RECORD OF COMMUNICATION

REGIONAL SAMPLE CONTROL CENTER

231776

DATE: JULY 8, 1999
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: George Karras, Hazardous Waste Support Section

RECEIVED
JUL 14 1999

Attached is the following ORGANIC Data Package to be reviewed for Quality Assurance

SITE	CORNELL-DUBILIER	CASE#	27133 / SDG# BWZ06
CONTRACTOR	START W	#SAMPLES	MATRIX
PHASE	SI	20	SOIL
LAB	SWOK		
TURN-AROUND-TIME	14 DAYS	FRACTION	PCB
CERCLIS ID #	NJD981557879	SITE SPILL #	GZ

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
		John Berlich	7-7-99
John Berlich	7-8-99	[illegible]	7/8/99
7/13/99 [illegible]		J. Turner	7/13/99
J. Turner	7/13/99	G. Karras	7/13/99
George Karras	7/14/99	J. Turner	7/14/99

(over for instructions) revised 3/99

RECORD OF COMMUNICATION

TO: Mike Mahnkops

FROM: *JANET TROTTER*
Region II ESAT/RSCC

DATE: July 15, 1999

SUBJECT: QUALITY ASSURED DATA

MESSAGE * SDG # BW206

PLEASE SIGN BELOW IN ACKNOWLEDGEMENT OF RECEIPT OF THE FOLLOWING AND RETURN ONE COPY OF THIS RECORD OF COMMUNICATION TO THE RSCC-REGION II.

(1) Cornell-Dubilier 27133 Swok Orig 20 soils

REPLY BY:

SIGNATURE: M. Mahnkopf DATE: 7/19/99

DATE RECEIVED BY RSCC: / /

cc: EPA TASK MONITOR
ESAT, MANAGER
file

CLP DATA ASSESSMENT

Functional Guidelines for Evaluating Organic Analysis

CASE No.: 27133 **SDG No.:** BWZ06 **LABORATORY:** SWOK

SITE: Cornell-Dublier

DATA ASSESSMENT

The current SOP HW-6 (Revision 11) June 1996, USEPA Region II Data Validation SOP for Statement of Work OLMO3.2 for evaluating organic data have been applied.

All data are valid and acceptable except those analytes rejected "R" (unusable). Due to the detection of QC problems some analytes may have the "J" (estimated), "N" (presumptive evidence for the presence of the material at an estimated value) flag. All action is detailed on the attached sheets.

The "R" flag means that the associated value is unusable. In other words, significant data bias is evident and the reported analyte concentration is unreliable.

Reviewer's Signature: [signature] **Date** 7/12/99

Verified By: [signature] **Date** 7/14/99

CLP DATA ASSESSMENT

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following action was taken in the samples and analytes shown due to excessive holding time.

Contract and technical holding times were met.

2. SURROGATES:

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.

No qualification of the data was necessary.

3. MATRIX SPIKE/SPIKE DUPLICATE, MS/MSD:

The MS/MSD data are generated to determine the long term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data.

No qualification of the data was necessary.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure

CLP DATA ASSESSMENT

cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank contaminant level (10 times for common contaminants), the analytes are qualified as non-detects, "U". The following analytes in the sample shown were qualified with "U" (or "R" where indicated) for these reasons:

A) Method blank contamination:

No problems.

B) Field or rinse blank contamination:

There were no field blanks.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene and for semi-volatiles Decafluorotriphenylphosphine (DFTPP).

If the mass calibration is in error, all associated data will be classified as unusable "R".

No problems.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure 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 checks document that the instrument is giving satisfactory daily performance.

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the

CLP DATA ASSESSMENT

specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 30% and %D must be < 25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detects data may be qualified "R".

For the PEST/PCB fraction, if %RSD exceeds 20% for all analytes except for the two surrogates (which must not exceed 30% RSD), qualify all associated positive results "J" and non-detects "UJ".

The following analytes in the sample shown were qualified for %RSD and %D:

No qualification of the PCB data was necessary.

8. COMPOUND IDENTIFICATION:

B) Pesticide Fraction:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10ng/ml in the final sample extract.

See attached CADRE Quantitation Limit Report for a list of samples qualified for this criteria.

10. CONTRACT PROBLEMS NON-COMPLIANCE:

Initial calibration standards analyzed 7/01/99 - Header information on Forms 6F, pages 249 and 250, were inconsistent with other forms and raw data. The forms list RTX-PEST and RTX-PEST2 as the columns used for the analyses. All other documents, pages 241, 242, 245, 246, 286, 288 and 444, list the respective columns as DB-1701 and DB-17.

4A

Dieldrin, gamma-Chlordane

BWZ23DL
4,4'-DDE, alpha-Chlordane

BWZ24DL
4,4'-DDE, Endrin aldehyde, alpha-Chlordane

BWZ25DL
Endosulfan II

DC-422: The following pesticide samples have analytes for which the percent difference between column results exceeds primary criteria. Hits > CRQL are flagged "J." Or: if %D is > 50% and value is < CRQL, sample result is elevated to the CRQL and qualified "U."

BWZ06
Heptachlor epoxide, 4,4'-DDE, Endrin, Methoxychlor
alpha-Chlordane, Aroclor-1254 — J

BWZ06DL
4,4'-DDT, Aroclor-1254 — J

BWZ07
delta-BHC, Heptachlor epoxide, 4,4'-DDE, Endrin aldehyde
alpha-Chlordane, Aroclor-1254 — J

BWZ07DL
4,4'-DDE, Endrin, alpha-Chlordane

BWZ08
Heptachlor, 4,4'-DDE, Aroclor-1254 — J

BWZ08DL
alpha-Chlordane, Aroclor-1254 — JN

BWZ09DL
4,4'-DDE, Endosulfan II, alpha-Chlordane

BWZ10
4,4'-DDE, Methoxychlor

BWZ10DL
Endrin aldehyde, Ar-1254 - JN

Quantitation Limit Report

SDG NO: **BWZ06** LABORATORY: **SWL-TULSA**

CASE NO: **27133** AGENCY INPUT FILE: **BWZ06.ASF**

BWZ11

gamma-BHC (Lindane), Heptachlor epoxide, 4,4'-DDE, 4,4'-DDD

BWZ12

Heptachlor, 4,4'-DDE, Aroclor-1254 — J

BWZ13

delta-BHC, gamma-BHC (Lindane), 4,4'-DDE, 4,4'-DDD
alpha-Chlordane

BWZ13DL

4,4'-DDE, Endosulfan II

BWZ14

delta-BHC, Heptachlor epoxide, Endosulfan II, 4,4'-DDD
gamma-Chlordane

BWZ14DL – Ar-1254 – JN

BWZ15

Endosulfan II, Aroclor-1254 — J

BWZ16

Endrin, 4,4'-DDD, Aroclor-1254 — J

BWZ17

Heptachlor epoxide, 4,4'-DDE, gamma-Chlordane

BWZ17DL

gamma-Chlordane

BWZ18

Endrin aldehyde

BWZ18DL: Ar-1254 – J

BWZ19

4,4'-DDE, Endrin, Aroclor-1248 — J

BWZ19DL: Ar-1254 – J

BWZ20DL

Dieldrin

BWZ21

Heptachlor epoxide, Aroclor-1254 — J

BWZ22

Heptachlor epoxide, 4,4'-DDE, Endrin

BWZ23

Endosulfan I, Endrin

4C

BWZ23DL
4,4'-DDE, gamma-Chlordane

BWZ24
alpha-BHC, Endosulfan I, Endrin

BWZ24DL
Aroclor-1254 - J

BWZ25
Endrin

BWZ25DL
Endosulfan I, Endrin, 4,4'-DDT

BWZ25MS
Endrin

DC-423: The following pesticide samples have analytes for which the percent difference between column results exceeds expanded criteria. Hits > CRQL are flagged "NJ;" or "R" when %D > 100; or "NJ" when %D is between 100 - 200 (interference detected). Hits < CRQL are elevated to the CRQL and qualified "U."

BWZ06
alpha-BHC, delta-BHC, Aldrin, Dieldrin
Endosulfan II, 4,4'-DDT

BWZ06DL
delta-BHC, Dieldrin, 4,4'-DDE, Endrin
Methoxychlor

BWZ07
alpha-BHC, gamma-BHC (Lindane), Aldrin, Dieldrin
Endosulfan II, 4,4'-DDD, 4,4'-DDT, Methoxychlor
gamma-Chlordane

BWZ07DL
4,4'-DDD, Methoxychlor

BWZ08
Endrin, Endosulfan II, 4,4'-DDD, 4,4'-DDT
Methoxychlor, Endrin aldehyde, alpha-Chlordane, gamma-Chlordane

BWZ08DL
Endrin aldehyde

Quantitation Limit Report

SDG NO: **BWZ06** LABORATORY: **SWL-TULSA**

CASE NO: **27133** AGENCY INPUT FILE: **BWZ06.ASF**

BWZ09

delta-BHC, Heptachlor, Dieldrin, Endrin
Endosulfan II, 4,4'-DDD, 4,4'-DDT, Methoxychlor
Endrin ketone, Endrin aldehyde, alpha-Chlordane, gamma-Chlordane

BWZ09DL

delta-BHC, Dieldrin, 4,4'-DDT, Methoxychlor
Endrin aldehyde

BWZ10

delta-BHC, 4,4'-DDD, 4,4'-DDT, Endrin ketone
Endrin aldehyde, Aroclor-1254 — JN

BWZ11

delta-BHC, Aldrin, Dieldrin, Endrin
Endosulfan II, 4,4'-DDT, Methoxychlor, Endrin aldehyde
alpha-Chlordane, gamma-Chlordane

BWZ11DL

Dieldrin, 4,4'-DDE, 4,4'-DDT, Endrin aldehyde
alpha-Chlordane

BWZ12

delta-BHC, Dieldrin, Endrin, 4,4'-DDT
Methoxychlor, Endrin aldehyde, alpha-Chlordane, gamma-Chlordane

BWZ13

Heptachlor, Heptachlor epoxide, Dieldrin, Endrin
Endosulfan II, 4,4'-DDT, Methoxychlor, Endrin aldehyde
gamma-Chlordane

BWZ13DL

Dieldrin, 4,4'-DDT, Methoxychlor, Endrin aldehyde

BWZ14

Heptachlor, Dieldrin, 4,4'-DDT, Methoxychlor
alpha-Chlordane, Aroclor-1254 — JN

BWZ14DL

delta-BHC, 4,4'-DDT, Endrin aldehyde

BWZ15

delta-BHC, Heptachlor epoxide, Dieldrin, 4,4'-DDT
Methoxychlor, Endrin aldehyde, alpha-Chlordane, gamma-Chlordane

BWZ15DL

Endrin aldehyde

BWZ16
delta-BHC, Dieldrin, Endosulfan II, 4,4'-DDT
Methoxychlor, Endrin aldehyde, gamma-Chlordane

BWZ16DL
Endrin, Endrin aldehyde

BWZ17
Endosulfan I, Dieldrin, Endosulfan II, Endrin aldehyde

BWZ17DL
Dieldrin, 4,4'-DDE

BWZ18
Dieldrin, alpha-Chlordane

BWZ19
Heptachlor epoxide, Dieldrin, Endosulfan II, alpha-Chlordane

BWZ20
Heptachlor epoxide, Endosulfan I, Dieldrin, Endrin
Endosulfan II, Methoxychlor, Endrin aldehyde, gamma-Chlordane

BWZ20DL
gamma-Chlordane

BWZ21
Dieldrin, Endosulfan II, 4,4'-DDD, 4,4'-DDT
Methoxychlor, Endrin ketone, Endrin aldehyde

BWZ21DL
Dieldrin, 4,4'-DDD, 4,4'-DDT, Endrin ketone

BWZ22
Dieldrin, Endosulfan II, Endrin ketone, Endrin aldehyde
alpha-Chlordane

BWZ22DL
Dieldrin

BWZ23
alpha-BHC, Heptachlor epoxide, Dieldrin, Endosulfan II
Endrin aldehyde

BWZ23DL

4F

Heptachlor epoxide, Dieldrin, alpha-Chlordane

BWZ24

Heptachlor epoxide, Dieldrin, Endosulfan II, Endrin aldehyde

BWZ24DL

Heptachlor epoxide, Dieldrin, 4,4'-DDT, Endrin aldehyde
alpha-Chlordane

BWZ25

alpha-BHC, delta-BHC, Heptachlor epoxide, Endosulfan I
Dieldrin, Endosulfan II, Methoxychlor, Endrin aldehyde
alpha-Chlordane, gamma-Chlordane

BWZ25DL

Heptachlor epoxide, Dieldrin, Endosulfan II, Endrin aldehyde
alpha-Chlordane

BWZ25MS

alpha-BHC, delta-BHC, gamma-BHC (Lindane), Aldrin
Heptachlor epoxide, Endosulfan I, Dieldrin, Endosulfan II
Endrin aldehyde, alpha-Chlordane, gamma-Chlordane

BWZ25MSD

alpha-BHC, delta-BHC, gamma-BHC (Lindane), Aldrin
Heptachlor epoxide, Endosulfan I, Dieldrin, Endosulfan II
4,4'-DDD, Endrin aldehyde, alpha-Chlordane, gamma-Chlordane

CLP DATA ASSESSMENT

11. FIELD DOCUMENTATION:

12. OTHER PROBLEMS:

13. This package contains reextractions, reanalyses or dilutions. Upon reviewing the QA results, the following Form 1(s) are identified not to be used:

BWZ06DL, BWZ09DL, BWZ17DL, BWZ19DL, BWZ20DL, BWZ21DL, BWZ22DL, BWZ23DL, BWZ24DL, BWZ25DL.- The corresponding undiluted samples were used, instead.

