type:	Biota	Date Received:	09/01/93
Phase Weight:	10.0 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0058	J
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0051	J
39765-80-5	trans-Nonachlor	0.011	
72-55-9	4,4'-DDE	0.16	* EJ
60-57-1	Dieldrin	0.053	
72-54-8	4,4'-DDD	0.070	
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.074	JN
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.		Client ID No.
Lab Code:	AQUAI		K40103F
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215887
Phase Type:	Biota	Date Received:	09/03/93
Phase Weight:	10.0 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
~~309-00-2~~	~~Aldrin~~	~~0.0058~~	R
1024-57-3	Heptachlor Epoxide	0.0067	
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.013	JN
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40104F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215889
Phase Type:	Biota	Date Received:	09/03/93
Phase Weight:	10.1 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
~~309-00-2~~	~~Aldrin~~	~~0.0077~~	R
1024-57-3	Heptachlor Epoxide	0.0082	
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.015	JN
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40105F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215891
Phase Type:	Biota	Date Received:	09/03/93
Phase Weight:	10.0 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
~~309-00-2~~	~~Aldrin~~	~~0.0065~~	R
1024-57-3	Heptachlor Epoxide	0.0075	
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.015	JN
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40106F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215893
Phase Type:	Biota	Date Received:	09/03/93
Phase Weight:	10.0 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.010	U
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40107F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215895
Phase Type:	Biota	Date Received:	09/03/93
Phase Weight:	10.0 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
~~309-00-2~~	~~Aldrin~~	~~0.0053~~	R
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.010	JN
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	
Lab Name:	Aquatec, Inc.		K40108F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215897
Phase Type:	Biota	Date Received:	09/03/93
Phase Weight:	10.0 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.010	U
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

PESTICIDE, PBB ANALYSIS DATA SHEET

Client ID No.: K40109F

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO
SDG: 39178

Lab Sample ID: 215899
Phase Type: Biota
Date Received: 09/03/93
Phase Weight: 10.0 g
Date Extracted: 04/19/94
Extraction: Soxhlet
Date Analyzed: 05/09/94
Dilution Factor: 1.0
Sulfur Clean-up: N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U J
2113-57-7	3-Bromobiphenyl	0.010	U J
92-66-0	4-Bromobiphenyl	0.010	U J
118-74-1	Hexachlorobenzene	0.0050	U J
58-89-9	gamma-BHC	0.0050	U J
309-00-2	Aldrin	0.0050	U J
1024-57-3	Heptachlor Epoxide	0.0050	U J
5103-74-2	gamma-Chlordane	0.0050	U J
5103-71-9	alpha-Chlordane	0.0050	U J
39765-80-5	trans-Nonachlor	0.0050	U J
72-55-9	4,4'-DDE	0.015	J
60-57-1	Dieldrin	0.010	U J
72-54-8	4,4'-DDD	0.010	U J
5103-73-1	cis-Nonachlor	0.0050	U J
50-29-3	4,4'-DDT	0.010	U J
36355-01-8	Hexabromobiphenyl	0.020	U J
8001-35-2	Toxaphene	0.20	U J

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40110F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215901
Phase Type:	Biota	Date Received:	09/03/93
Phase Weight:	10.0 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.010	U
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40111F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215903
Phase Type:	Biota	Date Received:	09/03/93
Phase Weight:	10.1 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
~~309-00-2~~	~~Aldrin~~	~~0.0076~~	R
1024-57-3	Heptachlor Epoxide	0.0093	
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.011	JN
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40112F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215905
Phase Type:	Biota	Date Received:	09/03/93
Phase Weight:	10.0 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.010	U
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40113F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215907
Phase Type:	Biota	Date Received:	09/03/93
Phase Weight:	10.0 g	Date Extracted:	04/19/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
~~309-00-2~~	~~Aldrin~~	~~0.0068~~	R
1024-57-3	Heptachlor Epoxide	0.0080	
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.015	JN
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40130F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215909
Phase Type:	Biota	Date Received:	09/18/93
Phase Weight:	10.0 g	Date Extracted:	04/10/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.027	JN
1024-57-3	Heptachlor Epoxide	0.027	
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.098~~	R
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.054	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.011	J
~~50-29-3~~	~~4,4'-DDT~~	~~0.011~~	R
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Client ID No.

K40131F

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

SDG: 39178

Lab Sample ID: 215911
Date Received: 09/18/93
Date Extracted: 04/10/94
Date Analyzed: 05/09/94
Sulfur Clean-up: N

Phase Type: Biota
Phase Weight: 10.0 g
Extraction: Soxhlet
Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.010	U	
2113-57-7	3-Bromobiphenyl	0.010	U	
92-66-0	4-Bromobiphenyl	0.010	U	
118-74-1	Hexachlorobenzene	0.0050	U	
58-89-9	gamma-BHC	0.0050	U	
309-00-2	Aldrin	0.050	JN	
1024-57-3	Heptachlor Epoxide	0.046		
5103-74-2	gamma-Chlordane	0.0050	U	
5103-71-9	alpha-Chlordane	0.0084		
~~39765-80-5~~	~~trans-Nonachlor~~	~~0.011~~		R
72-55-9	4,4'-DDE	0.12		
~~60-57-1~~	~~Dieldrin~~	~~0.017~~		R
72-54-8	4,4'-DDD	0.021	J	
5103-73-1	cis-Nonachlor	0.025	J	
~~50-29-3~~	~~4,4'-DDT~~	~~0.025~~		R
36355-01-8	Hexabromobiphenyl	0.020	U	
8001-35-2	Toxaphene	0.20	U	

PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	K40132F
Lab Name:	Aquatec, Inc.		
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39178
		Lab Sample ID:	215913
Phase Type:	Biota	Date Received:	09/18/93
Phase Weight:	10.0 g	Date Extracted:	04/10/94
Extraction:	Soxhlet	Date Analyzed:	05/09/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.010	U	
2113-57-7	3-Bromobiphenyl	0.010	U	
92-66-0	4-Bromobiphenyl	0.010	U	
118-74-1	Hexachlorobenzene	0.0050	U	
58-89-9	gamma-BHC	0.0050	U	
309-00-2	Aldrin	0.064	JN	
1024-57-3	Heptachlor Epoxide	0.056		
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.019~~		R
5103-71-9	alpha-Chlordane	0.0064	J	
~~39765-80-5~~	~~trans-Nonachlor~~	~~0.0099~~		R
72-55-9	4,4'-DDE	0.093		
~~60-57-1~~	~~Dieldrin~~	~~0.014~~		R
72-54-8	4,4'-DDD	0.027		
5103-73-1	cis-Nonachlor	0.016	J	
~~50-29-3~~	~~4,4'-DDT~~	~~0.017~~		R
36355-01-8	Hexabromobiphenyl	0.020	U	
8001-35-2	Toxaphene	0.20	U	

MERCURY ANALYSES

Introduction

Analyses were performed according to USEPA CLP SOW ILM03.0.

The data validation process is intended to evaluate the data on a technical basis rather than a contract compliance basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission for validation. During the validation process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this valuation, qualifier codes may be added, deleted, or modified by the data validator. Validator qualified results are annotated with the following codes in accordance with National Functional Guidelines:

Concentration (C) qualifiers:

U The analyte was analyzed for but not detected. The associated value is the instrument detection limit.

B The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).

Quantitation (Q) qualifiers:

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

M Duplicate injection precision not met.

N Spiked sample recovery not within control limits.

S Reported value was determined by the method of standard additions (MSA).

W Post-digestion spike for Furnace-AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.

* Duplicate analysis not within control limits.

+ Correlation coefficient for MSA is less than 0.995.

Validation qualifiers:

J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The recommended holding times for mercury analyses is 28 days from tissue homogenization. All samples were analyzed within this holding time.

2. Blank Contamination

Quality assurance blanks, i.e., preparation and calibration blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Preparation blanks measure laboratory contamination during preparation. Calibration blanks measure instrument contamination and sample cross-contamination.

All calibration and preparation blanks were found to be acceptable, with no analytes detected above the CRQL.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

3.1 Initial Calibration

The correlation coefficient of the initial calibration was greater than the minimum required 0.995.

3.2 Continuing Calibration

All continuing calibration verification standards were acceptable.

3.3 CRDL Standard

All CRDL standard recoveries were within acceptable limits.

4. Matrix Spike/Laboratory Duplicate

Matrix spike and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 Matrix spike

Recovery for the matrix spike was within acceptable limits.

4.2 Laboratory Duplicate

The laboratory duplicate relative percent difference (RPD) was within acceptable limits.

5. Laboratory Control Sample (LCS)

All recoveries were within the acceptable recovery limits.

6. Serial Dilution

No ICP analyses were performed, therefore no serial dilution was necessary.

7. Furnace QC

No furnace analyses were performed.