BWZ07DL, BWZ08DL, BWZ10DL, BWZ11DL, BWZ12DL, BWZ13DL, BWZ14DL, BWZ15DL, BWZ16DL, BWZ18DL - These dilutions were not required, as the original analyses did not contain any target hits exceeding the calibration range.

SOP NO. HW-6

Revision #11

May 1996

CLP ORGANICS DATA REVIEW AND PRELIMINARY REVIEW (CLP/SOW OLMO 3.2)

By: George Karras Date: 6/12/96
George Karras, Work Assignment Manager/Chemist
Toxic and Hazardous Waste Section

By: Karen Taylor Date: 6/17/96
Karen Taylor, Chemist
Toxic and Hazardous Waste Section

CONCURRED BY: Kevin W. Kubik Date: 6/18/96
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: Robert M. Runyon Date: 6/18/96
Robert Runyon, Chief
Monitoring Management Branch

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CLP Data Assessment . . . . . Attachment 1

Organic Regional Data Assessment Summary Form . . . Attachment 2

Data Rejection Summary Form . . . . . Attachment 3

INTRODUCTION

Scope and Applicability

This SOP offers detailed guidance in evaluating laboratory data generated according to the methods in the "USEPA Contract Laboratory Program Statement of Work for Organics Analysis OLM03.2," August 1994. The validation methods and actions discussed in this document are based on the requirements set forth in the "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," February 1994. This document attempts to cover technical as well as contractual problems specific to each fraction and sample matrix; however, situations may arise where data limitations must be assessed based on the reviewer's professional judgement.

In addition to technical requirements, contractual requirements are also covered in this document. While it is important that instances of contract non-compliance be addressed in the Data Assessment, the technical criteria are always used to qualify the analytical data.

Summary of Method

To ensure a thorough evaluation of each result in a data case, the reviewer must complete the checklist within this SOP, answering specific questions while performing the prescribed "ACTIONS" in each section. Qualifiers (or flags) are applied to questionable or unusable results as instructed. The data qualifiers discussed in this document are defined on page 4 of the National Functional Guidelines mentioned above.

The reviewer must prepare a detailed data assessment to be submitted along with the completed SOP checklist. The Data Assessment must list all data qualifications, reasons for qualifications, instances of missing data and contract non-compliance. This information is further summarized on the Organic Regional Data Assessment Summary and Data Rejection Summary forms (see attached).

CADRE reports, when available, are to be incorporated into the Data Assessment. To generate CADRE reports for a particular SDG, follow the SOP for Validating RAS/CLP Data Cases with MAGIC, CARD and CADRE (see attached).

Reviewer Qualifications

This SOP is intended for use by organic data validators who have successfully completed the USEPA Region II data validation training program. Data reviewers must possess a working knowledge of the USEPA Statement of Work and National Functional Guidelines mentioned above.

DEFINITIONS

Acronyms

BFB - bromofluorobenzene
BHC - benzene hexachloride
BNA - base neutral acid
CADRE - Computer Aided Data Review and Evaluation
CARD - CLP Analytical Results Database
CCS - contract compliance screening
CLASS - Contract Laboratory Analytical Services Support
CLP - Contract Laboratory Program
CRQL - Contract Required Quantitation Limit
%D - percent difference
DCB -decachlorobiphenyl
DDD - dichlorodiphenyldichloroethane
DDE - dichlorodiphenylethane
DDT - dichlorodiphenyltrichloroethane
GC - gas chromatography
GC/EC - gas chromatograph/electron capture detector
GC/MS - gas chromatograph/mass spectrometer
GPC - gel permeation chromatography
IS - internal standard
kg - kilogram
µg - microgram
MAGIC - Mainframe Access Graphical Interface with CARD
MS - matrix spike
MSD - matrix spike duplicate
ℓ - liter
mℓ - mililiter
PCB - polychlorinated biphenyl
PE - performance evaluation
PEM - Performance Evaluation Mixture
QC - quality control
RAS - Routine Analytical Services
RIC - reconstructed ion chromatogram
RPD - relative percent difference
RRF - relative response factor
$\overline{RRF}$ - average relative response factor (from initial calibration)
RRT - relative retention time
RSD - relative standard deviation
RT - retention time
RSCC - Regional Sample Control Center
SDG - sample delivery group
SMC - system monitoring compound
SOP - standard operating procedure
SOW - Statement of Work
SVOA - semivolatile organic acid
TCL - Target Compound List
TCLP - Toxicity Characteristics Leachate Procedure
TCX -tetrachloro-m-xylene
TIC - tentatively identified compound

Acronyms (cont'd.)

TPO - technical project officer
VOA - volatile organic acid
VTSR - validated time of sample receipt
WAM - EPA Work Assignment Manager

Data Qualifiers

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively dienrified; the associated numerical value is the approximate concentration of the analyte in the sample.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality contrrol criteria. The presence or absence of the analyte cannot be verified.

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 27133 LABORATORY: SWOK

SITE NAME: Cornell-Dubilier SDG Number(s): BWZ06

1.0 Chain of Custody and Sampling Trip Reports

1.1 Are the Traffic Reports/Chain-of-Custody Records present for all samples? [✓] ___ ___

ACTION: If no, contact RSCC, or contact the WAM to obtain replacement of missing or illegible copies from the lab.

1.2 Is the Sampling Trip Report present for all samples and all fractions? [✓] ___ ___

ACTION: If no, contact either RSCC or ask the WAM to obtain this information from the prime contractor.

2.0 Data Completeness and Deliverables

2.1 Have any missing deliverables been received and added to the data package? ___ ✓

NOTE: The lab is required to submit data for only two analyses, for each fraction. (i.e., the original sample and one dilution, or the most concentrated dilution analyzed and one further dilution.)

ACTION: Contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the lab. If lab cannot provide them, note the effect on the review of the package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.

2.2 Was CLASS CCS checklist included with package? [ ] ✓ ___

2.3 Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Report and Sample Tags? ___ [✓] ___

	YES	NO	N/A
ACTION: If yes, contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the laboratory.			
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	✓		
3.2 Are case number, SDG number and contract number contained in the SDG Narrative or cover letter (see SOW, Exhibit B, section 2.6.1)?	✓		
3.3 Does the narrative contain the following information:			
VOA: description of trap and columns used during sample analyses?			✓
BNA: description of columns used during sample analyses?			✓
Pest: description of columns used during sample analyses?	✓		
NOTE: As per section 6.23.3.1 SOW/p. D-11/Pest, Packed columns are not permitted.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?			✓
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler was exceeded, > 10° C, the lab must list by fraction and sample number, all affected samples.	✓		
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatile analysis (SOW Exhibit B, section 2.6.1.2)?			✓
3.7 Does the Case Narrative contain the statement, "verbatim", as required in Section B of the SOW?	✓		

ACTION: If "No", to any question in this section, contact the WAM to obtain all necessary resubmittals. If information is not available, document in the Data Assessment under Contract Problems/Non-Compliance section.

	YES	NO	N/A
4.0 Data Validation Checklist			
4.1 Check the package for the following discrepancies:			
a. Is the package paginated in ascending order starting from the SDG narrative?	[✓]		
b. Are all forms and copies legible?	[✓]		
c. Is each fraction assembled in the order set forth in the SOW?	[✓]		
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?	[ ]	✓	
The following checklist is divided into three parts. Part A is for any VOA analyses, Part B is for BNAs and Part C is Pesticide/PCBs.			
Does this package contain:			
VOA Data?		✓	
BNA Data?		✓	
Pesticide/PCB data?	✓		

ACTION: Complete corresponding parts of checklist.

YES NO N/A

PART C: PESTICIDE/PCB ANALYSIS

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records or SDG Narrative indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data? ___ [✓] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be qualified as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced, or if the ice was melted upon arrival at the laboratory, and the temperature of the cooler was elevated > 10^0 C, flag all positive results "J" and all non-detects "UJ".

ACTION: Check aqueous extraction log for sample pH, if adjustment was needed, it should have been noted in the SDG Narrative. If more information is needed, notify the WAM to contact the lab.

2.0 Holding Times

2.1 Have any PEST/PCB technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [✓] ___

NOTE: Technical Holding Times: Water and soil samples for PEST/PCB analysis must be extracted within 7 days of the date of collection. Extracts must be analyzed within 40 days of the date extraction.

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits "UJ" and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of

YES NO N/A

additional storage on the sample results. At a minimum, all the data should at least be qualified "J", but the reviewer may determine that non-detects are unusable "R".

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample Analyzed	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed

NOTE: Contractual Holding Times: Extraction of water samples must be completed within 5 days VTSR. Soil/sediment samples must be extracted within 10 days of VTSR. This requirement does not apply to Performance Evaluation (PE) samples. Extracts of water and soil/sediment samples must be analyzed within 40 days following start of extraction.

ACTION: If contractual holding times are exceeded, document in the Data Assessment and Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

3.0 Surrogate Recovery (Form II)

3.1 Are the PEST/PCB Surrogate Recovery Summaries (Form II) present for each of the following matrices:

a. Low Water? [✓] ___ ✓

b. Soil? [✓] ___ ___

3.2 Are all the PEST/PCB samples listed on the appropriate Surrogate Recovery Summary for each of the following matrices:

	YES	NO	N/A
a. Low Water?	[ ]		✓
b. Soil?	[✓]		

ACTION: Contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the laboratory. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.3 Were outliers marked correctly with an asterisk?	[✓]		

ACTION: Circle all outliers with red pencil.

3.4 Were surrogate recoveries of TCX or DCB outside of the contract specification for any sample, method blank or sulfur clean-up blank (30-150%)?		[✓]	

ACTION: In the absence of matrix interference, qualification of the data is not required in the following three situations:

1. When surrogates on both columns are diluted out.

2. When one surrogate on one column was outside (either above or below) the contract limits but above 10%.

3. When the same surrogate on both columns is above the contract limit.

If the same surrogate on both columns is below the contract limit but above 10%, check chromatograms for interference. The reviewer may use professional judgement, and qualify only those analytes which elute in the region of the GC chromatogram where interference was observed.

If the same surrogate on both columns is below the contract limit but above 10% (with no interference), qualify non-detects and positive hits "J" (estimated).

If recoveries for both surrogates on both columns are below the contract limit but above 10%, flag positive results and non-detects for that sample "J".

YES NO N/A

If recoveries are above the contract limit for both surrogates on both columns, then qualify positive values "J".

If both surrogates on one column are below the contract limit but above 10%, then use the data from the other column, providing both surrogates on that column are within contract limits. The validator must check from which column the concentration is reported for each analyte. If the value is reported from the failed column, then cross it out and use the value from the other column. Document this change in the Data Assessment.

If recovery is below 10% for either surrogate on any column, qualify positive results "J" and flag non-detects "R".

3.5 Were surrogate retention times (RT) within the windows established during the initial 3-point analysis of Individual Standard Mixture A (see Form VI Pest-1)? [✓] ___ ___

ACTION: If the RT limits are not met, positive results and non-detects for that sample may be qualified unusable, "R", based on professional judgement.

3.6 Are there any transcription/calculation errors between raw data and Form II? ___ [✓] ___

ACTION: If large errors exist, contact the WAM to obtain an explanation or resubmittal of corrected deliverables from the laboratory. Make any necessary corrections and document the effect in the Data Assessment.

4.0 Matrix Spikes (Form III)

4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present? [✓] ___ ___

4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices (one MS/MSD must be performed for every 20 samples of similar matrix or concentration level):

a. Low Water? [ ] ___ [✓]

	YES	NO	N/A
b. Soil?	[✓]		

ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.

ACTION: Circle all outliers with red pencil.

4.3 How many PEST/PCB spike recoveries are outside QC limits?

Water	Soil
NA out of 12	3 out of 12

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soil
✓ out of 6	2 out of 6

ACTION: No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the matrix spike and matrix spike duplicate results in conjunction with other QC criteria and determine the need for some qualification of the data.

5.0 Blanks (Form IV)

	YES	NO	N/A
5.1 Is the Method Blank Summary (Form IV) present?	[✓]		
5.2 Frequency of Analysis: Has a reagent/method blank been analyzed for each SDG, every 20 samples of similar matrix and concentration level or each extraction batch, whichever is more frequent?	[✓]		

ACTION: If any blank data are missing, take action as specified above in section 3.2. If blank data is not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank data for missing method blank data.

5.3 A separate Form IV should be present if part of an extraction batch required sulfur removal. In such cases some samples will be listed on two blank summary forms - once under the method

	YES	NO	N/A
blank, and once under the sulfur clean-up blank (PCBLK). Was this additional blank raw data and Form IV submitted when required?	[ ]	✓	
ACTION: If sulfur clean-up blank data and Form IV are missing, take action as specified in 3.2 above.			
5.4 Has a PEST/PCB instrument blank been analyzed at the beginning of every 12 hr. period following the initial calibration sequence (minimum contract requirement)?	[✓]		
ACTION: If any blank data are missing, take action as specified in section 3.2 above.			
5.5 Was the correct identification scheme used for all Pest/PCB blanks? (See page B-33, sec. 3.3.7.3 of the SOW for further information.)	[✓]		
ACTION: Contact the WAM to obtain resubmittals or make the required corrections on the forms. Document in the Data Assessment under Contract Problems/Non-Compliance all corrections made by the validator.			
5.6 Chromatography: review the blank raw data - chromatograms, quant. reports and data system printouts. Is the chromatographic performance (baseline stability) for each instrument acceptable?	[✓]		
ACTION: Use professional judgement to determine the effect on the data.			