8. Method of Standard Additions (MSA)

No MSA were performed.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviation specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

Data Validation Checksheets

Inorganic Data Validation Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the sample numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Form I to IX			
Are all the Form I through Form IX labeled with:			
Laboratory name?	X		
Sample No.?	X		
SDG No.?	X		
Correct units?	X		
Matrix?	X		
Raw Data			
Is the digestion log for flame AA/ICP present?			X
Is the digestion log for furnace AA present?			X
Is the distillation log for mercury present?	X		
Is the distillation log for cyanides present?			X
Are preparation dates present on sample preparation logs/bench sheets?	X		
Are the measurement read out records present for:			
ICP			X
Flame AA			X
Furnace AA			X
Mercury	X		
Cyanides			X
Is the data legible?	X		
Is the data properly labeled?	X		
Holding Times			
Were mercury analyses performed within 28 days?	X		

	YES	NO	NA
Were cyanide distillations performed within 14 days?			X
Were other metal analysis performed within 6 months?			X
Form I (Final Data)			
Are all forms complete?	X		
Are correct units indicated on Form I's?	X		
Are all "less than IDL" values properly coded with "U"?	X		
Are the correct concentration qualifiers used with final data?	X		
Was a brief physical description of samples given on Form I's?		X	
Calibration			
Is a record of at least 2 point calibration present for ICP analysis?			X
Is a record of 5 point calibration present for Hg analysis?	X		
Is a record of 4 point calibration present for:			
Flame AA?			X
Furnace AA?			X
Cyanides?			X
Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?			X
Is correlation coefficient less than .995 for:			
Mercury Analysis?	X		
Cyanide Analysis?			X
Atomic Absorption Analysis?			X
Form II A (Initial and Continuing Calibration Verification)			
Present and complete for every metal and cyanide?	X		
Are all calibration standards (initial and continuing) within control limits for:			
Metals (90-110 %R)?			X
Hg (80-120 %R)?	X		
Cyanides (85-115 %R)?			X

	YES	NO	NA
Was continuing calibration performed every 10 samples or every 2 hours?	X		
Was the ICV for cyanides distilled?			X
Form II B (CRDL Standards for AA and ICP)			
Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?			X
Was a mid-range calibration verification standard distilled and analyzed for cyanide analysis?			X
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run?			X
Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?			X
Are CRA and CRI standards within control limits for metals (60-120 %R)?	X		
Is mid-range standard within control limits for cyanide (80-120 %R)			X
Form III (Initial and Continuing Calibration Blanks)			
Present and complete?	X		
Was an initial calibration blank analyzed?	X		
Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	X		
Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	X		
Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?			X
Form III (Preparation Blank)			
Was one prep. blank analyzed for:			
each Sample Delivery Group SDG)?	X		
each batch of digested samples?	X		
each matrix type?	X		
Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?		X	

	YES	NO	NA
If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank?			X
Is concentration of prep. blank value less than two times IDL, when IDL is greater than CRDL?			X
Is concentration of prep. blank below the negative CRDL?		X	
Form IV (ICP Interference Check Sample)			
Present and complete?			X
Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?			X
Are all Interference Check Sample results inside the control limits (±20%)?			X
If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?			X
Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)			
Present and complete for:			
each SDG?	X		
each matrix type?	X		
Was field blank used for spiked sample?		X	
Are all recoveries within control limits (75-125)?	X		
If no, is sample concentration greater than or equal to four times spike concentration?			X
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?			X
Are any spike recoveries:			
less than 10%?		X	
between 10-74%?		X	
between 126-200%?		X	
greater than 200%?		X	
Form VI (Lab Duplicates)			
Present and complete for:			
each SDG?	X		

	YES	NO	NA
each matrix type?	X		
Was field blank used for duplicate analysis?		X	
Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	X		
If no, are all results outside the control limits flagged with an * on Form I's and VI?			X
Is any RPD (where sample and duplicate are both greater than or equal to 5 times CRDL) > 100%?		X	
Is any difference between sample and duplicate (where sample and/or duplicate is less than 5xCRDL) > 2xCRDL?			X
Form VII (Laboratory Control Sample)			
Was one LCS prepared and analyzed for:			
each SDG?	X		
each batch samples digested/distilled?	X		
Is LLCS "Found" value higher than the control limits on Form VII?		X	
Is LCS "Found" lower than the control limits on Form VII?		X	
Form IX (ICP Serial Dilution)			
Was Serial Dilution analysis performed for:			
each SDG?			X
each matrix type?			X
Was field blank(s) used for Serial Dilution Analysis?			X
Are results outside control limit flagged with an "E"" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.			X
Are any % difference values:			
> 10%?			X
≥100%?			X
Furnace Atomic Absorption (AA) QC Analysis			
Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed be GFAA?			X

	YES	NO	NA
Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or coefficient of Variation (CV) for concentration greater than CRDL?			X
Was a dilution analyzed for sample with analytical spike recovery less than 40%?			X
Is analytical spike recovery outside the control limits (85-115%) for any sample?			X
Form VIII (Method of Standard Addition Results)			
Present?		X	
If no, is any Form I result coded with "S" or a "+"?		X	
Is coefficient of correlation for MSA less than 0.990 for any sample?			X
Was MSA required for any sample but not performed?		X	
Is coefficient of correlation for MSA less than 0.995?			X
Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?			X
Was proper quantitation procedure followed as outlined in the SOW on page E-23?			X
Field Blank			
Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?			X
If no, was field blank value already rejected due to other QC criteria?			X
Form X, XI, XII (Verification of Instrumental Parameters)			
Is verification report present for :			
Instrument Detection Limits (quarterly)?	X		
ICP Interelement Correlation Factors (annually)?			X
ICP Linear Ranges (quarterly)?			X
Form X (Instrument Detection Limits)			
Are IDLs present for:			
all the analytes?	X		
all the instruments used?	X		

	YES	NO	NA
Is IDL greater than CRDL for any analyte?		X	
If yes, is the concentration of Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.			X
Was any sample result higher linear range of ICP.			X
Was any sample result higher than the highest calibration standard for non-ICP parameters?		X	
If yes for any of the above, was the sample diluted to obtain the result on Form I?			X

Corrected Sample Analysis Data Sheets

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40070F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215877

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.14			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40071F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215879

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.31			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40072F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215881

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.18			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40073F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215883

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.15			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40074F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215885

Level (low/med): LOW Date Received: 09/01/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.09			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40103F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215887

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.14			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40104F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215889

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.12			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40105F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215891

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.16			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40106F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215893

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.14			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40107F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215895

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.14			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40108F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215897

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.32			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40109F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215899

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.18			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40110F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215901

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.27			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40111F

b Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215903

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.11			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40112F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215905

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.11			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40113F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215907

Level (low/med): LOW Date Received: 09/03/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.12			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40130F

b Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215909

Level (low/med): LOW Date Received: 09/18/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.24			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40131F

.b Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215911

Level (low/med): LOW Date Received: 09/18/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.11			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40132F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39178

Matrix (soil/water): SOIL Lab Sample ID: 215913

Level (low/med): LOW Date Received: 09/18/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.22			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

MISCELLANEOUS PARAMETERS

MISCELLANEOUS PARAMETERS

Sample ID	Description	Sex	Fillet Weight	% Lipids	
				Fillet	Remaining Carcass
K40070	Small Mouth Bass	male	278g	1.00	3.18
K40071	Small Mouth Bass	male	245g	0.85	2.68
K40072	Small Mouth Bass	female	186g	1.80	3.71
K40073	Small Mouth Bass	female	155g	1.66	3.95
K40074	Small Mouth Bass	male	141g	3.73	10.60
K40103	Small Mouth Bass	female	182g	0.78	3.80
K40104	Small Mouth Bass	female	154g	1.34	4.12
K40105	Small Mouth Bass	female	147g	1.49	3.40
K40106	Small Mouth Bass	male	144g	0.66	1.70
K40107	Small Mouth Bass	female	147g	0.62	2.10
K40108	Small Mouth Bass	male	304g	0.44	7.10
K40109	Small Mouth Bass	male	181g	0.66	1.30
K40110	Small Mouth Bass	male	184g	0.32	0.72
K40111	Small Mouth Bass	female	180g	0.91	2.60
K40112	Small Mouth Bass	female	117g	0.43	2.50
K40113	Small Mouth Bass	male	144g	1.14	3.90
K40130	Small Mouth Bass	female	661g	1.85	3.94
K40131	Small Mouth Bass	female	395g	4.71	2.92
K40132	Small Mouth Bass	female	443g	4.06	8.57

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# 39560

PCB, PESTICIDE AND
MERCURY ANALYSES

BIOTA - FISH

Analyses performed by:

Aquatec, Inc.
Colchester, Vermont

Review performed by:

Blasland, Bouck & Lee, Inc.
Syracuse, New York

Summary

The following is an assessment of the Pesticide/PCB/PBB and Mercury data for SDG# 39560 for the Biota sampling of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and corrected sample results. Analyses were performed on the following samples:

Sample ID	Lab ID	Species	Description	Sample Location	Analysis	
					Pest/PCB/ Hg	%lipid
K40119F	215393	carp	fillet	Lake Allegan	x	x
K40119R	215394	carp	carcass	Lake Allegan		x
K40120F	215395	carp	fillet	Lake Allegan	x	x
K40120R	215396	carp	carcass	Lake Allegan		x
K40121F	215397	carp	fillet	Lake Allegan	x	x
K40121R	215398	carp	carcass	Lake Allegan		x
K40122F	215399	carp	fillet	Lake Allegan	x	x
K40122R	215400	carp	carcass	Lake Allegan		x
K40123F	215401	carp	fillet	Lake Allegan	x	x
K40123R	215402	carp	carcass	Lake Allegan		x
K40124F	215403	carp	fillet	Lake Allegan	X	x
K40124R	215404	carp	carcass	Lake Allegan		x
K40125F	215405	carp	fillet	Lake Allegan	x	x
K40125R	215406	carp	carcass	Lake Allegan		x
K40126F	215407	carp	fillet	Lake Allegan	x	x
K40126R	215408	carp	carcass	Lake Allegan		x
K40127F	215409	carp	fillet	Lake Allegan	x	x
K40127R	215410	carp	carcass	Lake Allegan		x
K40128F	215411	carp	fillet	Lake Allegan	x	x
K40128R	215412	carp	carcass	Lake Allegan		x
K40129F	215413	carp	fillet	Lake Allegan	x	x
K40129R	215414	carp	carcass	Lake Allegan		x
K40152F	215415	carp	fillet	Below Allegan Dam	x	x
K40152R	215416	carp	carcass	Below Allegan Dam		x
K40153F	215417	carp	fillet	Below Allegan Dam	x	x
K40153R	215418	carp	carcass	Below Allegan Dam		x
K40154F	215419	carp	fillet	Below Allegan Dam	x	x
K40154R	215420	carp	carcass	Below Allegan Dam		x

Sample ID	Lab ID	Species	Description	Sample Location	Analysis	
					Pest/PCB/ Hg	%lipid
K40155F	215421	carp	fillet	Below Allegan Dam	x	x
K40155R	215422	carp	carcass	Below Allegan Dam		x
K40156F	215423	carp	fillet	Below Allegan Dam	x	x
K40156R	215424	carp	carcass	Below Allegan Dam		x
K40157F	215425	carp	fillet	Below Allegan Dam	x	x
K40157R	215426	carp	carcass	Below Allegan Dam		x
K40158F	215427	carp	fillet	Below Allegan Dam	x	x
K40158R	215428	carp	carcass	Below Allegan Dam		x
K40167F*	215429	carp	fillet	Below Allegan Dam	x	x
K40167R	215430	carp	carcass	Below Allegan Dam		x
K40168F	215431	carp	fillet	Below Allegan Dam	x	x
K40168R	215432	carp	carcass	Below Allegan Dam		x

* MS/MSD/DUP performed on sample

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by Aquatec, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

The specified holding time for PCB analyses from extraction is 40 days. All samples were analyzed within the specified holding time.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No Aroclors were detected in the method or instrument blanks.

3. System Performance

The system performance was acceptable for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The %RSD was within acceptable limits for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limits.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for both surrogates in samples K40119F and K40120F. All data for these samples were qualified as estimated. Samples K40122F, K40123F, K40124F, K40125F, K40127F, K40128F, K40129F, K40154F, K40157F, K40167F, K40167MS, K40167FMSD and K40168F had one surrogate recovery below acceptable control limits. No qualifiers were added to these samples based on surrogate performance. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

A review of the sample chromatograms indicate that the Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

All matrix spike recoveries and relative percent differences (RPD) between recoveries were within acceptable control limits. All matrix spike blank recoveries were also within specified control limits.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the samples numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Holding Times			
Have any holding times been exceeded?		X	
Surrogate Recovery			
Are surrogate recovery forms present?	X		
Are all the samples listed on the appropriate surrogate recovery form?	X		
Are the outliers correctly marked with an asterisk?	X		
Were recoveries of TCMX or DCB outside of specified limits for any sample or blank?	X		
If yes, were the samples reanalyzed?		X	
Matrix Spikes			
Is there a matrix spike recovery form present?	X		
Were matrix spikes analyzed at the required frequency?	X		
How many spike recoveries were outside of QC limits?			
0 out of 4			
How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits?			
0 out of 2			
Blanks			
Is a Method Blank Summary Form present?	X		
Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent?	X		
Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration?	X		
Is the chromatographic performance acceptable for each instrument?	X		

	YES	NO	NA
Do any method/reagent/instrument blanks have positive results?		X	
Do any field/rinse blanks have positive results?			X
Are there field/rinse/equipment blanks associated with every sample?		X	
Calibration and GC Performance			
Are the following chromatograms and data printouts present?			
Aroclor 1016/1260	X		
Aroclor 1221	X		
Aroclor 1232	X		
Aroclor 1242	X		
Aroclor 1248	X		
Aroclor 1254	X		
Instrument Blanks	X		
Are Initial Calibration Summary Forms present and complete for each column and analytical sequence?	X		
Are the linearity criteria for the initial analyses within limits for both columns (20% RSD)	X		
Have all samples been injected within a 12 hour period beginning with the injection of an instrument blank?	X		
Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed?	X		
Are %D values for all compounds within limits (less than 15%)?	X		
Analytical Sequence Check			
Is a analytical sequence form present and complete for each column and each period of analyses?	X		
Was the proper analytical sequence followed?	X		

	YES	NO	NA
Cleanup Efficiency Verification			
If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present?	X		
Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits?	X		
PCB Identification			
Is both a combined and single column Aroclor Identification Report present for every sample?	X		
Do the combined column and individual column Aroclor identifications agree?	X		
Were there any false negatives?		X	
Was GC/MS confirmation provided when required?			X
Compound Quantitation and Reported Detection Limits			
Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture?	X		
Chromatogram Quality			
Were the baselines stable?	X		
Were any electronegative displacement (negative peaks) or unusual peaks detected?		X	
Field Duplicates			
Where field duplicates submitted with the samples?		X	

PCB Holding Time and Surrogate Recovery Summary

Sample ID	Holding Time	Surrogates - Column 1		Surrogates - Column 2	
		TCX	DCB	TCX	DCB
K40119F	OK for all samples	↓ (46)	↓ (56)	↓ (46)	↓ (56)
K40120F		↓ (34)	↓ (47)	↓ (34)	↓ (52)
K40121F					
K40122F		↓ (52)		↓ (51)	
K40123F		↓ (43)		↓ (45)	
K40124F		↓ (55)		↓ (55)	
K40125F		↓ (45)		↓ (46)	
K40126F					
K40127F		↓ (53)		↓ (53)	
K40128F		↓ (51)		↓ (52)	
K40129F		↓ (51)		↓ (50)	
K40152F					
K40153F					
K40154F		↓ (51)			
K40155F					
K40156F					
K40157F		↓ (57)			
K40158F					
K40167F		↓ (55)		↓ (59)	
K40167FMS		↓ (50)			
K40167FMSD		↓ (49)		↓ (58)	
K40168F		↓ (50)		↓ (54)	

Surrogate Standards
TCX Tetrachloro-m-xylene
DCB Decachlorobiphenyl

Qualifiers:
D Surrogates diluted out
↑ Recovery high
↓ Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: HP2087
Column: RTX-35 / RTX-5

Date:	5/1/94 2255	5/4	5/4	5/5	5/5	5/5	5/5
Time:	to 5/2/94 1016	1833	1908	0219	0255	1005	1041
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016	5.7 / 4.0						10.5
Aroclor 1221	6.4 / 3.4						
Aroclor 1232	4.1 / 2.5						
Aroclor 1242	4.6 / 4.2						
Aroclor 1248	5.1 / 4.5	5.5		8.0		13.0	
Aroclor 1254	4.9 / 4.8		9.5				
Aroclor 1260	3.6 / 3.0				10.0		
Tetrachloro-m-xylene	6.6 / 4.5						
Decachlorobiphenyl	6.5 / 8.5						

Affected Samples:

bio39560

PCB Calibration Summary - Page 2

Instrument: HP2087
Column: RTX-35 / RTX-5

Date:		5/5	5/5	5/6	5/6		
Time:		1752	1828	0243	0319		
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
Aroclor 1016							
Aroclor 1221							
Aroclor 1232							
Aroclor 1242			15.0				
Aroclor 1248		14.5		13.5			
Aroclor 1254					11.5		
Aroclor 1260							
Tetrachloro-m-xylene							
Decachlorobiphenyl							

Affected Samples:

bio39560

CORRECTED ANALYSIS SUMMARY FORMS

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40119F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215393

Date Received: 09/18/93

Date Extracted: 04/01/94

Date Analyzed: 05/04/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U J
11104-28-2	Aroclor-1221	0.050	U J
11141-16-5	Aroclor-1232	0.050	U J
53469-21-9	Aroclor-1242	0.050	U J
12672-29-6	Aroclor-1248	0.44	J
11097-69-1	Aroclor-1254	0.50	J
11096-82-5	Aroclor-1260	0.078	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40120F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 215395

Date Received: 09/18/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	UJ
11104-28-2	Aroclor-1221	0.10	UJ
11141-16-5	Aroclor-1232	0.10	UJ
53469-21-9	Aroclor-1242	0.10	UJ
12672-29-6	Aroclor-1248	0.57	J
11097-69-1	Aroclor-1254	0.55	J
11096-82-5	Aroclor-1260	0.12	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40121F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 215397