6.0 Contamination

NOTE: "Water blanks", "distilled water blanks" and "drilling water blanks" are validated like any other sample and are not used to qualify the data. Do not confuse them with the other QC blanks discussed below.

	YES	NO	N/A
6.1 Do any method/reagent, instrument, or cleanup blanks show positive hits for pest/PCBs?		[✓]	
6.2 If any method blanks and/or sulfur clean-up blanks contain "hits" for target compounds, are these hits greater than the CRQL for that			

	YES	NO	N/A
analyte?		[✓]	
6.3 In any instrument blanks, is the concentration of any target hit > 0.5 times CRQL for that analyte (see SOW, section 12.1.4.4.2, page D-77/PEST)?		[✓]	

NOTE: Most labs will report 0.5 times CRQLs on the instrument blank Form I instead of the actual method CRQLs. If the lab reported the actual CRQLs, then check if any detected hits are above 0.5 times the CRQLs reported on the Form I.

ACTION: If yes to any of the above questions: note in the Data Assessment under Contract Problems/Non-Compliance if any method or clean-up blanks contain hits > the CRQL, or of instrument blank contained hits > 0.5 times CRQL for that analyte.

	YES	NO	N/A
6.4 Do any field/rinse blanks have positive pest/PCB results?		[✓]	✓

ACTION: Prepare a list of the samples associated with each contaminated blank. (Attach a separate sheet)

NOTE: All field blank results associated to a particular group of samples (may exceed one per case or one per day) may be used to qualify data. Do not convert <u>field blank</u> results to account for the difference in soil CRQLs. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate, and/or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

NOTE: When applied as directed in the table below, the contaminant concentration in method/instrument/reagent/cleanup blanks is multiplied by the sample dilution factor, where necessary.

If the laboratory has not already done so, the contaminant concentration in <u>soil</u> blanks is multiplied by 33 times the sample dilution factor and corrected for %moisture (fraction of solid) where necessary. 30 grams of sodium sulfate are used to prepare each soil reagent/method blank as instructed on page D-72/PEST, section 12.1.2.3.1. Ask the WAM

YES NO N/A

to contact the laboratory if the soil blanks are not reported in soil units (µg/kg).

Flag sample result with a "U":	Report CRQL & qualify "U":	No qualification is needed:
Sample conc. > CRQL, but ≤ 5× blank.	Sample conc. < CRQL & is ≤ 5× blank value.	Sample conc. > CRQL & > 5× blank value.

NOTE: If gross blank contamination exists, all data in the associated samples should be qualified as "R", unusable.

6.5 Are there field/rinse/equipment blanks associated with every sample? [ ] ✓ ___

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For analytes with high concentrations, use professional judgement to qualify these values and document in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 Calibration and GC Performance

7.1 Are the following Gas Chromatograms and Data Systems Printouts for both columns present for all samples, blanks and MS/MSD:

a. Peak resolution check? [✓] ___ ___

b. Performance evaluation mixtures? [✓] ___ ___

c. Aroclor 1016/1260? [✓] ___ ___

d. Aroclors 1221, 1232, 1242, 1248, 1254? [✓] ___ ___

e. Toxaphene? [✓] ___ ___

f. Low points individual mixtures A & B? [✓] ___ ___

g. Med points individual mixtures A & B? [✓] ___ ___

h. High points individual mixtures A & B? [✓] ___ ___

	YES	NO	N/A
i. Instrument blanks?	✓		
j. Were the appropriate GC columns used as specified on pg. D-11/PEST, sections 6.23.3.1 to 6.23.3.7, in the SOW?	✓		
7.2 Do the chromatograms for all Individual Standard Mixtures and PEM analyses display single component analytes at > 10% but < 100% of full scale (see sections 9.3.5.8.1 thru 9.3.5.8.4, pages D-32 & 33/PEST)?	✓		
Have chromatograms for Individual Standard Mixtures and PEM analyses been replotted, showing scaling factor(s), to meet the above requirements when necessary?	✓		

NOTE: All standard chromatograms must clearly display all peaks at > 10% but < 100% of full scale, and replotted if necessary to accommodate peaks not properly scaled in the initial chromatogram(s). Both the initial and replotted chromatograms must be submitted with the data package.

ACTION: If all single component peaks are not clearly displayed on chromatograms for all Individual Standard Mixtures and PEM analyses, notify the WAM to obtain resubmittal of the necessary data.

	YES	NO	N/A
7.3 Are Forms VI PEST 1-7 present and complete for each column and each analytical sequence?	✓		

ACTION: If no, take action as specified in 3.2 above.

	YES	NO	N/A
7.4 Are there any transcription/ calculation errors between raw data and Forms VI?	✓		N/A

ACTION: If large errors exist, take action as specified in section 3.6 above.

Header info.

	YES	NO	N/A
7.5 Do all standard retention times, including each pesticide in each level of Individual Mixtures A & B, fall within the windows established during the Initial Calibration (see Form VI PEST-1)?	✓		

ACTION: If no, all samples in the entire analytical sequence are potentially affected. Check to see if the chromatograms contain peaks within an expanded window surrounding the expected

	YES	NO	N/A

retention times. If no peaks are found and the surrogates are visible, non-detects are valid. If peaks are present and cannot be identified through pattern recognition or using a revised RT window, qualify all positive results "JN" and non-detects as unusable (R). For aroclors, the RT may be outside the window, but the aroclor may still be identified from its distinctive pattern.

ONLY PCB's well validated

7.6 Are the linearity criteria for the initial analyses of Individual Standards A & B within limits for both columns? (%RSD must be ≤ 25.0 for alpha and delta BHC, ≤ 30.0 for the two surrogates and ≤ 20% for all other analytes.) [ ] ___ ___

NOTE: Contractual requirements allow up to two single component TCL compounds, but not surrogates, on each column to exceed the criteria provided the %RSD is ≤ 30%. (See page D-28/Pest, sec. 9.2.5.7 in the SOW.) Technical criteria, however, are the same for all analytes.

ACTION: If technical criteria were not met, qualify all associated positive results generated during the entire analytical sequence "J" and all non-detects "UJ". When %RSD > 90%, flag all non-detect results for that analyte "R" (unusable).

ACTION: If more than two analytes failed %RSD, document in the Data Assessment Contract Problems/Non-Compliance section and Organic Regional Data Assessment Summary form.

7.7 Is the resolution between each pair of adjacent peaks in the Resolution Check Mixture ≥ 60.0% for both columns? (See Form VI PEST-4.) [ ] ___ ___

ACTION: If no, qualify positive results for compounds that were not adequately resolved "J". Use professional judgement to determine if non-detects which elute in areas affected by co-eluting peaks should be qualified "N" as presumptive evidence of presence or unusable (R).

7.8 Is Form VI PEST-5 present and complete for each Performance Evaluation Mixture (PEM) standard used for <u>both initial and continuing</u> calibrations (see SOW section 3.12.4.4, page B-52)? [ ] ___ ___

	YES	NO	N/A
ACTION: If no, take action as specified in section 3.2 above.			
7.9 For each PEM standard, was the resolution between each pair of adjacent peaks ≥ 90.0% on both columns?	[ ]		
ACTION: Qualify positive results for compounds not adequately resolved estimated (J). Qualify non-detects based on professional judgement.			
7.10 Have Forms VI PEST-6 & PEST-7 been completed for all midpoint Individual Standards A and B used for initial calibration?	[ ]		
For each standard, was the resolution between each pair of adjacent peaks ≥ 90.0% on both columns?	[ ]		
ACTION: If no, qualify positive results for compounds that were not adequately resolved estimated (J). Use professional judgement to determine if non-detects which elute in areas affected by co-eluting peaks should be qualified "N" as presumptive evidence of presence or unusable "R".			
7.11 Is Form VII Pest-1 present and complete for each PEM standard analyzed during the analytical sequence for both columns?	[ ]		
Was the %Breakdown of DDT and Endrin calculated using the equations given on page D-26/PEST, sec. 9.2.4.8 in the SOW?	[ ]		
Were all pesticides and surrogates in each PEM standard within the RT windows established during the Initial Calibration?	[ ]		
ACTION: If no, take action as specified in 3.2 above.			
7.12 Has the individual percent breakdown for DDT/Endrin exceeded 20.0% in any PEM on either column? (See Form VII PEST-1.)			
- for 4,4'-DDT?		[ ]	
- for Endrin?		[ ]	
Has the combined percent breakdown for DDT/Endrin			

ONY PCBs were validated

YES NO N/A

exceeded 30.0% in any PEM on either column (required for all PEM analyses)? ___ ✓ ___

ACTION: 1. If any percent breakdown has failed the QC criteria in either PEM in steps 2 and 17 in the initial calibration sequence (page D-28/Pest, sec. 9.2.5.6 in the SOW), qualify all samples in the entire analytical sequence as described in sections 2.a, b and c below.

2. If any percent breakdown failed the QC criteria in a PEM calibration verification analysis, review data beginning with the samples which followed the last in-control standard until the next acceptable PEM and qualify the data as described below.

a. 4,4'-DDT Breakdown: If DDT breakdown was > 20.0%:

i. Qualify all positive results for DDT with "J". If DDT was not detected, but DDD and DDE are positive, then qualify the quantitation limit for DDT unusable, "R".

ii. Qualify positive results for DDD and/or DDE as presumptively present at an approximated quantity "JN".

b. Endrin Breakdown: If endrin breakdown was > 20.0%:

i. Qualify all positive results for endrin with "J". If endrin was not detected, but endrin aldehyde and endrin ketone are positive, then qualify the quantitation limit for Endrin as unusable "R".

ii. Qualify positive results for endrin ketone and endrin aldehyde as presumptively present at an approximated quantity "JN".

c. Combined Breakdown: If the combined 4,4'-DDT and endrin breakdown is greater than 30.0%:

i. Qualify all positive results for DDT and Endrin with "J". If endrin was not detected, but endrin aldehyde and endrin ketone are positive, then qualify the quantitation limit for endrin as unusable

only PCBs were reported

	YES	NO	N/A

"R". If DDT was not detected, but DDD and DDE are positive, then qualify the quantitation limit for DDT as unusable "R".

ii. Qualify positive results for endrin ketone and endrin aldehyde as presumptively present at an approximated quantity "JN". Qualify positive results for DDD and/or DDE as presumptively present at an approximated quantity "JN".

7.13 Are all percent difference (%D) values for PEM analytes and surrogates on both columns ≥ -25% and ≤ +25.0%? (See Form VII PEST-1.) [ ] ___ ___

ACTION: If no, qualify all associated positive results generated during the analytical sequence "J" and sample quantitation limits "UJ".

NOTE: If the failing PEM is part of the initial calibration, all samples are potentially affected. If the offending standard is a calibration verification, the associated samples are those which followed the last in-control standard until the next passing standard.

7.14 Is Form VII Pest-2 present and complete for each INDA and INDB calibration verification analyzed? [ ] ___ ___

ACTION: If no, take action specified in 3.2 above.

7.15 Are there any transcription/calculation errors between raw data and Form VII Pest-2? ___ [ ] ___

ACTION: If large errors exists, take action as specified in section 3.6 above.

7.16 Do all standard retention times for each INDA and INDB calibration verification fall within the RT windows established during the initial calibration sequence? (See Form VII PEST-2.) [ ] ___ ___

ACTION: If no, beginning with the samples which followed the <u>last in-control standard</u>, check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times. If no peaks are found and the surrogates are visible, non-detects are valid. If peaks are present and cannot be identified through pattern recognition or using a revised

Only PCB data was validated

YES NO N/A

RT window, qualify all positive results and non-detects as unusable (R).

7.17 Are all %D values for INDA and INDB calibration verification compounds ≥ -25.0% and ≤ +25.0%? [ ] ___ ___

ACTION: If the %D is outside the ±25.0% range for any compound(s), qualify associated positive results for that compound "J" and non-detects "UJ". The "associated samples" are those which followed the last in-control standard up to the next passing standard containing the analyte(s) in question. If the %D is > 90%, flag all non-detects for that analyte "R" (unusable).

8.0 Analytical Sequence Check (Form VIII-PEST)

8.1 Is Form VIII present and complete for each column and each period of analyses? [✓] ___ ___

ACTION: If no, take action specified in 3.2 above.

8.2 Was the proper analytical sequence followed for each initial calibration and subsequent analyses, and all standards analyzed at the required frequency for each GC/EC instrument used.? (See SOW pages D-23 & D-58/PEST.) [✓] ___ ___

ACTION: If no, use professional judgement to determine the severity of the effect on the data and qualify accordingly. Generally, the effect is negligible unless the sequence was grossly altered and/or the calibration was out of QC limits.

8.3 Were all samples analyzed within a 12 hour time period beginning with the injection of an instrument blank and bracketed by acceptable analyses of the proper standards? [✓] ___ ___

ACTION: If no, use professional judgement to determine the severity of the effect on the data and qualify accordingly. Document in the Data Assessment under Contract Problems/Non-Compliance and Organic Regional Data Assessment Summary.