Date Received: 09/18/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	0.93	
11096-82-5	Aroclor-1260	0.14	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40122F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 215399

Date Received: 09/18/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	1.2	
11097-69-1	Aroclor-1254	1.1	
11096-82-5	Aroclor-1260	0.20	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40123F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 5.0

Lab Sample ID: 215401

Date Received: 09/18/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.25	U
11104-28-2	Aroclor-1221	0.25	U
11141-16-5	Aroclor-1232	0.25	U
53469-21-9	Aroclor-1242	0.25	U
12672-29-6	Aroclor-1248	3.8	
11097-69-1	Aroclor-1254	2.7	
11096-82-5	Aroclor-1260	0.25	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40124F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215403

Date Received: 09/18/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.30	
11097-69-1	Aroclor-1254	0.32	
11096-82-5	Aroclor-1260	0.066	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40125F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 215405

Date Received: 09/18/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	1.1	
11097-69-1	Aroclor-1254	1.1	
11096-82-5	Aroclor-1260	0.15	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40126F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

Lab Sample ID: 215407

Date Received: 09/18/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.077	
11096-82-5	Aroclor-1260	0.022	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40127F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 215409

Date Received: 09/18/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.83	
11097-69-1	Aroclor-1254	0.94	
11096-82-5	Aroclor-1260	0.16	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40128F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 215411

Date Received: 09/18/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	0.94	
11096-82-5	Aroclor-1260	0.14	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40129F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 215413

Date Received: 09/18/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.23	
11097-69-1	Aroclor-1254	0.68	
11096-82-5	Aroclor-1260	0.073	J

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40152F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 15.0

Lab Sample ID: 215415

Date Received: 09/23/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.75	U
11104-28-2	Aroclor-1221	0.75	U
11141-16-5	Aroclor-1232	0.75	U
53469-21-9	Aroclor-1242	0.75	U
12672-29-6	Aroclor-1248	3.6	
11097-69-1	Aroclor-1254	9.7	
11096-82-5	Aroclor-1260	1.1	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40153F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 10.0

Lab Sample ID: 215417

Date Received: 09/23/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	5.2	
11096-82-5	Aroclor-1260	1.2	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40154F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 30.0

Lab Sample ID: 215419

Date Received: 09/23/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: Y (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	1.5	U
11104-28-2	Aroclor-1221	1.5	U
11141-16-5	Aroclor-1232	1.5	U
53469-21-9	Aroclor-1242	1.5	U
12672-29-6	Aroclor-1248	1.5	U
11097-69-1	Aroclor-1254	14	
11096-82-5	Aroclor-1260	3.0	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40155F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 5.0

Lab Sample ID: 215421

Date Received: 09/23/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.25	U
11104-28-2	Aroclor-1221	0.25	U
11141-16-5	Aroclor-1232	0.25	U
53469-21-9	Aroclor-1242	0.25	U
12672-29-6	Aroclor-1248	1.4	
11097-69-1	Aroclor-1254	2.5	
11096-82-5	Aroclor-1260	0.46	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40156F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 5.0

Lab Sample ID: 215423

Date Received: 09/23/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: Y (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.25	U
11104-28-2	Aroclor-1221	0.25	U
11141-16-5	Aroclor-1232	0.25	U
53469-21-9	Aroclor-1242	0.25	U
12672-29-6	Aroclor-1248	0.25	U
11097-69-1	Aroclor-1254	3.5	
11096-82-5	Aroclor-1260	0.58	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40157F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 10.0

Lab Sample ID: 215425

Date Received: 09/23/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	3.7	
11097-69-1	Aroclor-1254	3.6	
11096-82-5	Aroclor-1260	0.63	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40158F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

Lab Sample ID: 215427

Date Received: 09/23/93

Date Extracted: 04/01/94

Date Analyzed: 05/05/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.71	
11097-69-1	Aroclor-1254	1.1	
11096-82-5	Aroclor-1260	0.12	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40167F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 10.0

Lab Sample ID: 215429

Date Received: 10/07/93

Date Extracted: 04/04/94

Date Analyzed: 05/04/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	5.3	
11097-69-1	Aroclor-1254	4.0	
11096-82-5	Aroclor-1260	1.2	

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

K40168F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39560

Phase Type: BIOTA

Phase Weight: 10.0 (g)

Injection Volume: 1.0 (uL)

Dilution Factor: 10.0

Lab Sample ID: 215431

Date Received: 10/07/93

Date Extracted: 04/04/94

Date Analyzed: 05/04/94

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	7.5	
11097-69-1	Aroclor-1254	3.5	
11096-82-5	Aroclor-1260	1.2	

PESTICIDE ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 Method 8081.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- C Identification confirmed by GC/MS.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The holding time for pesticide extracts is 40 days from extraction to analysis. All samples were originally analyzed within the acceptable holding time. Dilutions for samples K40155F, K40167F, and K40168F were, however, analyzed over the specified holding time. All data for the dilurions have been qualified as estimated.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No target compounds were detected in either the method blanks or instrument blanks.

3. System Performance

The resolution and compound breakdown was within acceptable limits for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

A maximum RSD of 20% is allowed. All initial calibrations were within the specified limit.

4.2 Continuing Calibration

A maximum RPD of 25% is allowed. All continuing calibrations were within the specified limit.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for both surrogates in samples K40119F and K40120F. All data for these samples have been qualified as estimated due to the deviation. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The retention times of pesticide/PCB compounds must fall within the calculated retention time windows for both the primary and confirmation columns.

The quantitated concentrations between the two columns exceeded the 25% difference limit for the following samples and compounds:

K40119F	Aldrin	57.1%
	gamma-Chlordane	110.5%
	4,4'-DDE	42.3%
	cis-Nonachlor	42.9%
K40120F	Aldrin	61.9%
	Heptachlor Epoxide	40.0%
	gamma-Chlordane	94.0%
	4,4'-DDE	28.1%
	cis-Nonachlor	30.0%
K40121F	Aldrin	70.0%
	Heptachlor Epoxide	29.4%
	gamma-Chlordane	70.7%
	4,4'-DDE	26.3%
	cis-Nonachlor	96.7%
K40122F	Aldrin	66.7%
	Heptachlor Epoxide	29.4%
	gamma-Chlordane	64.3%
	4,4'-DDE	27.8%
K40123F	Aldrin	56.4%
	gamma-Chlordane	117.6%
	alpha-Chlordane	100.0%
	trans-Nonachlor	340.0%
	4,4'-DDE	49.5%
	Dieldrin	173.3%
	4,4'-DDT	726.1%

K40125F	Aldrin	61.1%
	Heptachlor Epoxide	31.3%
	gamma-Chordane	53.3%
	4,4'-DDE	34.7%
K40127F	Aldrin	70.4%
	Heptachlor Epoxide	27.3%
	gamma-Chlordane	54.5%
K40128F	Aldrin	93.8%
	gamma-Chlordane	48.1%
	4,4'-DDE	36.4%
	cis-Nonachlor	52.8%
K40129F	Aldrin	76.5%
	gamma-Chlordane	120.0%
	4,4'-DDE	31.0%
	cis-Nonachlor	47.7%
P40152F	Aldrin	107.5%
	Heptachlor Epoxide	84.5%
	gamma-Chlordane	69.2%
	trans-Nonachlor	300.0%
	Dieldrin	300.0%
	cis-Nonachlor	41.1%
	4,4'-DDT	762.5%
K40153F	Aldrin	103.0%
	Heptachlor Epoxide	96.9%
	gamma-Chlordane	81.3%
	trans-Nonachlor	220.0%
	Dieldrin	453.3%
	4,4'-DDD	61.9%
	cis-Nonachlor	35.3%
	4,4'-DDT	775.0%
K40155F	Aldrin	98.4%
	gamma-Chlordane	86.2%
	alpha-Chlordane	33.3%
	trans-Nonachlor	190.0%
	Dieldrin	227.8%
	cis-Nonachlor	113.6%
	4,4'-DDT	648.3%
K40155FDL	Aldrin	103.1%
	Heptachlor Epoxide	103.8%
	gamma-Chlordane	96.3%
	trans-Nonachlor	264.7%
	cis-Nonachlor	41.4%
	4,4'-DDT	710.7%

K40156F	Aldrin	109.8%
	Heptachlor Epoxide	147.8%
	gamma-Chlordane	96.0%
	trans-Nonachlor	210.5%
	Dieldrin	416.7%
	4,4'-DDD	40.9%
	cis-Nonachlor	40.6%
	4,4'-DDT	800.0%
K40157F	Aldrin	67.2%
	gamma-Chlordane	140.5%
	trans-Nonachlor	196.6%
	Dieldrin	109.1%
	4,4'-DDD	28.6%
	cis-Nonachlor	35.0%
	4,4'-DDT	697.4%
K40158F	Aldrin	96.0%
	gamma-Chlordane	90.0%
	cis-Nonachlor	36.4%
K40167F	Hexachlorobenzene	125.4%
	Aldrin	42.6%
	gamma-Chlordane	37.2%
	cis-Nonachlor	32.1%
	4,4'-DDT	392.6%
K40167FDL	Aldrin	51.6%
	gamma-Chlordane	73.3%
	trans-Nonachlor	48.6%
	4,4'-DDT	505.0%
K40168F	Hexachlorobenzene	133.3%
	Aldrin	27.9%
	4,4'-DDT	264.9%
K40168FDL	Aldrin	32.9%
	gamma-Chlordane	50.8%
	4,4'-DDT	363.5%

All data in the samples for the compounds listed has been qualified. Data with %D values between 25 and 50% has been qualified as estimated, J. All data with %D values between 50 and 90% has been qualified as estimated with presumptive evidence of presence, JN. All data with %D values greater than 90% has been rejected.

7. Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

Recoveries for Aldrin were high in both the matrix spike and matrix spike duplicate samples. The elevated recoveries were most likely due to positive interference from PCBs present in the samples. The blank spike associated with the MS/MSD had acceptable recoveries for all compounds. No qualifiers have been added to the samples based on matrix spike performance.

8. General Comments

The recommended data usage for the sample dilutions is as follows:

K40155F and K40155FDL
The data from sample K40155F should be used for all compounds except 4,4'-DDE, Dieldrin and cis-Nonachlor. The data from the dilution K40155FDL should be used for 4,4'-DDE, Dieldrin and cis-Nonachlor only.

K40167F and K40167FDL
The data from sample K40167F should be used for all compounds except Hexachlorobenzene, Aldrin, Heptachlor Epoxide, alpha-Chlordane, trans-Nonachlor and 4,4'-DDE. The data from the dilution K40167FDL should be used for Hexachlorobenzene, Aldrin, Heptachlor Epoxide, alpha-Chlordane, trans-Nonachlor and 4,4'-DDE only.

K40168F and K40168FDL
The data from sample K40168F should be used for all compounds except Hexachlorobenzene, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-Chlordane, trans-Nonachlor, 4,4'-DDE, Dieldrin, 4,4'-DDD and cis-Nonachlor. The data from the dilution K40168FDL should be used for Hexachlorobenzene, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-Chlordane, trans-Nonachlor, 4,4'-DDE, Dieldrin, 4,4'-DDD and cis-Nonachlor only.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

Data Validation Checksheets

Pesticide Data Validation Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the samples numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Holding Times			
Have any holding times been exceeded?	X		
Surrogate Recovery			
Are the surrogate recovery forms present?	X		
Are all the samples listed on the appropriate surrogate recovery form?	X		
Are the outliers correctly marked with an asterisk?	X		
Were recoveries of TCMX or DCB outside of specified limits for any sample or blank?	X		
If yes, were the samples reanalyzed?		X	
Were the method blanks reanalyzed?			X
Matrix Spikes			
Is there a matrix spike recovery form present?	X		
Were matrix spikes analyzed at the required frequency?	X		
How many spike recoveries were outside of QC limits?			
2 out of 8			
How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits?			
0 out of 4			
Blanks			
Is the method blank summary form present?	X		
Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent?	X		
Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration?	X		

	YES	NO	NA
Is the chromatographic performance acceptable for each instrument?	X		
Do any method/reagent/instrument blanks have positive results?		X	
Do any trip/field/rinse blanks have positive results?			X
Are there field/rinse/equipment blanks associated with every sample?		X	
Calibration and GC Performance			
Are the following chromatograms and data printouts present for all samples, blanks, and MS/MSD?			
peak resolution check	X		
performance evaluation mixtures (BCS)	X		
Toxaphene multipoint calibration	X		
Pesticide/PBB multipoint calibration	X		
Pesticide/PBB mid-point standard	X		
instrument blanks	X		
Are Forms VI 1-4 present and complete for each column and analytical sequence?	X		
Are the linearity criteria for the initial analyses if INDA and INDB within limits for both columns?	X		
Is the resolution between any two adjacent peaks in the resolution check mixture > 60% for both columns?	X		
Is Form VII-1 present for each BCS analyzed for both columns?	X		
Has the individual % breakdown exceeded 20% on either column for 4,4'-DDT		X	
Are all the relative percent difference (RPD) values for all PEM analytes < 25%?	X		
Is Form VII-2 present and complete for each mid-point standard analyzed?	X		
Are RPD values for all compounds < 25%?	X		
Analytical Sequence Check			
Is Form VIII present and complete for each column and each period of analyses?	X		

	YES	NO	NA
Was the proper analytical sequence followed?	X		
Cleanup Efficiency Verification			
Is Form IX-1 present for each lot of Florisil cartridges used?	X		
Are all samples listed on the form?	X		
If GPC cleanup was performed, is Form IX-2 present?			X
Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits for:			
Florisil cartridge check (80-120%)	X		
GPC calibration (80-110%)			X
Pesticide/PBB Identification			
Is a Form X present for every sample in which a pesticide or PCB was detected?	X		
Was GC/MS confirmation provided when required?			X
Is the percent difference (%D) calculated for the positive sample results on the two columns less than 25%?		X	
Were there any false negatives?		X	
Compound Quantitation and Reported Detection Limits			
Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture?	X		
Chromatogram Quality			
Were the baselines stable?	X		
Were any electronegative displacement (negative peaks) or unusual peaks detected?		X	
Field Duplicates			
Where field duplicates submitted with the samples?		X	

Pesticide/PBB Qualifier Summary
Holding Time and Surrogates

Sample ID	Holding Time	Surrogates - Column 1		Surrogates - Column 2	
		TCX	DCB	TCX	DCB
K40119F		↓ (57)	↓ (57)	↓ (58)	↓ (57)
K40120F		↓ (44)	↓ (44)	↓ (45)	↓ (43)
K40121F					
K40122F					
K40123F					
K40124F					
K40125F					
K40126F					
K40127F					
K40128F					
K40129F					
K40152F					
K40153F					
K40154F					
K40155F					
K40155FDL	+13				
K40156F					
K40157F					
K40158F					
K40167F					
K40167FDL	+8				
K40167FMS					
K40167FMSD					
K40168F					
K40168FDL	+8				

Surrogates:
TCX Tetrachloro-m-xylene
DCB Decachlorobiphenyl

Qualifiers:
D Surrogate diluted out
↑ Recovery high
↓ Recovery low

Unless otherwise noted, all samples are within specified limits.

Pesticide/PBB Calibration Summary

Instrument: HP2404
Column: RTX-5

Date:	4/26/94	4/28	4/29	4/30	4/30		
Time:	20:30	22:31	22:14	06:41	15:47		
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok	ok	ok	ok		
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptacior epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							
Affected Samples:							

bio39560

Pesticide/PBB Calibration Summary - Page 2

Instrument: HP2404
Column: RTX-35

Date:	4/26/94	4/28	4/29	4/30	4/30		
Time:	20:30	22:31	22:14	07:18	15:47		
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok	ok	ok	ok		
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptaclor epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							
Affected Samples:							

bio39560

Pesticide/PBB Calibration Summary - Page 3

Instrument: HP2404
Column: RTX-5

Date:	5/5/94	5/6					
Time:	16:20	06:37					
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok					
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptacior epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							
Affected Samples:							

bio39560

Pesticide/PBB Calibration Summary - Page 4

Instrument: HP2404
Column: RTX-35

Date:	5/5/94	5/6					
Time:	16:20	06:37					
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok					
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptaclor epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							
Affected Samples:							

bio39560

Pesticide/PBB Calibration Summary - Page 5

Instrument: HP2404
Column: RTX-5

Date:	5/6/94	5/7					
Time:	17:57	08:14					
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok					
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptacior epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							
Affected Samples:							

bio39560

Pesticide/PBB Calibration Summary - Page 6

Instrument: HP2404
Column: RTX-35

Date:	5/6/94	5/7					
Time:	17:57	08:14					
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok					
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptaclor epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							
Affected Samples:							

Pesticide/PBB Calibration Summary - Page 7

Instrument: HP2404
Column: RTX-5

Date:	5/17/94	5/22	5/22	5/24	5/24		
Time:	17:19	10:29	20:52	00:41	09:01		
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok	ok	ok	ok		
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptaclor epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							
Affected Samples:							

bio39560

Pesticide/PBB Calibration Summary - Page 8

Instrument: HP2404
Column: RTX-35

Date:	5/17/94	5/22	5/22	5/24	5/24		
Time:	17:19	10:29	20:52	08:41	09:01		
	Initial Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.	Cont. Cal.
	%RSD	%D	%D	%D	%D	%D	%D
2-Bromobiphenyl	ok	ok	ok	ok	ok		
3-Bromobiphenyl							
4-Bromobiphenyl							
Hexachlorobenzene							
gamma-BHC (Lindane)							
Aldrin							
Heptacior epoxide							
gamma-Chlordane							
alpha-Chlordane							
trans-Nonachlor							
4,4'-DDE							
Dieldrin							
4,4'-DDD							
cis-Nonachlor							
4,4'-DDT							
Hexabromobiphenyl (BP-6)							
Toxaphene							
Tetrachloro-m-xylene							
Decachlorobiphenyl							
Affected Samples:							

Corrected Sample Analysis Data Sheets

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PESTICIDE, PBB ANALYSIS DATA SHEET