8.4 If a multi-component analyte was detected in a sample, was a matching multi-component standard analyzed within 72 hours of the injection of the

	YES	NO	N/A
sample and within a valid 12 hour sequence?	[✓]	___	___

NOTE: This additional standard is for identification purposes only. Positive results for Aroclors and Toxaphene are quantitated from the initial calibration.

ACTION: If no, document in the Data Assessment under Contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

9.0 Cleanup Efficiency Verification (Form IX)

	YES	NO	N/A
9.1 Is Form IX PEST-1 present and complete for each lot of Florisil Cartridges used? (Florisil Cleanup is required for all Pest/PCB extracts.)	[✓]	___	___
Are all samples listed on the Pesticide Florisil Cartridge Check Form?	[✓]	___	___

ACTION: If no, take action specified in 3.2 above. If data suggests florisil clean-up was not performed, document in the Data Assessment under the Contract Non-compliance section.

	YES	NO	N/A
9.2 Are percent recoveries (%REC) of the pesticide and surrogate compounds used to check the efficiency of the florisil clean-up procedure within QC limits of 80 - 120%?	[✓]	___	___

ACTION: Qualify only the analyte(s) which failed the recovery criteria as follows:

If %REC is < 80%, qualify positive results "J" and non-detects "UJ".

If any pesticide %REC was zero, flag non-detects "R" for that compound.

Use professional judgement to qualify positive results if any recoveries are > 120%.

NOTE: Sample data should be evaluated for potential interferences if recovery of 2,4,5-trichlorophenol was > 5% in the Florisil Cartridge Performance Check analysis. Document any problems found in the Data Assessment under the Contract Problems/Non-Compliance section.

	YES	NO	N/A
9.3 If GPC Cleanup was performed (mandatory for all soil sample extracts), is Form IX Pest-2 present?	[✓]	___	___
Are all soil samples listed on Form IX Pest-2?	[✓]	___	___

ACTION: If no, take action specified in 3.2 above. If data suggests GPC clean-up was not performed when required, document in the Data Assessment under the Contract Problems/Non-Compliance section and Organic Regional Data Assessment Summary.

Are the %REC values for all pesticides in the GPC calibration solution between 80 - 110%?	[✓]	___	___

ACTION: Qualify only those analytes which failed the recovery criteria as follows:

If %REC are < 80%, qualify positive results "J" and non-detects "UJ".

If any pesticide %REC was zero, flag non-detects "R" for that compound.

Use professional judgement to qualify positive results if any recoveries are > 110%.

NOTE: An Aroclor mixture containing Aroclors 1016 and 1260 is also analyzed during GPC calibration; however, Aroclor data is not listed on Form IX PEST-2. The raw GPC data for Aroclors 1016/1260 must be evaluated for pattern similarity with previously analyzed Aroclor standards.

9.4 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-35, sec. 3.3.7.8 and 3.3.7.9 of the SOW for further information.			
Was the correct identification scheme used for GPC and Florisil blanks?	[✓]	___	___

10.0 Pesticide/PCB Identification

10.1 Is Form X complete for every sample in which a pesticide or PCB was detected?	[✓]	___	___

ACTION: If no, take action specified in 3.2 above.

	YES	NO	N/A
10.2 Are all sample chromatograms properly scaled, attenuated, etc. as required for proper identification of single and multi-component analytes? (Refer to SOW sections 11.3.7.1 thru 11.3.7.8, page D-70/Pest for specific details.)	[✓]		

NOTE: Proper verification of Pest/PCB results depends on clear, legible presentation of the raw data. Single component pesticides and all peaks chosen for quantitation of multi-component analytes must appear at less than full scale. Toxaphene and PCB patterns must be clearly visible to enable comparison with standard chromatograms.

ACTION: If retention times or apex of peaks cannot be verified, or if multi-component peak patterns cannot be discerned, contact the WAM to obtain rescaled chromatograms from the lab.

10.3 Are there any transcription/calculation errors between raw data and Forms 10A and 10B?		[✓]	

ACTION: If large errors exist, take action as specified in section 3.6 above.

10.4 Are RTs of sample compounds within the established RT windows for analyses on both columns?	[✓]		
Was GC/MS confirmation provided when required (when compound concentration is > 10 ug/mℓ in the final extract)?	[✓]		

ACTION: Use professional judgement to qualify positive results which were not confirmed by GC/MS analysis. Qualify as unusable (R) all positive results which were not confirmed on a second GC column. Also qualify as unusable (R) all positive results which do not meet RT window criteria, unless associated standard compounds are similarly biased. Use professional judgement to assign an appropriate quantitation limit.

10.5 Is the percent difference (%D) calculated for the positive sample results on both columns > 25.0%?	✓	[ ]	

ACTION: If the reviewer finds neither column shows interference for the positive hits, the data should be flagged as follows:

YES NO N/A

% Difference	Qualifier
0 - 25%	None
25 - 70%	"J"
70 - 100%	"JN"
> 100% (No interference)	"R"
100 - 200% (Interference detected)*	"JN"
> 50% (Pesticide value is < CRQL)**	"U"
> 200%	"R"

* When the reported %D is 100 - 200%, but interference is detected on either column, qualify the data with "J".

** When the reported pesticide value is lower than the CRQL, and the %D is > 50%, raise the value to the CRQL and qualify "U", undetected.

NOTE: For Aroclors, if the %D is > 50%, but the pattern of GC peaks on both columns indicates a specific Aroclor is present, qualify that Aroclor "J".

NOTE: The lower of the two values is reported on Form I. If using professional judgement, the reviewer determines that the higher result was more acceptable, the reviewer should replace the value and indicate the reason for the change in the Data Assessment.

10.6 Check chromatograms for false negatives, especially the multiple-peak compounds (Toxaphene and the PCBs). Were there any false negatives? ___ [✓] ___

ACTION: Use professional judgement to decide if the compound should be reported. If the appropriate PCB standards were not analyzed within 72 hrs. of the sample(s) in question, qualify the data unusable "R".

Also note in Data Assessment under Contract Problems/Non-Compliance if the lab failed to analyze Aroclor standards when required.

11.0 Target Compound List (TCL) Analytes

11.1 Are the Organic Analysis Data Sheets (Form I Pest) present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate? [✓] ___ ___

b. Matrix spikes and matrix spike duplicates? [✓] ___ ___

	YES	NO	N/A
c. Blanks?	[✓]		
d. Instrument Blanks (per column & analysis)?	[✓]		
11.2 Are the Pest chromatograms and quant. reports included in the sample data package for each of the following:			
a. Samples and/or fractions as appropriate?	[✓]		
b. Matrix spikes and matrix spike duplicates?	[✓]		
c. Blanks?	[✓]		
d. Instrument Blanks (per column & analysis)?	[✓]		
ACTION: If any data are missing, take action specified in 3.2 above.			
11.3 Are the calibration factors shown in the quant. reports?	[ ]	✓	
11.4 Is chromatographic performance acceptable with respect to:			
a. Baseline stability?	[✓]		
b. Resolution?	[✓]		
c. Peak shape?	[✓]		
d. Full-scale graph attenuation?	[✓]		
e. Other: _____?	[ ]		
11.5 Were any electropositive displacement (negative peaks) or unusual peaks seen?		[✓]	
ACTION: Use professional judgement to determine the acceptability of the data. Address comments under System Performance section of the Data Assessment.			

12.0 Compound Quantitation and Reported Detection Limits

	YES	NO	N/A
12.1 Are there any transcription/calculation errors in Form I results? Check at least two positive results. Were any errors found?		[✓]	

YES NO N/A

NOTE: Single-peak pesticide results can be checked for rough agreement between quantitative results obtained on the two GC columns. Use professional judgement to decide whether a large discrepancy indicates the presence of an interfering compound. If an interfering compound is visible on the chromatogram, the lower of the two values should be reported and qualified as presumptively present at an approximated quantity "JN". This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has interfered with the evaluation of the second column confirmation.

12.2 Are the CRQLs adjusted to reflect sample dilutions? [✓] ___ ___

ACTION: If large errors exist, take action as specified in section 3.6 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQLs from the diluted sample). Replace concentrations which exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with the result from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including those in the data summary package.

ACTION: Quantitation limits affected by large, off-scale peaks should be qualified as unusable (R). If the interference is on-scale, the reviewer may offer an approximated quantitation limit (UJ) for each affected compound.

NOTE: If a sample required greater than a 10 times dilution, then a 10 times more concentrated analysis must also be performed and submitted (see SOW, page D-60/PEST, section 10.2.3.5).

ACTION: If a more concentrated analysis is unavailable, document in the Contract Problems/Non-Compliance section of the Data Assessment. Use professional judgement to qualify non-detects and positive hits below the CRQL.

	YES	NO	N/A
13.0 Field Duplicates			
13.1 Were any field duplicates submitted?	[✓]	___	___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

DPO: [X]ACTION [ ]FYI REGION II

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO.: 27133 LABORATORY: SWL-TULSA

SDG NO.: BWZ06 DATA USER: EPA Region II

SOW: OLM03.2 REVIEW COMPLETION DATE: 7/12/99

NO. OF SAMPLES: __ WATER 20 SOIL __ OTHER

REVIEWER: [ ] ESD [X] ESAT [ ] OTHER, CONTRACTOR: _____

QC ITEM	PEST	
HOLDING TIMES	O	
GC-MS PERFORMANCE	NA	
INITIAL CALIBRATIONS	O	
CONTINUING CALIBRATIONS	O	
FIELD BLANKS(F = N/A)	O	
LABORATORY BLANKS	O	
SURROGATES	O	
MATRIX SPIKE/DUPLICATES	O	
QC SAMPLES(LCS, PVS)	NA	
INTERNAL STANDARDS	NA	
COMPOUND IDENTIFICATION	X	
COMPOUND QUANTITATION	O	
SYSTEM PERFORMANCE	O	
OVERALL ASSESSMENT	X	

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as either estimated or unusable.
Z = More than about 5% of the data points are qualified as unusable.

DPO ACTION ITEMS:

SWOK continues to dilute samples unnecessarily.

AREAS OF CONCERN:

DATA REJECTION SUMMARY

Type of Review: Organic **Date:** 7/12/99 **Case/SDG No.:** BWZ06

Site Name: Cornell-Dublier **Lab Name:** SWL-TULSA

Reviewer's Initials: **Number of Samples, including REs, DLs and QC:** 42

Analytes Rejected Due to Exceeding Review Criteria For:

No. of Compounds/No. of Fractions (Samples)

	Surrogates	Holding Time	Calibration	Contamination	ID	Internal Standards	Other	Total # of Samples	Total # Estimated/Total # in All Samples
VOA(33)									0 / 0 = %
ACID(14)									0 / 0 = %
B/N(50)									0 / 0 = %
PEST(21)									0 / 0 = %
PCB(7)								42	0 / 294 = 0 %

NOTE: ASTERISK (*) INDICATES ADDITIONAL EXCEEDANCES OF REVIEW CRITERIA.

Analytes Estimated Due to Exceeding Review Criteria For:

No. of Compounds/No. of Fractions (Samples)

	Surrogates	Holding Time	Calibration	Contamination	ID	Internal Standards	Other	Total # of Samples	Total # Estimated/Total # in All Samples
VOA(33)									0 / 0 = %
ACID(14)									0 / 0 = %
B/N(50)									0 / 0 = %
PEST(21)									0 / 0 = %
PCB(7)					19			42	19 / 294 = 6 %

NOTE: ASTERISK (*) INDICATES ADDITIONAL EXCEEDANCES OF REVIEW CRITERIA.

Lockheed Martin Services Group
Environmental Services & Technologies Region 2
175 May Street, Suite 101 Edison, NJ 08837
Telephone 908-417-1061 Facsimile 908-417-3926

LOCKHEED MARTIN

< < <FAX TRANSMISSION> > >

FROM: George Vailakis

Questions?

Call: 732/417-9342
Fax: 732/417-5727

TO: George Karras, cc: R. Grazioli, C. Stanca
COMPANY: EPA
FAX#:
DATE: 7/8/99

PAGES: 4

RE: Case/SDG: 27133/BWZ06

Message:

George:

SWOK continues to submit dilution analyses for samples which don't require dilution, although we've cited this problems in the past. Only 10 of the 20 dilutions for this case were required to bring target hits within range. Although the case narrative acknowledges this, all twenty dilutions were submitted (see attached). Since time is of the essence, the lab shouldn't give us twice the work (or more, depending on the number of calibrations required to analyze the additional samples) necessary to validate each sample. Can the lab be made aware of this and how it affects the validation process?

verification standards analyzed before these samples met OLM03.2 continuing calibration criteria. When diluted (10 of the soil samples required dilution to bring target analytes within calibration range) the samples met OLM03.2 acceptance criteria. A non-compliant undiluted analysis and a compliant dilution analysis was performed for all these samples, except for BWZ23 and BWZ24 (both have 2 compliant dilutions). Forms for the compliant and non-compliant data have been submitted.

Blanks: No corrective action required.

Surrogates: No corrective action required.

Matrix Spikes: No corrective action required. 2 out of 6 RPDs and 3 out of 12 recoveries were outside control limits control limits due to matrix interference.

The following tables list the total nanograms injected on column for each calibration standard based upon amount injected, 0.5µL, 1µL, or 2µL:

RESOLUTION CHECK

Compounds	Total nanograms (0.5µL)	Total nanograms (1µL)	Total nanograms (2µL)
gamma-Chlordane	0.005	0.01	0.02
Endosulfan I	0.005	0.01	0.02
4,4'-DDE	0.01	0.02	0.04
Dieldrin	0.01	0.02	0.04
Endosulfan Sulfate	0.01	0.02	0.04
Endrin Ketone	0.01	0.02	0.04
Methoxychlor	0.5	0.1	0.2
Tetrachloro-m-xylene	0.01	0.02	0.04
Decachlorobiphenyl	0.01	0.02	0.04

PERFORMANCE EVALUATION

Compounds	Total nanograms (0.5µL)	Total nanograms (1µL)	Total nanograms (2µL)
gamma-BHC	0.005	0.01	0.02
alpha-BHC	0.005	0.01	0.02
4,4'-DDT	0.05	0.1	.02
beta-BHC	0.005	0.01	0.02
Endrin	0.025	0.05	0.1
Methoxychlor	0.125	0.25	0.5
Tetrachloro-m-xylene	0.01	0.02	0.04
Decachlorobiphenyl	0.01	0.02	0.04

02

2F
SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

GC Column(1): RTX-PEST ID: 0.32(mm) GC Column(2): RTX-PEST 2 ID: 0.32(mm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	PBLKSK	72	62	95	94			0
02	BWZ17DL	84	68	210D	158D			0
03	BWZ18DL	71	67	198D	189D			0
04	BWZ19DL	66	61	117	140			0
05	BWZ20DL	65	58	85	79			0
06	BWZ21DL	96	78	232D	212D			0
07	BWZ22DL	58	54	126	136			0
08	BWZ23DL	74	0D	0D	4523D			0
09	BWZ23	75	76	675D	4743D			0
10	BWZ24DL	0D	203D	0D	4232D			0
11	BWZ24	74	80	510D	3940D			0
12	BWZ25DL	69	279D	234D	260D			0
13	BWZ17	85	72	193*	150			1
14	BWZ18	67	62	189*	127			1
15	BWZ19	68	69	136	128			0
16	BWZ20	69	57	72	89			0
17	BWZ21	101	75	241*	152*			2
18	BWZ22	69	62	143	109			0
19	BWZ25	90	78	297*	261*			2
20	BWZ25MS	84	75	166*	191*			2
21	BWZ25MSD	78	61	122	159*			1
22								
23								
24								
25								
26								
27								
28								
29								
30								

QC LIMITS

TCX = Tetrachloro-m-xylene (30-150)
DCB = Decachlorobiphenyl (30-150)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

2F
SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

GC Column(1): DB-1701 ID: 0.32(mm) GC Column(2): DB-17 ID: 0.32(mm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	PBLKSJ	107	57	86	88			0
02	BWZ06DL	132	66	235D	490D			0
03	BWZ07DL	120	49	100	209D			0
04	BWZ08DL	94	35	66	0D			0
05	BWZ09DL	108	60	102	119			0
06	BWZ10DL	96	50	52	100			0
07	BWZ11DL	93	40	54	75			0
08	BWZ12DL	97	43	72	64			0
09	BWZ13DL	114	65	66	116			0
10	BWZ14DL	110	62	55	118			0
11	BWZ15DL	112	45	58	88			0
12	BWZ16DL	107	53	52	72			0
13	BWZ06	124	73	162*	347*			2
14	BWZ07	127	135	119	178*			1
15	BWZ08	82	35	120	54			0
16	BWZ09	100	54	98	92			0
17	BWZ10	91	42	68	79			0
18	BWZ11	93	41	69	64			0
19	BWZ12	99	40	81	61			0
20	BWZ13	109	66	81	94			0
21	BWZ14	114	59	101	107			0
22	BWZ15	98	43	83	78			0
23	BWZ16	82	32	59	57			0
24								
25								
26								
27								
28								
29								
30								

QC LIMITS

TCX = Tetrachloro-m-xylene (30-150)
DCB = Decachlorobiphenyl (30-150)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

FORM II PEST-2 OLM03.0

RECEIVED
JUL 07 1999

SOUTHWEST LABORATORY OF OKLAHOMA
(SWL-TULSA)
1700 West Albany, Suite A/ Broken Arrow, OK 74012
918-251-2858

SDG NARRATIVE

CONTRACT: 68-D5-0026

CASE NO: 27133

SDG NO: BWZ06

SAMPLES: BWZ06, BWZ07, BWZ08, BWZ09, BWZ10, BWZ11, BWZ12, BWZ13, BWZ14, BWZ15, BWZ16, BWZ17, BWZ18, BWZ19, BWZ20, BWZ21, BWZ22, BWZ23, BWZ24, BWZ25, BWZ06DL, BWZ07DL, BWZ08DL, BWZ09DL, BWZ10DL, BWZ11DL, BWZ12DL, BWZ13DL, BWZ14DL, BWZ15DL, BWZ16DL, BWZ17DL, BWZ18DL, BWZ19DL, BWZ20DL, BWZ21DL, BWZ22DL, BWZ23DL, BWZ24DL, BWZ25DL

FRACTION: Pesticide/PCB

This SDG consisted of 20 soil samples that were analyzed for pesticide/PCBs, by EPA SOW OLM03.2. The samples were analyzed on Restek and J&W dual analytical columns. RTX-PEST/RTX-PEST 2 (proprietary Restek phases) and DB-17/DB-1701 (J&W). The DB-17 phase consists of (50%-Phenyl) Methylpolysiloxane and the DB-1701 phase consists of (14%-Cyanopropylphenyl) Methylpolysiloxane . These columns were specifically designed for pesticide/PCB separation as required by the EPA's SOW. All applicable manufacturer's instructions were followed for the analysis of pesticides/PCBs. Manufacturer provided information on the performance characteristics of the columns are kept on site. Hydrogen was used as the carrier gas for all instruments except HP-6 and HP-8 (helium). The temperature of the coolers was noted at 5 ° C.

The matrix of these soil samples caused problems with their analysis by introducing interference peaks in the sample chromatograms and degrading instrument performance. All of the samples also contained degraded arochlor patterns. It should be noted that when multi-responding compounds and/or large numbers of "interference" peaks are present in a sample, false positives of single response compounds are common. Since ECD detection is not a definitive means of detection, single-response analytes in the presence of multi-responders or interference will be reported, per the method, if a peak is within a target analyte's retention time window on both columns, then it is reported as that target analyte). This alleviates the possibility that false negative results will be reported. <u>However, this may lead to false positives</u>. The end data user should be aware of the limitations of the method and take appropriate care.

When analyzed undiluted the soil samples in this SDG caused breakdown of 4,4'-DDT in the calibration verification standards following their injection. The calibration

verification standards analyzed before these samples met OLM03.2 continuing calibration criteria. When diluted (10 of the soil samples required dilution to bring target analytes within calibration range) the samples met OLM03.2 acceptance criteria. A non-compliant undiluted analysis and a compliant dilution analysis was performed for all these samples, except for BWZ23 and BWZ24 (both have 2 compliant dilutions). Forms for the compliant and non-compliant data have been submitted.

Blanks: No corrective action required.

Surrogates: No corrective action required.

Matrix Spikes: No corrective action required. 2 out of 6 RPDs and 3 out of 12 recoveries were outside control limits control limits due to matrix interference.

The following tables list the total nanograms injected on column for each calibration standard based upon amount injected, 0.5µL, 1µL, or 2µL:

RESOLUTION CHECK

Compounds	Total nanograms (0.5µL)	Total nanograms (1µL)	Total nanograms (2µL)
gamma-Chlordane	0.005	0.01	0.02
Endosulfan I	0.005	0.01	0.02
4,4'-DDE	0.01	0.02	0.04
Dieldrin	0.01	0.02	0.04
Endosulfan Sulfate	0.01	0.02	0.04
Endrin Ketone	0.01	0.02	0.04
Methoxychlor	0.5	0.1	0.2
Tetrachloro-m-xylene	0.01	0.02	0.04
Decachlorobiphenyl	0.01	0.02	0.04

PERFORMANCE EVALUATION

Compounds	Total nanograms (0.5µL)	Total nanograms (1µL)	Total nanograms (2µL)
gamma-BHC	0.005	0.01	0.02
alpha-BHC	0.005	0.01	0.02
4,4'-DDT	0.05	0.1	.02
beta-BHC	0.005	0.01	0.02
Endrin	0.025	0.05	0.1
Methoxychlor	0.125	0.25	0.5
Tetrachloro-m-xylene	0.01	0.02	0.04
Decachlorobiphenyl	0.01	0.02	0.04

02

INDIVIDUAL STANDARD MIXTURE A -- LOW

Compounds	Total nanograms (0.5µL)	Total nanograms (1µL)	Total nanograms (2µL)
alpha-BHC	0.0025	0.005	0.01
Heptachlor	0.0025	0.005	0.01
gamma-BHC	0.0025	0.005	0.01
Endosulfan I	0.0025	0.005	0.01
Dieldrin	0.005	0.01	0.02
Endrin	0.005	0.01	0.02
4,4'-DDD	0.005	0.01	0.02
4,4'-DDT	0.005	0.01	0.02
Methoxychlor	0.025	0.05	0.1
Tetrachloro-m-xylene	0.0025	0.005	0.01
Decachlorobiphenyl	0.005	0.01	0.02

INDIVIDUAL STANDARD MIXTURE B -- LOW

Compounds	Total nanograms (0.5µL)	Total nanograms (1µL)	Total nanograms (2µL)
beta-BHC	0.0025	0.005	0.01
delta-BHC	0.0025	0.005	0.01
Aldrin	0.0025	0.005	0.01
Heptachlor epoxide	0.0025	0.005	0.01
alpha-Chlordane	0.0025	0.005	0.01
gamma-Chlordane	0.0025	0.005	0.01
4,4'-DDE	0.005	0.01	0.02
Endosulfan sulfate	0.005	0.01	0.02
Endrin aldehyde	0.005	0.01	0.02
Endrin ketone	0.005	0.01	0.02
Endosulfan II	0.005	0.01	0.02
Tetrachloro-m-xylene	0.0025	0.005	0.01
Decachlorobiphenyl	0.005	0.01	0.02

INDIVIDUAL STANDARD MIXTURE A -- MEDIUM

Compounds	Total nanograms (0.5µL)	Total nanograms (1µL)	Total nanograms (2µL)
alpha-BHC	0.01	0.02	0.04
Heptachlor	0.01	0.02	0.04
gamma-BHC	0.01	0.02	0.04
Endosulfan I	0.01	0.02	0.04
Dieldrin	0.02	0.04	0.08
Endrin	0.02	0.04	0.08
4,4'-DDD	0.02	0.04	0.08
4,4'-DDT	0.02	0.04	0.08
Methoxychlor	0.1	0.2	0.4
Tetrachloro-m-xylene	0.01	0.02	0.04
Decachlorobiphenyl	0.02	0.04	0.08

INDIVIDUAL STANDARD MIXTURE B -- MEDIUM

Compounds	Total nanograms (0.5µL)	Total nanograms (1µL)	Total nanograms (2µL)
beta-BHC	0.01	0.02	0.04
delta-BHC	0.01	0.02	0.04
Aldrin	0.01	0.02	0.04
Heptachlor epoxide	0.01	0.02	0.04
alpha-Chlordane	0.01	0.02	0.04
gamma-Chlordane	0.01	0.02	0.04
4,4'-DDE	0.02	0.04	0.08
Endosulfan sulfate	0.02	0.04	0.08
Endrin aldehyde	0.02	0.04	0.08
Endrin ketone	0.02	0.04	0.08
Endosulfan II	0.02	0.04	0.08
Tetrachloro-m-xylene	0.01	0.02	0.04
Decachlorobiphenyl	0.02	0.04	0.08

INDIVIDUAL STANDARD MIXTURE A -- HIGH

Compounds	Total nanograms (0.5µL)	Total nanograms (1µL)	Total nanograms (2µL)
alpha-BHC	0.04	0.08	0.16
Heptachlor	0.04	0.08	0.16
gamma-BHC	0.04	0.08	0.16
Endosulfan I	0.04	0.08	0.16
Dieldrin	0.08	0.16	0.32
Endrin	0.08	0.16	0.32
4,4'-DDD	0.08	0.16	0.32
4,4'-DDT	0.08	0.16	0.32
Methoxychlor	0.4	0.8	1.6
Tetrachloro-m-xylene	0.04	0.08	0.16
Decachlorobiphenyl	0.08	0.16	0.32

INDIVIDUAL STANDARD MIXTURE B -- HIGH

Compounds	Total nanograms (0.5µL)	Total nanograms (1µL)	Total nanograms (2µL)
beta-BHC	0.04	0.08	0.16
delta-BHC	0.04	0.08	0.16
Aldrin	0.04	0.08	0.16
Heptachlor epoxide	0.04	0.08	0.16
alpha-Chlordane	0.04	0.08	0.16
gamma-Chlordane	0.04	0.08	0.16
4,4'-DDE	0.08	0.16	0.32
Endosulfan sulfate	0.08	0.16	0.32
Endrin aldehyde	0.08	0.16	0.32
Endrin ketone	0.08	0.16	0.32
Endosulfan II	0.08	0.16	0.32
Tetrachloro-m-xylene	0.04	0.08	0.16
Decachlorobiphenyl	0.08	0.16	0.32

MULTI-RESPONSE STANDARD MIXTURES

Compounds	Total nanograms (0.5µL)	Total nanograms (1µL)	Total nanograms (2µL)
Aroclor-1016	0.05	0.1	0.2
Aroclor-1221	0.1	0.2	0.4
Aroclor-1232	0.05	0.1	0.2
Aroclor-1242	0.05	0.1	0.2
Aroclor-1248	0.05	0.1	0.2
Aroclor-1254	0.05	0.1	0.2
Aroclor-1260	0.05	0.1	0.2
Toxaphene	0.25	0.5	1.0

All manual integrations in this data package for GC/EC have been performed for one of the following reasons:

a. Data system missed a peak during processing.
b. Data system improperly integrated a peak.