			Client ID No.
Lab Name:	Aquatec, Inc.		K40119F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215393
Phase Type:	Biota	Date Received:	09/18/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	04/29/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U J
2113-57-7	3-Bromobiphenyl	0.010	U J
92-66-0	4-Bromobiphenyl	0.010	U J
118-74-1	Hexachlorobenzene	0.0050	U J
58-89-9	gamma-BHC	0.0050	U J
309-00-2	Aldrin	0.021	J N
1024-57-3	Heptachlor Epoxide	0.012	J
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.0057~~	R
5103-71-9	alpha-Chlordane	0.0050	U J
39765-80-5	trans-Nonachlor	0.0050	U J
72-55-9	4,4'-DDE	0.026	J
60-57-1	Dieldrin	0.010	U J
72-54-8	4,4'-DDD	0.010	J
5103-73-1	cis-Nonachlor	0.0056	J
50-29-3	4,4'-DDT	0.010	U J
36355-01-8	Hexabromobiphenyl	0.020	U J
8001-35-2	Toxaphene	0.20	U J

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40120F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215395
Phase Type:	Biota	Date Received:	09/18/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	04/29/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U J
2113-57-7	3-Bromobiphenyl	0.010	U J
92-66-0	4-Bromobiphenyl	0.010	U J
118-74-1	Hexachlorobenzene	0.0050	U J
58-89-9	gamma-BHC	0.0050	U J
309-00-2	Aldrin	0.021	J N
1024-57-3	Heptachlor Epoxide	0.010	J
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.0067~~	R
5103-71-9	alpha-Chlordane	0.0050	U J
39765-80-5	trans-Nonachlor	0.0050	U J
72-55-9	4,4'-DDE	0.032	J
60-57-1	Dieldrin	0.010	U J
72-54-8	4,4'-DDD	0.010	U J
5103-73-1	cis-Nonachlor	~~7.0~~ 0.0070	J
50-29-3	4,4'-DDT	0.010	U J
36355-01-8	Hexabromobiphenyl	0.020	U J
8001-35-2	Toxaphene	0.20	U J

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40121F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215397
Phase Type:	Biota	Date Received:	09/18/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	04/29/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.020	JN
1024-57-3	Heptachlor Epoxide	0.0085	J
5103-74-2	gamma-Chlordane	0.0082	JN
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.038	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	
~~5103-73-1~~	~~cis-Nonachlor~~	~~0.0061~~	R
50-29-3	4,4'-DDT	0.010 ~~0.0070~~	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	K40122F
Lab Name:	Aquatec, Inc.		
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215399
Phase Type:	Biota	Date Received:	09/18/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	04/29/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.036	JN
1024-57-3	Heptachlor Epoxide	0.017	J
5103-74-2	gamma-Chlordane	0.014	JN
5103-71-9	alpha-Chlordane	0.0051	
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.054	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.018	
5103-73-1	cis-Nonachlor	0.012	
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40123F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215401
Phase Type:	Biota	Date Received:	09/18/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	05/06/94
Dilution Factor:	2.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.020	U	
2113-57-7	3-Bromobiphenyl	0.020	U	
92-66-0	4-Bromobiphenyl	0.020	U	
118-74-1	Hexachlorobenzene	0.010	U	
58-89-9	gamma-BHC	0.010	U	
309-00-2	Aldrin	0.12	JN	
1024-57-3	Heptachlor Epoxide	0.071		
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.034~~		R
~~5103-71-9~~	~~alpha-Chlordane~~	~~0.011~~		R
~~39765-80-5~~	~~trans-Nonachlor~~	~~0.015~~		R
72-55-9	4,4'-DDE	0.095	J	
~~60-57-1~~	~~Dieldrin~~	~~0.015~~		R
72-54-8	4,4'-DDD	0.040		
5103-73-1	cis-Nonachlor	0.024		
~~50-29-3~~	~~4,4'-DDT~~	~~0.023~~		R
36355-01-8	Hexabromobiphenyl	0.040	U	
8001-35-2	Toxaphene	0.40	U	

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40124F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215403
Phase Type:	Biota	Date Received:	09/18/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	04/29/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.013	JN
1024-57-3	Heptachlor Epoxide	0.0067	
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.020	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Client ID No.	K40125F		
Lab Name:	Aquatec, Inc.		
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215405
Phase Type:	Biota	Date Received:	09/18/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	04/29/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.036	JN
1024-57-3	Heptachlor Epoxide	0.016	J
5103-74-2	gamma-Chlordane	0.015	JN
5103-71-9	alpha-Chlordane	0.0052	
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.049	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.018	
5103-73-1	cis-Nonachlor	0.012	
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40126F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215407
Phase Type:	Biota	Date Received:	09/18/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	04/29/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.010	U
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	K40127F
Lab Name:	Aquatec, Inc.		
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215409
Phase Type:	Biota	Date Received:	09/18/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	04/29/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.027	JN
1024-57-3	Heptachlor Epoxide	0.011	J
5103-74-2	gamma-Chlordane	0.011	JN
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.044	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.012	
5103-73-1	cis-Nonachlor	0.0090	
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40128F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215411
Phase Type:	Biota	Date Received:	09/18/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	04/29/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
~~309-00-2~~	~~Aldrin~~	~~0.016~~	R
1024-57-3	Heptachlor Epoxide	0.0078	
5103-74-2	gamma-Chlordane	0.0081	J
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.033	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0072	JN
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40129F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215413
Phase Type:	Biota	Date Received:	09/18/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	04/29/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.017	JN
1024-57-3	Heptachlor Epoxide	0.0085	
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.0050~~	R
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.029	J
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0065	J
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40152F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215415
Phase Type:	Biota	Date Received:	09/23/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	05/06/94
Dilution Factor:	3.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.030	U	
2113-57-7	3-Bromobiphenyl	0.030	U	
92-66-0	4-Bromobiphenyl	0.030	U	
118-74-1	Hexachlorobenzene	0.015	U	
58-89-9	gamma-BHC	0.015	U	
~~309-00-2~~	~~Aldrin~~	~~0.13~~		R
1024-57-3	Heptachlor Epoxide	0.084	JN	
5103-74-2	gamma-Chlordane	0.065	JN	
5103-71-9	alpha-Chlordane	0.026		
~~39765-80-5~~	~~trans-Nonachlor~~	~~0.040~~		R
72-55-9	4,4'-DDE	0.47		
~~60-57-1~~	~~Dieldrin~~	~~0.032~~		R
72-54-8	4,4'-DDD	0.053		
5103-73-1	cis-Nonachlor	0.073	J	
~~50-29-3~~	~~4,4' DDT~~	~~0.064~~		R
36355-01-8	Hexabromobiphenyl	0.060	U	
8001-35-2	Toxaphene	0.60	U	

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40153F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215417
Phase Type:	Biota	Date Received:	09/23/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	05/06/94
Dilution Factor:	3.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.030	U	
2113-57-7	3-Bromobiphenyl	0.030	U	
92-66-0	4-Bromobiphenyl	0.030	U	
118-74-1	Hexachlorobenzene	0.015	U	
58-89-9	gamma-BHC	0.015	U	
~~309-00-2~~	~~Aldrin~~	~~0.067~~		R
~~1024-57-3~~	~~Heptachlor Epoxide~~	~~0.032~~		R
5103-74-2	gamma-Chlordane	0.032	JN	
5103-71-9	alpha-Chlordane	0.15	U	
~~39765-80-5~~	~~trans-Nonachlor~~	~~0.025~~		R
72-55-9	4,4'-DDE	0.41		
~~60-57-1~~	~~Dieldrin~~	~~0.015~~		R
72-54-8	4,4'-DDD	0.021	JN	
5103-73-1	cis-Nonachlor	0.051	J	
~~50-29-3~~	~~4,4'-DDT~~	~~0.044~~		R
36355-01-8	Hexabromobiphenyl	0.060	U	
8001-35-2	Toxaphene	0.60	U	

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PESTICIDE, PBB ANALYSIS DATA SHEET

Client ID No.