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

Drew Cowan
GC Supervisor
Dc

July 6, 1999

SAMPLE DELIVERY GROUP (SDG)
TRAFFIC REPORT (TR) COVER SHEET

LAB NAME: SOUTHWEST LABORATORY OF OKLAHOMA CONTRACT NO.: 68-D5-0026

LAB CODE: SWOK CASE NO.: 27133 SAS NO.:

FULL SAMPLE ANALYSIS PRICE IN CONTRACT:

SDG No./First Sample in SDG: (Lowest EPA Sample Number in first shipment of samples received under SDG). BWZ06 Sample Receipt Date: 06/22/99 (MM/DD/YY)

Last Sample in SDG: (Highest EPA Sample Number in last shipment of samples received under SDG). BWZ25 Sample Receipt Date: 06/22/99

EPA Sample Numbers in the SDG (listed in alphanumeric order):

1) BWZ06
2) BWZ07
3) BWZ08
4) BWZ09
5) BWZ10
6) BWZ11
7) BWZ12
8) BWZ13
9) BWZ14
10) BWZ15
11) BWZ16
12) BWZ17
13) BWZ18
14) BWZ19
15) BWZ20
16) BWZ21
17) BWZ22
18) BWZ23
19) BWZ24
20) BWZ25

Note: There are a maximum of 20 field samples in a SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Harry M. Boyd
Sample Custodian

6-22-99
Date

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ06

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.01

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

% Moisture: 20 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/02/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	PJ
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	14	P
58-89-9	gamma-BHC (Lindane)	1.2	J
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	3.2	P
1024-57-3	Heptachlor epoxide	4.5	P
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	17	P
72-55-9	4,4'-DDE	20	P
72-20-8	Endrin	92	PE
33213-65-9	Endosulfan II	8.1	P
72-54-8	4,4'-DDD	15	
1031-07-8	Endosulfan sulfate	4.0	U
50-29-3	4,4'-DDT	46	P
72-43-5	Methoxychlor	190	P
53494-70-5	Endrin ketone	56	E
7421-93-4	Endrin aldehyde	4.0	U
5103-71-9	alpha-Chlordane	17	P
5103-74-2	gamma-Chlordane	18	
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	40	U
11104-28-2	Aroclor-1221	82	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	300	~~R~~
11096-82-5	Aroclor-1260	40	U

ONLY PCB DATA WERE VALIDATED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ06DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.01DL

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

% Moisture: 20 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/01/99

Injection Volume: 0.5(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	21	U
319-85-7	beta-BHC	21	U
319-86-8	delta-BHC	19	DPJ
58-89-9	gamma-BHC (Lindane)	21	U
76-44-8	Heptachlor	21	U
309-00-2	Aldrin	21	U
1024-57-3	Heptachlor epoxide	21	U
959-98-8	Endosulfan I	21	U
60-57-1	Dieldrin	20	DPJ
72-55-9	4,4'-DDE	14	DPJ
72-20-8	Endrin	110	DP
33213-65-9	Endosulfan II	40	U
72-54-8	4,4'-DDD	40	U
1031-07-8	Endosulfan sulfate	40	U
50-29-3	4,4'-DDT	89	DP
72-43-5	Methoxychlor	280	DP
53494-70-5	Endrin ketone	40	U
7421-93-4	Endrin aldehyde	40	U
5103-71-9	alpha-Chlordane	20	DJ
5103-74-2	gamma-Chlordane	22	D
8001-35-2	Toxaphene	2100	U
12674-11-2	Aroclor-1016	400	U
11104-28-2	Aroclor-1221	820	U
11141-16-5	Aroclor-1232	400	U
53469-21-9	Aroclor-1242	400	U
12672-29-6	Aroclor-1248	400	U
11097-69-1	Aroclor-1254	410	DPJ
11096-82-5	Aroclor-1260	400	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ07

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.02

Sample wt/vol: 30.9 (g/mL) G Lab File ID: _____

% Moisture: 12 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/02/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	4.5	P
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	17	P
58-89-9	gamma-BHC (Lindane)	4.3	P
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	2.4	P
1024-57-3	Heptachlor epoxide	12	P
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	10	P
72-55-9	4,4'-DDE	25	P
72-20-8	Endrin	29	
33213-65-9	Endosulfan II	7.2	P
72-54-8	4,4'-DDD	20	P
1031-07-8	Endosulfan sulfate	3.6	U
50-29-3	4,4'-DDT	22	P
72-43-5	Methoxychlor	43	P
53494-70-5	Endrin ketone	3.6	U
7421-93-4	Endrin aldehyde	16	P
5103-71-9	alpha-Chlordane	4.3	P
5103-74-2	gamma-Chlordane	5.5	P
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	74	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	280	~~P~~ J
11096-82-5	Aroclor-1260	36	U

ONLY PCB DATA WERE VALIDATED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ07DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.02DL

Sample wt/vol: 30.9 (g/mL) G Lab File ID:

% Moisture: 12 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/01/99

Injection Volume: 0.5(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	19	U
319-85-7	beta-BHC	19	U
319-86-8	delta-BHC	19	U
58-89-9	gamma-BHC (Lindane)	19	U
76-44-8	Heptachlor	19	U
309-00-2	Aldrin	19	U
1024-57-3	Heptachlor epoxide	19	U
959-98-8	Endosulfan I	19	U
60-57-1	Dieldrin	36	U
72-55-9	4,4'-DDE	21	DPJ
72-20-8	Endrin	28	DPJ
33213-65-9	Endosulfan II	36	U
72-54-8	4,4'-DDD	30	DPJ
1031-07-8	Endosulfan sulfate	36	U
50-29-3	4,4'-DDT	36	U
72-43-5	Methoxychlor	24	DPJ
53494-70-5	Endrin ketone	36	U
7421-93-4	Endrin aldehyde	36	U
5103-71-9	alpha-Chlordane	10	DPJ
5103-74-2	gamma-Chlordane	19	U
8001-35-2	Toxaphene	1900	U
12674-11-2	Aroclor-1016	360	U
11104-28-2	Aroclor-1221	740	U
11141-16-5	Aroclor-1232	360	U
53469-21-9	Aroclor-1242	360	U
12672-29-6	Aroclor-1248	360	U
11097-69-1	Aroclor-1254	320	DJ
11096-82-5	Aroclor-1260	360	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ08

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.03

Sample wt/vol: 31.8 (g/mL) G Lab File ID: _____

% Moisture: 7 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/02/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	0.64	PJ
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.3	U
72-55-9	4,4'-DDE	7.3	P
72-20-8	Endrin	8.2	P
33213-65-9	Endosulfan II	5.8	P
72-54-8	4,4'-DDD	11	P
1031-07-8	Endosulfan sulfate	3.3	U
50-29-3	4,4'-DDT	14	P
72-43-5	Methoxychlor	4.2	PJ
53494-70-5	Endrin ketone	3.3	U
7421-93-4	Endrin aldehyde	12	P
5103-71-9	alpha-Chlordane	1.8	P
5103-74-2	gamma-Chlordane	3.5	P
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	240	~~R~~ J
11096-82-5	Aroclor-1260	33	U

ONLY PCB DATA WERE VALIDATED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ08DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.03DL

Sample wt/vol: 31.8 (g/mL) G Lab File ID: _____

% Moisture: 7 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/01/99

Injection Volume: 0.5 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	17	U
319-85-7	beta-BHC	17	U
319-86-8	delta-BHC	17	U
58-89-9	gamma-BHC (Lindane)	17	U
76-44-8	Heptachlor	17	U
309-00-2	Aldrin	17	U
1024-57-3	Heptachlor epoxide	17	U
959-98-8	Endosulfan I	17	U
60-57-1	Dieldrin	33	U
72-55-9	4,4'-DDE	10	DJ
72-20-8	Endrin	33	U
33213-65-9	Endosulfan II	33	U
72-54-8	4,4'-DDD	33	U
1031-07-8	Endosulfan sulfate	33	U
50-29-3	4,4'-DDT	33	U
72-43-5	Methoxychlor	170	U
53494-70-5	Endrin ketone	33	U
7421-93-4	Endrin aldehyde	8.1	DPJ
5103-71-9	alpha-Chlordane	5.4	DPJ
5103-74-2	gamma-Chlordane	17	U
8001-35-2	Toxaphene	1700	U
12674-11-2	Aroclor-1016	330	U
11104-28-2	Aroclor-1221	680	U
11141-16-5	Aroclor-1232	330	U
53469-21-9	Aroclor-1242	330	U
12672-29-6	Aroclor-1248	330	U
11097-69-1	Aroclor-1254	260	DJ ~~X~~ JN
11096-82-5	Aroclor-1260	330	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ09

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.04

Sample wt/vol: 31.9 (g/mL) G Lab File ID: _____

% Moisture: 15 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/02/99

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	9.0	P
58-89-9	gamma-BHC (Lindane)	2.8	
76-44-8	Heptachlor	1.1	PJ
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	28	E
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	33	P
72-55-9	4,4'-DDE	54	
72-20-8	Endrin	26	P
33213-65-9	Endosulfan II	27	P
72-54-8	4,4'-DDD	20	P
1031-07-8	Endosulfan sulfate	3.6	U
50-29-3	4,4'-DDT	60	PE
72-43-5	Methoxychlor	39	P
53494-70-5	Endrin ketone	11	P
7421-93-4	Endrin aldehyde	17	P
5103-71-9	alpha-Chlordane	5.6	P
5103-74-2	gamma-Chlordane	4.6	P
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	74	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	1300	
11096-82-5	Aroclor-1260	36	U

ONLY PCB DATA WERE VALIDATED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ09DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.04DL

Sample wt/vol: 31.9 (g/mL) G Lab File ID: _____

% Moisture: 15 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/01/99

Injection Volume: 0.5 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	19	U
319-85-7	beta-BHC	19	U
319-86-8	delta-BHC	5.2	DPJ
58-89-9	gamma-BHC (Lindane)	19	U
76-44-8	Heptachlor	19	U
309-00-2	Aldrin	19	U
1024-57-3	Heptachlor epoxide	19	U
959-98-8	Endosulfan I	19	U
60-57-1	Dieldrin	37	DP
72-55-9	4,4'-DDE	43	DP
72-20-8	Endrin	36	U
33213-65-9	Endosulfan II	30	DPJ
72-54-8	4,4'-DDD	36	U
1031-07-8	Endosulfan sulfate	36	U
50-29-3	4,4'-DDT	58	DP
72-43-5	Methoxychlor	61	DPJ
53494-70-5	Endrin ketone	36	U
7421-93-4	Endrin aldehyde	30	DPJ
5103-71-9	alpha-Chlordane	17	DPJ
5103-74-2	gamma-Chlordane	19	U
8001-35-2	Toxaphene	1900	U
12674-11-2	Aroclor-1016	360	U
11104-28-2	Aroclor-1221	740	U
11141-16-5	Aroclor-1232	360	U
53469-21-9	Aroclor-1242	360	U
12672-29-6	Aroclor-1248	360	U
11097-69-1	Aroclor-1254	1500	D
11096-82-5	Aroclor-1260	360	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ10

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.05

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

% Moisture: 12 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/02/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	2.9	P
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.7	U
72-55-9	4,4'-DDE	4.7	P
72-20-8	Endrin	19	
33213-65-9	Endosulfan II	9.9	
72-54-8	4,4'-DDD	5.6	P
1031-07-8	Endosulfan sulfate	3.7	U
50-29-3	4,4'-DDT	7.7	P
72-43-5	Methoxychlor	34	P
53494-70-5	Endrin ketone	8.6	P
7421-93-4	Endrin aldehyde	9.9	P
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	75	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	82	~~R~~ JN
11096-82-5	Aroclor-1260	37	U

ONLY PCB DATA WAS REQUIRED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ10DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.05DL

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

% Moisture: 12 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/01/99

Injection Volume: 0.5(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	19	U
319-85-7	beta-BHC	19	U
319-86-8	delta-BHC	19	U
58-89-9	gamma-BHC (Lindane)	19	U
76-44-8	Heptachlor	19	U
309-00-2	Aldrin	19	U
1024-57-3	Heptachlor epoxide	19	U
959-98-8	Endosulfan I	19	U
60-57-1	Dieldrin	37	U
72-55-9	4,4'-DDE	37	U
72-20-8	Endrin	37	U
33213-65-9	Endosulfan II	37	U
72-54-8	4,4'-DDD	37	U
1031-07-8	Endosulfan sulfate	37	U
50-29-3	4,4'-DDT	37	U
72-43-5	Methoxychlor	190	U
53494-70-5	Endrin ketone	37	U
7421-93-4	Endrin aldehyde	36	DPJ
5103-71-9	alpha-Chlordane	19	U
5103-74-2	gamma-Chlordane	19	U
8001-35-2	Toxaphene	1900	U
12674-11-2	Aroclor-1016	370	U
11104-28-2	Aroclor-1221	750	U
11141-16-5	Aroclor-1232	370	U
53469-21-9	Aroclor-1242	370	U
12672-29-6	Aroclor-1248	370	U
11097-69-1	Aroclor-1254	100	DJP JN
11096-82-5	Aroclor-1260	370	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ11