K40154F

Lab Name:	Aquatec, Inc.		
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215419
Phase Type:	Biota	Date Received:	09/23/94
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	04/30/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.0050	U
1024-57-3	Heptachlor Epoxide	0.0050	U
5103-74-2	gamma-Chlordane	0.0050	U
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.010	U
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	U
5103-73-1	cis-Nonachlor	0.0050	U
50-29-3	4,4'-DDT	0.038	
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

1

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40155F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215421
Phase Type:	Biota	Date Received:	09/23/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	04/30/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.010	U	
2113-57-7	3-Bromobiphenyl	0.010	U	
92-66-0	4-Bromobiphenyl	0.010	U	
118-74-1	Hexachlorobenzene	0.0050	U	
58-89-9	gamma-BHC	0.0050	U	
~~309-00-2~~	~~Aldrin~~	~~0.063~~		R
1024-57-3	Heptachlor Epoxide	0.0050	U	
5103-74-2	gamma-Chlordane	0.029	JN	
5103-71-9	alpha-Chlordane	0.012	J	
~~39765-80-5~~	~~trans-Nonachlor~~	~~0.020~~		R
72-55-9	4,4'-DDE	0.18 ~~0.180~~	~~X~~ D	
60-57-1	Dieldrin	0.020 ~~0.018~~	UD	
72-54-8	4,4'-DDD	0.034		
5103-73-1	cis-Nonachlor	0.029 ~~0.022~~	DJ	
~~50-29-3~~	~~4,4'-DDT~~	~~0.029~~		R
36355-01-8	Hexabromobiphenyl	0.020	U	
8001-35-2	Toxaphene	0.20	U	

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40156F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215423
Phase Type:	Biota	Date Received:	09/23/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	2.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.020	U	
2113-57-7	3-Bromobiphenyl	0.020	U	
92-66-0	4-Bromobiphenyl	0.020	U	
118-74-1	Hexachlorobenzene	0.010	U	
58-89-9	gamma-BHC	0.010	U	
~~309-00-2~~	~~Aldrin~~	~~0.061~~		R
~~1024-57-3~~	~~Heptachlor Epoxide~~	~~0.046~~		R
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.025~~		R
5103-71-9	alpha-Chlordane	0.012		
~~39765-80-5~~	~~trans-Nonachlor~~	~~0.019~~		R
72-55-9	4,4'-DDE	0.23		
~~60-57-1~~	~~Dieldrin~~	~~0.012~~		R
72-54-8	4,4'-DDD	0.022	J	
5103-73-1	cis-Nonachlor	0.032	J	
~~50-29-3~~	~~4,4'-DDT~~	~~0.028~~		R
36355-01-8	Hexabromobiphenyl	0.040	U	
8001-35-2	Toxaphene	0.40	U	

1

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40157F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215425
Phase Type:	Biota	Date Received:	09/23/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	05/07/94
Dilution Factor:	3.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q	
2052-07-5	2-Bromobiphenyl	0.030	U	
2113-57-7	3-Bromobiphenyl	0.030	U	
92-66-0	4-Bromobiphenyl	0.030	U	
118-74-1	Hexachlorobenzene	0.015	U	
58-89-9	gamma-BHC	0.015	U	
309-00-2	Aldrin	0.13	JN	
1024-57-3	Heptachlor Epoxide	0.083		
~~5103-74-2~~	~~gamma-Chlordane~~	~~0.037~~		R
5103-71-9	alpha-Chlordane	0.020		
~~39765-80-5~~	~~trans-Nonachlor~~	~~0.029~~		R
72-55-9	4,4'-DDE	0.27		
~~60-57-1~~	~~Dieldrin~~	~~0.022~~		R
72-54-8	4,4'-DDD	0.042	J	
5103-73-1	cis-Nonachlor	0.040	J	
~~50-29-3~~	~~4,4'-DDT~~	~~0.038~~		R
36355-01-8	Hexabromobiphenyl	0.060	U	
8001-35-2	Toxaphene	0.60	U	

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PESTICIDE, PBB ANALYSIS DATA SHEET

		Client ID No.	K40158F
Lab Name:	Aquatec, Inc.		
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215427
Phase Type:	Biota	Date Received:	09/23/93
Phase Weight:	10.0 g	Date Extracted:	04/01/94
Extraction:	Soxhlet	Date Analyzed:	04/30/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.0050	U
58-89-9	gamma-BHC	0.0050	U
~~309-00-2~~	~~Aldrin~~	~~0.025~~	R
1024-57-3	Heptachlor Epoxide	0.018	
5103-74-2	gamma-Chlordane	0.010	JN
5103-71-9	alpha-Chlordane	0.0050	U
39765-80-5	trans-Nonachlor	0.0050	U
72-55-9	4,4'-DDE	0.060	
60-57-1	Dieldrin	0.010	U
72-54-8	4,4'-DDD	0.010	
5103-73-1	cis-Nonachlor	0.011	J
50-29-3	4,4'-DDT	0.010	U
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

1

PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40167F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215429
Phase Type:	Biota	Date Received:	10/07/93
Phase Weight:	10.0 g	Date Extracted:	04/04/94
Extraction:	Soxhlet	Date Analyzed:	04/30/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.035 ~~0.0071~~	UD
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.12 ~~0.094~~	~~X~~ DJN
1024-57-3	Heptachlor Epoxide	0.091 ~~0.084~~	~~X~~ D
5103-74-2	gamma-Chlordane	0.078	J
5103-71-9	alpha-Chlordane	0.11 ~~0.10~~	~~X~~ D
39765-80-5	trans-Nonachlor	0.11 ~~0.11~~	~~X~~ DJ
72-55-9	4,4'-DDE	0.160 ~~0.47~~	~~X~~ D
60-57-1	Dieldrin	0.15	
72-54-8	4,4'-DDD	0.14	
5103-73-1	cis-Nonachlor	0.056	
~~50-29-3~~	~~4,4'-DDT~~	~~0.054~~	R
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

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PESTICIDE, PBB ANALYSIS DATA SHEET

Lab Name:	Aquatec, Inc.	Client ID No.	K40168F
Lab Code:	AQUAI		
Contract:	91082		
Case:	BIO	SDG:	39560
		Lab Sample ID:	215431
Phase Type:	Biota	Date Received:	10/07/93
Phase Weight:	10.0 g	Date Extracted:	04/04/94
Extraction:	Soxhlet	Date Analyzed:	04/30/94
Dilution Factor:	1.0	Sulfur Clean-up:	N

CAS NO.	COMPOUND	CONCENTRATION (mg/Kg)	Q
2052-07-5	2-Bromobiphenyl	0.010	U
2113-57-7	3-Bromobiphenyl	0.010	U
92-66-0	4-Bromobiphenyl	0.010	U
118-74-1	Hexachlorobenzene	0.050 ~~0.015~~	UD
58-89-9	gamma-BHC	0.0050	U
309-00-2	Aldrin	0.25 ~~0.15~~	~~X~~ DJ
1024-57-3	Heptachlor Epoxide	0.20 ~~0.16~~	~~X~~ D
5103-74-2	gamma-Chlordane	0.18 ~~0.17~~	~~X~~ DJN
5103-71-9	alpha-Chlordane	0.25 ~~0.21~~	~~X~~ D
39765-80-5	trans-Nonachlor	0.24 ~~0.21~~	~~X~~ D
72-55-9	4,4'-DDE	1.0 ~~0.52~~	~~X~~ D
60-57-1	Dieldrin	0.31 ~~0.28~~	~~X~~ D
72-54-8	4,4'-DDD	0.26 ~~0.24~~	~~X~~ D
5103-73-1	cis-Nonachlor	0.11 ~~0.093~~	~~X~~ D
~~50-29-3~~	~~4,4'-DDT~~	~~0.077~~	R
36355-01-8	Hexabromobiphenyl	0.020	U
8001-35-2	Toxaphene	0.20	U

MERCURY ANALYSES

Introduction

Analyses were performed according to USEPA CLP SOW ILM03.0.

The data validation process is intended to evaluate the data on a technical basis rather than a contract compliance basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission for validation. During the validation process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this valuation, qualifier codes may be added, deleted, or modified by the data validator. Validator qualified results are annotated with the following codes in accordance with National Functional Guidelines:

Concentration (C) qualifiers:

U The analyte was analyzed for but not detected. The associated value is the instrument detection limit.

B The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).

Quantitation (Q) qualifiers:

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

M Duplicate injection precision not met.

N Spiked sample recovery not within control limits.

S Reported value was determined by the method of standard additions (MSA).

W Post-digestion spike for Furnace-AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.

* Duplicate analysis not within control limits.

+ Correlation coefficient for MSA is less than 0.995.

Validation qualifiers:

J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The recommended holding times for mercury analyses is 28 days from tissue homogenization. All samples were analyzed within this holding time.

2. Blank Contamination

Quality assurance blanks, i.e., preparation and calibration blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Preparation blanks measure laboratory contamination during preparation. Calibration blanks measure instrument contamination and sample cross-contamination.

All calibration and preparation blanks were found to be acceptable, with no analytes detected above the CRQL.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

3.1 Initial Calibration

The correlation coefficient of the initial calibration was greater than the minimum required 0.995.

3.2 Continuing Calibration

All continuing calibration verification standards were acceptable.

3.3 CRDL Standard

One CRDL standard recovery was above acceptable limits. No data fell in the affected range; therefore, no data qualification was necessary.

4. Matrix Spike/Laboratory Duplicate

Matrix spike and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 Matrix spike

Recovery for the matrix spike was within acceptable limits.

4.2 Laboratory Duplicate

The laboratory duplicate relative percent difference (RPD) was within acceptable limits.

5. Laboratory Control Sample (LCS)

All recoveries were within the acceptable recovery limits.

6. Serial Dilution

No ICP analyses were performed, therefore no serial dilution was necessary.

7. Furnace QC

No furnace analyses were performed.

8. Method of Standard Additions (MSA)

No MSA were performed.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviation specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

Data Validation Checksheets

Inorganic Data Validation Checklist

	YES	NO	NA
Data Completeness and Deliverables			
Is there a narrative or cover letter present?	X		
Are the sample numbers included in the narrative?	X		
Are the sample chain-of-custodies present?	X		
Do the chain-of-custodies indicate any problems with sample receipt or sample condition?		X	
Form I to IX			
Are all the Form I through Form IX labeled with:			
Laboratory name?	X		
Sample No.?	X		
SDG No.?	X		
Correct units?	X		
Matrix?	X		
Raw Data			
Is the digestion log for flame AA/ICP present?			X
Is the digestion log for furnace AA present?			X
Is the distillation log for mercury present?	X		
Is the distillation log for cyanides present?			X
Are preparation dates present on sample preparation logs/bench sheets?	X		
Are the measurement read out records present for:			
ICP			X
Flame AA			X
Furnace AA			X
Mercury	X		
Cyanides			X
Is the data legible?	X		
Is the data properly labeled?	X		
Holding Times			
Were mercury analyses performed within 28 days?	X		

	YES	NO	NA
Were cyanide distillations performed within 14 days?			X
Were other metal analysis performed within 6 months?			X
Form I (Final Data)			
Are all forms complete?	X		
Are correct units indicated on Form I's?	X		
Are all "less than IDL" values properly coded with "U"?	X		
Are the correct concentration qualifiers used with final data?	X		
Was a brief physical description of samples given on Form I's?		X	
Calibration			
Is a record of at least 2 point calibration present for ICP analysis?			X
Is a record of 5 point calibration present for Hg analysis?	X		
Is a record of 4 point calibration present for:			
Flame AA?			X
Furnace AA?			X
Cyanides?			X
Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?			X
Is correlation coefficient less than .995 for:			
Mercury Analysis?	X		
Cyanide Analysis?			X
Atomic Absorption Analysis?			X
Form II A (Initial and Continuing Calibration Verification)			
Present and complete for every metal and cyanide?	X		
Are all calibration standards (initial and continuing) within control limits for:			
Metals (90-110 %R)?			X
Hg (80-120 %R)?	X		
Cyanides (85-115 %R)?			X

	YES	NO	NA
Was continuing calibration performed every 10 samples or every 2 hours?	X		
Was the ICV for cyanides distilled?			X
Form II B (CRDL Standards for AA and ICP)			
Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?			X
Was a mid-range calibration verification standard distilled and analyzed for cyanide analysis?			X
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run?			X
Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?			X
Are CRA and CRI standards within control limits for metals (60-120 %R)?		X	
Is mid-range standard within control limits for cyanide (80-120 %R)			X
Form III (Initial and Continuing Calibration Blanks)			
Present and complete?	X		
Was an initial calibration blank analyzed?	X		
Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	X		
Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	X		
Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?			X
Form III (Preparation Blank)			
Was one prep. blank analyzed for:			
each Sample Delivery Group SDG)?	X		
each batch of digested samples?	X		
each matrix type?	X		
Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?		X	

	YES	NO	NA
If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank?			X
Is concentration of prep. blank value less than two times IDL, when IDL is greater than CRDL?			X
Is concentration of prep. blank below the negative CRDL?		X	
Form IV (ICP Interference Check Sample)			
Present and complete?			X
Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?			X
Are all Interference Check Sample results inside the control limits (±20%)?			X
If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?			X
Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)			
Present and complete for:			
each SDG?	X		
each matrix type?	X		
Was field blank used for spiked sample?		X	
Are all recoveries within control limits (75-125)?	X		
If no, is sample concentration greater than or equal to four times spike concentration?			X
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?			X
Are any spike recoveries:			
less than 10%?		X	
between 10-74%?		X	
between 126-200%?		X	
greater than 200%?		X	
Form VI (Lab Duplicates)			
Present and complete for:			
each SDG?	X		

	YES	NO	NA
each matrix type?	X		
Was field blank used for duplicate analysis?		X	
Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	X		
If no, are all results outside the control limits flagged with an * on Form I's and VI?			X
Is any RPD (where sample and duplicate are both greater than or equal to 5 times CRDL) > 100%?		X	
Is any difference between sample and duplicate (where sample and/or duplicate is less than 5xCRDL) > 2xCRDL?			X
Form VII (Laboratory Control Sample)			
Was one LCS prepared and analyzed for:			
each SDG?	X		
each batch samples digested/distilled?	X		
Is LLCS "Found" value higher than the control limits on Form VII?		X	
Is LCS "Found" lower than the control limits on Form VII?		X	
Form IX (ICP Serial Dilution)			
Was Serial Dilution analysis performed for:			
each SDG?			X
each matrix type?			X
Was field blank(s) used for Serial Dilution Analysis?			X
Are results outside control limit flagged with an "E"" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.			X
Are any % difference values:			
> 10%?			X
≥100%?			X
Furnace Atomic Absorbtion (AA) QC Analysis			
Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed be GFAA?			X

	YES	NO	NA
Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or coefficient of Variation (CV) for concentration greater than CRDL?			X
Was a dilution analyzed for sample with analytical spike recovery less than 40%?			X
Is analytical spike recovery outside the control limits (85-115%) for any sample?			X
Form VIII (Method of Standard Addition Results)			
Present?		X	
If no, is any Form I result coded with "S" or a "+"?		X	
Is coefficient of correlation for MSA less than 0.990 for any sample?			X
Was MSA required for any sample but not performed?		X	
Is coefficient of correlation for MSA less than 0.995?			X
Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?			X
Was proper quantitation procedure followed as outlined in the SOW on page E-23?			X
Field Blank			
Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?			X
If no, was field blank value already rejected due to other QC criteria?			X
Form X, XI, XII (Verification of Instrumental Parameters)			
Is verification report present for :			
Instrument Detection Limits (quarterly)?	X		
ICP Interelement Correlation Factors (annually)?			X
ICP Linear Ranges (quarterly)?			X
Form X (Instrument Detection Limits)			
Are IDLs present for:			
all the analytes?	X		
all the instruments used?	X		

	YES	NO	NA
Is IDL greater than CRDL for any analyte?		X	
If yes, is the concentration of Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.			X
Was any sample result higher linear range of ICP.			X
Was any sample result higher than the highest calibration standard for non-ICP parameters?		X	
If yes for any of the above, was the sample diluted to obtain the result on Form I?			X

Corrected Sample Analysis Data Sheets

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40119F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215393

Level (low/med): LOW Date Received: 09/18/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.30			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40120F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215395

Level (low/med): LOW Date Received: 09/18/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.14			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40121F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215397

Level (low/med): LOW Date Received: 09/18/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.23			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40122F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215399

Level (low/med): LOW Date Received: 09/18/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.20			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40123F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215401

Level (low/med): LOW Date Received: 09/18/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.20			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40124F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215403

Level (low/med): LOW Date Received: 09/18/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.18			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40125F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215405

Level (low/med): LOW Date Received: 09/18/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.23			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40126F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215407

Level (low/med): LOW Date Received: 09/18/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.10			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40127F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215409

Level (low/med): LOW Date Received: 09/18/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.14			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40128F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215411

Level (low/med): LOW Date Received: 09/18/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.16			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40129F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215413

Level (low/med): LOW Date Received: 09/18/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.11			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40152F

Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215415

Level (low/med): LOW Date Received: 09/23/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.21			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40153F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215417

Level (low/med): LOW Date Received: 09/23/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.27			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40154F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215419

Level (low/med): LOW Date Received: 09/23/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.42			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40155F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215421

Level (low/med): LOW Date Received: 09/23/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.13			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40156F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215423

Level (low/med): LOW Date Received: 09/23/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.18			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40157F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215425

Level (low/med): LOW Date Received: 09/23/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.13			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40158F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215427

Level (low/med): LOW Date Received: 09/23/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.13			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40167F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215429

Level (low/med): LOW Date Received: 10/07/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.12			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40168F

Lab Name: AQUATEC Contract: 91082

Lab Code: AQUAI Case No.: BIO SAS No.: SDG No.: 39560

Matrix (soil/water): FISH Lab Sample ID: 215431

Level (low/med): LOW Date Received: 10/07/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.14			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

MISCELLANEOUS PARAMETERS

MISCELLANEOUS PARAMETERS

Sample ID	Description	Sex	Fillet Weight	% Lipids	
				Fillet	Body
K40119	Carp	female	426g	2.03	3.90
K40120	Carp	female	275g	2.76	4.25
K40121	Carp	female	278g	0.82	4.24
K40122	Carp	female	365g	1.60	3.90
K40123	Carp	male	360g	2.79	9.40
K40124	Carp	female	275g	0.83	1.65
K40125	Carp	male	286g	1.03	4.15
K40126	Carp	female	152g	0.38	0.68
K40127	Carp	male	278g	1.00	3.66
K40128	Carp	male	319g	0.53	1.97
K40129	Carp	female	248g	1.11	4.82
K40152	Carp	female	457g	4.05	6.31
K40153	Carp	female	464g	2.07	3.81
K40154	Carp	female	709g	2.87	6.16
K40155	Carp	female	493g	2.60	3.31
K40156	Carp	female	378g	2.56	11.4
K40157	Carp	female	609g	4.52	11.4
K40158	Carp	female	513g	1.00	3.02
K40167	Carp	male	1976g	18.8	23.9
K40168	Carp	female	3323g	30.7	23.5