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.06

Sample wt/vol: 30.2 (g/mL) G Lab File ID: _____

% Moisture: 12 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/02/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	3.1	P
58-89-9	gamma-BHC (Lindane)	0.82	PJ
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.4	PJ
1024-57-3	Heptachlor epoxide	7.9	P
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	10	P
72-55-9	4,4'-DDE	14	P
72-20-8	Endrin	13	P
33213-65-9	Endosulfan II	10	P
72-54-8	4,4'-DDD	9.8	P
1031-07-8	Endosulfan sulfate	3.7	U
50-29-3	4,4'-DDT	22	P
72-43-5	Methoxychlor	14	PJ
53494-70-5	Endrin ketone	3.7	U
7421-93-4	Endrin aldehyde	8.6	P
5103-71-9	alpha-Chlordane	1.7	PJ
5103-74-2	gamma-Chlordane	1.7	PJ
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	76	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	480	
11096-82-5	Aroclor-1260	37	U

ONLY PCB DATA WERE VALIDATED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ11DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.06DL

Sample wt/vol: 30.2 (g/mL) G Lab File ID: _____

% Moisture: 12 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/01/99

Injection Volume: 0.5 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	19	U
319-85-7	beta-BHC	19	U
319-86-8	delta-BHC	19	U
58-89-9	gamma-BHC (Lindane)	19	U
76-44-8	Heptachlor	19	U
309-00-2	Aldrin	19	U
1024-57-3	Heptachlor epoxide	19	U
959-98-8	Endosulfan I	19	U
60-57-1	Dieldrin	10	DPJ
72-55-9	4,4'-DDE	11	DPJ
72-20-8	Endrin	37	U
33213-65-9	Endosulfan II	9.8	DJ
72-54-8	4,4'-DDD	37	U
1031-07-8	Endosulfan sulfate	37	U
50-29-3	4,4'-DDT	19	DPJ
72-43-5	Methoxychlor	190	U
53494-70-5	Endrin ketone	37	U
7421-93-4	Endrin aldehyde	25	DPJ
5103-71-9	alpha-Chlordane	7.9	DPJ
5103-74-2	gamma-Chlordane	19	U
8001-35-2	Toxaphene	1900	U
12674-11-2	Aroclor-1016	370	U
11104-28-2	Aroclor-1221	760	U
11141-16-5	Aroclor-1232	370	U
53469-21-9	Aroclor-1242	370	U
12672-29-6	Aroclor-1248	370	U
11097-69-1	Aroclor-1254	510	D
11096-82-5	Aroclor-1260	370	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ12

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.07

Sample wt/vol: 32.1 (g/mL) G Lab File ID: _____

% Moisture: 8 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/02/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	P
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	0.70	PJ
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.3	PJ
72-55-9	4,4'-DDE	5.0	P
72-20-8	Endrin	5.4	P
33213-65-9	Endosulfan II	5.6	
72-54-8	4,4'-DDD	7.8	
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	8.4	P
72-43-5	Methoxychlor	11	PJ
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	7.1	P
5103-71-9	alpha-Chlordane	0.97	PJ
5103-74-2	gamma-Chlordane	1.2	PJ
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	150	P
11096-82-5	Aroclor-1260	34	U

ANY PCB DATA WERE VALIDATED

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ12DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.07DL

Sample wt/vol: 32.1 (g/mL) G Lab File ID: _____

% Moisture: 8 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/01/99

Injection Volume: 0.5 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	17	U
319-85-7	beta-BHC	17	U
319-86-8	delta-BHC	17	U
58-89-9	gamma-BHC (Lindane)	17	U
76-44-8	Heptachlor	17	U
309-00-2	Aldrin	17	U
1024-57-3	Heptachlor epoxide	17	U
959-98-8	Endosulfan I	17	U
60-57-1	Dieldrin	34	U
72-55-9	4,4'-DDE	34	U
72-20-8	Endrin	34	U
33213-65-9	Endosulfan II	34	U
72-54-8	4,4'-DDD	34	U
1031-07-8	Endosulfan sulfate	34	U
50-29-3	4,4'-DDT	34	U
72-43-5	Methoxychlor	170	U
53494-70-5	Endrin ketone	34	U
7421-93-4	Endrin aldehyde	34	U
5103-71-9	alpha-Chlordane	17	U
5103-74-2	gamma-Chlordane	17	U
8001-35-2	Toxaphene	1700	U
12674-11-2	Aroclor-1016	340	U
11104-28-2	Aroclor-1221	680	U
11141-16-5	Aroclor-1232	340	U
53469-21-9	Aroclor-1242	340	U
12672-29-6	Aroclor-1248	340	U
11097-69-1	Aroclor-1254	160	DJ
11096-82-5	Aroclor-1260	340	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ13

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.08

Sample wt/vol: 32.5 (g/mL) G Lab File ID: _____

% Moisture: 12 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/02/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	12	P
58-89-9	gamma-BHC (Lindane)	0.92	PJ
76-44-8	Heptachlor	1.2	PJ
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.6	PJ
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	13	P
72-55-9	4,4'-DDE	38	P
72-20-8	Endrin	17	P
33213-65-9	Endosulfan II	12	P
72-54-8	4,4'-DDD	11	P
1031-07-8	Endosulfan sulfate	3.5	U
50-29-3	4,4'-DDT	30	P
72-43-5	Methoxychlor	11	PJ
53494-70-5	Endrin ketone	3.5	U
7421-93-4	Endrin aldehyde	11	P
5103-71-9	alpha-Chlordane	3.5	P
5103-74-2	gamma-Chlordane	1.7	PJ
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	70	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	540	
11096-82-5	Aroclor-1260	35	U

ONLY PCB DATA WERE VALIDATED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ13DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.08DL

Sample wt/vol: 32.5 (g/mL) G Lab File ID: _____

% Moisture: 12 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/01/99

Injection Volume: 0.5 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	18	U
319-85-7	beta-BHC	18	U
319-86-8	delta-BHC	18	U
58-89-9	gamma-BHC (Lindane)	18	U
76-44-8	Heptachlor	18	U
309-00-2	Aldrin	18	U
1024-57-3	Heptachlor epoxide	18	U
959-98-8	Endosulfan I	18	U
60-57-1	Dieldrin	13	DPJ
72-55-9	4,4'-DDE	27	DPJ
72-20-8	Endrin	35	U
33213-65-9	Endosulfan II	14	DPJ
72-54-8	4,4'-DDD	35	U
1031-07-8	Endosulfan sulfate	35	U
50-29-3	4,4'-DDT	34	DPJ
72-43-5	Methoxychlor	26	DPJ
53494-70-5	Endrin ketone	35	U
7421-93-4	Endrin aldehyde	13	DPJ
5103-71-9	alpha-Chlordane	18	U
5103-74-2	gamma-Chlordane	20	D
8001-35-2	Toxaphene	1800	U
12674-11-2	Aroclor-1016	350	U
11104-28-2	Aroclor-1221	700	U
11141-16-5	Aroclor-1232	350	U
53469-21-9	Aroclor-1242	350	U
12672-29-6	Aroclor-1248	350	U
11097-69-1	Aroclor-1254	610	D
11096-82-5	Aroclor-1260	350	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ14

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.09

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

% Moisture: 6 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/02/99

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	10	P
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	0.89	PJ
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	3.5	P
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	4.0	P
72-55-9	4,4'-DDE	29	
72-20-8	Endrin	25	
33213-65-9	Endosulfan II	8.1	P
72-54-8	4,4'-DDD	15	P
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	28	P
72-43-5	Methoxychlor	46	P
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	16	
5103-71-9	alpha-Chlordane	2.1	P
5103-74-2	gamma-Chlordane	3.3	P
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	69	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	120	R JN
11096-82-5	Aroclor-1260	34	U

ONLY PCB DATA WERE VALIDATED

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ14DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.09DL

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

% Moisture: 6 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/01/99

Injection Volume: 0.5 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	18	U
319-85-7	beta-BHC	18	U
319-86-8	delta-BHC	8.7	DPJ
58-89-9	gamma-BHC (Lindane)	18	U
76-44-8	Heptachlor	18	U
309-00-2	Aldrin	18	U
1024-57-3	Heptachlor epoxide	18	U
959-98-8	Endosulfan I	18	U
60-57-1	Dieldrin	34	U
72-55-9	4,4'-DDE	20	DJ
72-20-8	Endrin	24	DJ
33213-65-9	Endosulfan II	34	U
72-54-8	4,4'-DDD	34	U
1031-07-8	Endosulfan sulfate	34	U
50-29-3	4,4'-DDT	29	DPJ
72-43-5	Methoxychlor	180	U
53494-70-5	Endrin ketone	34	U
7421-93-4	Endrin aldehyde	20	DPJ
5103-71-9	alpha-Chlordane	18	U
5103-74-2	gamma-Chlordane	18	U
8001-35-2	Toxaphene	1800	U
12674-11-2	Aroclor-1016	340	U
11104-28-2	Aroclor-1221	690	U
11141-16-5	Aroclor-1232	340	U
53469-21-9	Aroclor-1242	340	U
12672-29-6	Aroclor-1248	340	U
11097-69-1	Aroclor-1254	160	DJR
11096-82-5	Aroclor-1260	340	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ15

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.10

Sample wt/vol: 31.0 (g/mL) G Lab File ID: _____

% Moisture: 10 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/02/99

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.3	PJ
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	0.83	J
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.6	PJ
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	4.3	P
72-55-9	4,4'-DDE	7.9	
72-20-8	Endrin	24	
33213-65-9	Endosulfan II	5.7	P
72-54-8	4,4'-DDD	8.2	
1031-07-8	Endosulfan sulfate	3.5	U
50-29-3	4,4'-DDT	13	P
72-43-5	Methoxychlor	26	P
53494-70-5	Endrin ketone	3.5	U
7421-93-4	Endrin aldehyde	14	P
5103-71-9	alpha-Chlordane	1.2	PJ
5103-74-2	gamma-Chlordane	1.4	PJ
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	72	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	170	P J
11096-82-5	Aroclor-1260	35	U

ONLY TCL DATA WERE VALIDATED

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ15DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.10DL

Sample wt/vol: 31.0 (g/mL) G Lab File ID: _____

% Moisture: 10 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/01/99

Injection Volume: 0.5(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	18	U
319-85-7	beta-BHC	18	U
319-86-8	delta-BHC	14	DJ
58-89-9	gamma-BHC (Lindane)	18	U
76-44-8	Heptachlor	18	U
309-00-2	Aldrin	18	U
1024-57-3	Heptachlor epoxide	18	U
959-98-8	Endosulfan I	18	U
60-57-1	Dieldrin	35	U
72-55-9	4,4'-DDE	35	U
72-20-8	Endrin	35	U
33213-65-9	Endosulfan II	35	U
72-54-8	4,4'-DDD	35	U
1031-07-8	Endosulfan sulfate	35	U
50-29-3	4,4'-DDT	35	U
72-43-5	Methoxychlor	180	U
53494-70-5	Endrin ketone	35	U
7421-93-4	Endrin aldehyde	38	DP
5103-71-9	alpha-Chlordane	18	U
5103-74-2	gamma-Chlordane	18	U
8001-35-2	Toxaphene	1800	U
12674-11-2	Aroclor-1016	350	U
11104-28-2	Aroclor-1221	720	U
11141-16-5	Aroclor-1232	350	U
53469-21-9	Aroclor-1242	350	U
12672-29-6	Aroclor-1248	350	U
11097-69-1	Aroclor-1254	270	DJ
11096-82-5	Aroclor-1260	350	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ16

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.11

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

% Moisture: 9 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/02/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.9	P
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	1.9	PJ
72-55-9	4,4'-DDE	5.2	
72-20-8	Endrin	17	P
33213-65-9	Endosulfan II	3.7	P
72-54-8	4,4'-DDD	7.5	P
1031-07-8	Endosulfan sulfate	3.5	U
50-29-3	4,4'-DDT	12	P
72-43-5	Methoxychlor	24	P
53494-70-5	Endrin ketone	3.5	U
7421-93-4	Endrin aldehyde	11	P
5103-71-9	alpha-Chlordane	2.6	
5103-74-2	gamma-Chlordane	1.5	PJ
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	72	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	120	~~R~~
11096-82-5	Aroclor-1260	35	U

ONLY PCB DATA WERE VALIDATED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ16DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.11DL

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

% Moisture: 9 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/01/99

Injection Volume: 0.5(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	18	U
319-85-7	beta-BHC	18	U
319-86-8	delta-BHC	18	U
58-89-9	gamma-BHC (Lindane)	18	U
76-44-8	Heptachlor	18	U
309-00-2	Aldrin	18	U
1024-57-3	Heptachlor epoxide	18	U
959-98-8	Endosulfan I	18	U
60-57-1	Dieldrin	35	U
72-55-9	4,4'-DDE	35	U
72-20-8	Endrin	11	DPJ
33213-65-9	Endosulfan II	35	U
72-54-8	4,4'-DDD	35	U
1031-07-8	Endosulfan sulfate	35	U
50-29-3	4,4'-DDT	35	U
72-43-5	Methoxychlor	180	U
53494-70-5	Endrin ketone	35	U
7421-93-4	Endrin aldehyde	28	DPJ
5103-71-9	alpha-Chlordane	18	U
5103-74-2	gamma-Chlordane	18	U
8001-35-2	Toxaphene	1800	U
12674-11-2	Aroclor-1016	350	U
11104-28-2	Aroclor-1221	720	U
11141-16-5	Aroclor-1232	350	U
53469-21-9	Aroclor-1242	350	U
12672-29-6	Aroclor-1248	350	U
11097-69-1	Aroclor-1254	200	DJ
11096-82-5	Aroclor-1260	350	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ17

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.12

Sample wt/vol: 32.9 (g/mL) G Lab File ID: _____

% Moisture: 11 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/03/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	8.5	P
959-98-8	Endosulfan I	1.0	PJ
60-57-1	Dieldrin	22	P
72-55-9	4,4'-DDE	20	P
72-20-8	Endrin	14	
33213-65-9	Endosulfan II	4.8	P
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	140	E
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	5.2	P
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	17	P
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	69	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	310	
11096-82-5	Aroclor-1260	34	U

ONLY PCB DATA WERE VALIDATED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ17DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.12DL

Sample wt/vol: 32.9 (g/mL) G Lab File ID: _____

% Moisture: 11 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/03/99

Injection Volume: 0.5 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	17	U
319-85-7	beta-BHC	17	U
319-86-8	delta-BHC	17	U
58-89-9	gamma-BHC (Lindane)	17	U
76-44-8	Heptachlor	17	U
309-00-2	Aldrin	17	U
1024-57-3	Heptachlor epoxide	17	U
959-98-8	Endosulfan I	17	U
60-57-1	Dieldrin	26	DPJ
72-55-9	4,4'-DDE	20	DPJ
72-20-8	Endrin	34	U
33213-65-9	Endosulfan II	34	U
72-54-8	4,4'-DDD	34	U
1031-07-8	Endosulfan sulfate	34	U
50-29-3	4,4'-DDT	160	D
72-43-5	Methoxychlor	170	U
53494-70-5	Endrin ketone	34	U
7421-93-4	Endrin aldehyde	34	U
5103-71-9	alpha-Chlordane	17	U
5103-74-2	gamma-Chlordane	19	DP
8001-35-2	Toxaphene	1700	U
12674-11-2	Aroclor-1016	340	U
11104-28-2	Aroclor-1221	690	U
11141-16-5	Aroclor-1232	340	U
53469-21-9	Aroclor-1242	340	U
12672-29-6	Aroclor-1248	340	U
11097-69-1	Aroclor-1254	340	D
11096-82-5	Aroclor-1260	340	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ18

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.13

Sample wt/vol: 31.1 (g/mL) G Lab File ID: _____

% Moisture: 12 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/03/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	12	P
72-55-9	4,4'-DDE	3.6	U
72-20-8	Endrin	3.6	U
33213-65-9	Endosulfan II	3.6	U
72-54-8	4,4'-DDD	3.6	U
1031-07-8	Endosulfan sulfate	3.6	U
50-29-3	4,4'-DDT	34	
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.6	U
7421-93-4	Endrin aldehyde	7.6	P
5103-71-9	alpha-Chlordane	2.1	P
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	73	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	84	
11096-82-5	Aroclor-1260	36	U

ONLY PCB DATA WERE VALIDATED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ18DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.13DL

Sample wt/vol: 31.1 (g/mL) G Lab File ID: _____

% Moisture: 12 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/03/99

Injection Volume: 0.5(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	19	U
319-85-7	beta-BHC	19	U
319-86-8	delta-BHC	19	U
58-89-9	gamma-BHC (Lindane)	19	U
76-44-8	Heptachlor	19	U
309-00-2	Aldrin	19	U
1024-57-3	Heptachlor epoxide	19	U
959-98-8	Endosulfan I	19	U
60-57-1	Dieldrin	36	U
72-55-9	4,4'-DDE	36	U
72-20-8	Endrin	36	U
33213-65-9	Endosulfan II	36	U
72-54-8	4,4'-DDD	36	U
1031-07-8	Endosulfan sulfate	36	U
50-29-3	4,4'-DDT	39	D
72-43-5	Methoxychlor	190	U
53494-70-5	Endrin ketone	36	U
7421-93-4	Endrin aldehyde	36	U
5103-71-9	alpha-Chlordane	19	U
5103-74-2	gamma-Chlordane	19	U
8001-35-2	Toxaphene	1900	U
12674-11-2	Aroclor-1016	360	U
11104-28-2	Aroclor-1221	730	U
11141-16-5	Aroclor-1232	360	U
53469-21-9	Aroclor-1242	360	U
12672-29-6	Aroclor-1248	360	U
11097-69-1	Aroclor-1254	110	DJP
11096-82-5	Aroclor-1260	360	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ19

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.14

Sample wt/vol: 30.2 (g/mL) G Lab File ID: _____

% Moisture: 8 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/03/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	4.4	P
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	14	P
72-55-9	4,4'-DDE	13	P
72-20-8	Endrin	7.6	P
33213-65-9	Endosulfan II	7.4	P
72-54-8	4,4'-DDD	3.6	U
1031-07-8	Endosulfan sulfate	3.6	U
50-29-3	4,4'-DDT	64	E
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.6	U
7421-93-4	Endrin aldehyde	3.6	U
5103-71-9	alpha-Chlordane	2.0	P
5103-74-2	gamma-Chlordane	14	
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	72	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	210	~~P~~ J
11097-69-1	Aroclor-1254	170	
11096-82-5	Aroclor-1260	36	U

ONLY PCB DATA WERE VALIDATED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ19DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.14DL

Sample wt/vol: 30.2 (g/mL) G Lab File ID: _____

% Moisture: 8 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/03/99

Injection Volume: 0.5(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	18	U
319-85-7	beta-BHC	18	U
319-86-8	delta-BHC	18	U
58-89-9	gamma-BHC (Lindane)	18	U
76-44-8	Heptachlor	18	U
309-00-2	Aldrin	18	U
1024-57-3	Heptachlor epoxide	18	U
959-98-8	Endosulfan I	18	U
60-57-1	Dieldrin	36	U
72-55-9	4,4'-DDE	36	U
72-20-8	Endrin	36	U
33213-65-9	Endosulfan II	36	U
72-54-8	4,4'-DDD	36	U
1031-07-8	Endosulfan sulfate	36	U
50-29-3	4,4'-DDT	67	D
72-43-5	Methoxychlor	180	U
53494-70-5	Endrin ketone	36	U
7421-93-4	Endrin aldehyde	36	U
5103-71-9	alpha-Chlordane	18	U
5103-74-2	gamma-Chlordane	18	U
8001-35-2	Toxaphene	1800	U
12674-11-2	Aroclor-1016	360	U
11104-28-2	Aroclor-1221	720	U
11141-16-5	Aroclor-1232	360	U
53469-21-9	Aroclor-1242	360	U
12672-29-6	Aroclor-1248	230	DJ
11097-69-1	Aroclor-1254	180	DJ
11096-82-5	Aroclor-1260	360	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ20

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.15

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

% Moisture: 12 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/03/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	8.2	P
959-98-8	Endosulfan I	2.2	P
60-57-1	Dieldrin	30	P
72-55-9	4,4'-DDE	36	
72-20-8	Endrin	8.8	P
33213-65-9	Endosulfan II	5.6	P
72-54-8	4,4'-DDD	3.8	U
1031-07-8	Endosulfan sulfate	3.8	U
50-29-3	4,4'-DDT	100	E
72-43-5	Methoxychlor	7.1	PJ
53494-70-5	Endrin ketone	3.8	U
7421-93-4	Endrin aldehyde	2.8	PJ
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	23	P
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	76	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	380	
11096-82-5	Aroclor-1260	38	U

ONLY PCB DATA WERE VALIDATED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ20DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.15DL

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

% Moisture: 12 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/03/99

Injection Volume: 0.5(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	19	U
319-85-7	beta-BHC	19	U
319-86-8	delta-BHC	19	U
58-89-9	gamma-BHC (Lindane)	19	U
76-44-8	Heptachlor	19	U
309-00-2	Aldrin	19	U
1024-57-3	Heptachlor epoxide	19	U
959-98-8	Endosulfan I	19	U
60-57-1	Dieldrin	46	DP
72-55-9	4,4'-DDE	38	D
72-20-8	Endrin	38	U
33213-65-9	Endosulfan II	38	U
72-54-8	4,4'-DDD	38	U
1031-07-8	Endosulfan sulfate	38	U
50-29-3	4,4'-DDT	130	D
72-43-5	Methoxychlor	190	U
53494-70-5	Endrin ketone	38	U
7421-93-4	Endrin aldehyde	38	U
5103-71-9	alpha-Chlordane	19	U
5103-74-2	gamma-Chlordane	25	DP
8001-35-2	Toxaphene	1900	U
12674-11-2	Aroclor-1016	380	U
11104-28-2	Aroclor-1221	760	U
11141-16-5	Aroclor-1232	380	U
53469-21-9	Aroclor-1242	380	U
12672-29-6	Aroclor-1248	380	U
11097-69-1	Aroclor-1254	460	D
11096-82-5	Aroclor-1260	380	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ21

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.16

Sample wt/vol: 30.1 (g/mL) G Lab File ID: _____

% Moisture: 7 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/03/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	6.6	P
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	18	P
72-55-9	4,4'-DDE	98	E
72-20-8	Endrin	11	
33213-65-9	Endosulfan II	4.7	P
72-54-8	4,4'-DDD	16	P
1031-07-8	Endosulfan sulfate	3.5	U
50-29-3	4,4'-DDT	84	PE
72-43-5	Methoxychlor	44	P
53494-70-5	Endrin ketone	12	P
7421-93-4	Endrin aldehyde	11	P
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	14	
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	72	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	190	~~R~~ J
11096-82-5	Aroclor-1260	35	U

ONLY PCB DATA WERE VALIDATED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ21DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.16DL

Sample wt/vol: 30.1 (g/mL) G Lab File ID: _____

% Moisture: 7 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/03/99

Injection Volume: 0.5(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	18	U
319-85-7	beta-BHC	18	U
319-86-8	delta-BHC	18	U
58-89-9	gamma-BHC (Lindane)	18	U
76-44-8	Heptachlor	18	U
309-00-2	Aldrin	18	U
1024-57-3	Heptachlor epoxide	18	U
959-98-8	Endosulfan I	18	U
60-57-1	Dieldrin	20	DPJ
72-55-9	4,4'-DDE	76	D
72-20-8	Endrin	35	U
33213-65-9	Endosulfan II	35	U
72-54-8	4,4'-DDD	16	DPJ
1031-07-8	Endosulfan sulfate	35	U
50-29-3	4,4'-DDT	84	DP
72-43-5	Methoxychlor	180	U
53494-70-5	Endrin ketone	18	DPJ
7421-93-4	Endrin aldehyde	35	U
5103-71-9	alpha-Chlordane	18	U
5103-74-2	gamma-Chlordane	18	U
8001-35-2	Toxaphene	1800	U
12674-11-2	Aroclor-1016	350	U
11104-28-2	Aroclor-1221	720	U
11141-16-5	Aroclor-1232	350	U
53469-21-9	Aroclor-1242	350	U
12672-29-6	Aroclor-1248	350	U
11097-69-1	Aroclor-1254	280	DJ
11096-82-5	Aroclor-1260	350	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ22

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.17

Sample wt/vol: 30.9 (g/mL) G Lab File ID: _____

% Moisture: 8 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/03/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	6.5	P
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	19	P
72-55-9	4,4'-DDE	13	P
72-20-8	Endrin	9.8	P
33213-65-9	Endosulfan II	3.9	P
72-54-8	4,4'-DDD	3.5	U
1031-07-8	Endosulfan sulfate	3.5	U
50-29-3	4,4'-DDT	94	E
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	7.4	P
7421-93-4	Endrin aldehyde	8.1	P
5103-71-9	alpha-Chlordane	2.1	P
5103-74-2	gamma-Chlordane	15	
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	71	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	200	
11096-82-5	Aroclor-1260	35	U

ONLY PCB DATA WERE VALIDATED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ22DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.17DL

Sample wt/vol: 30.9 (g/mL) G Lab File ID: _____

% Moisture: 8 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/03/99

Injection Volume: 0.5(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	18	U
319-85-7	beta-BHC	18	U
319-86-8	delta-BHC	18	U
58-89-9	gamma-BHC (Lindane)	18	U
76-44-8	Heptachlor	18	U
309-00-2	Aldrin	18	U
1024-57-3	Heptachlor epoxide	18	U
959-98-8	Endosulfan I	18	U
60-57-1	Dieldrin	5.4	DPJ
72-55-9	4,4'-DDE	35	U
72-20-8	Endrin	35	U
33213-65-9	Endosulfan II	35	U
72-54-8	4,4'-DDD	35	U
1031-07-8	Endosulfan sulfate	35	U
50-29-3	4,4'-DDT	100	D
72-43-5	Methoxychlor	180	U
53494-70-5	Endrin ketone	35	U
7421-93-4	Endrin aldehyde	35	U
5103-71-9	alpha-Chlordane	18	U
5103-74-2	gamma-Chlordane	15	DJ
8001-35-2	Toxaphene	1800	U
12674-11-2	Aroclor-1016	350	U
11104-28-2	Aroclor-1221	710	U
11141-16-5	Aroclor-1232	350	U
53469-21-9	Aroclor-1242	350	U
12672-29-6	Aroclor-1248	350	U
11097-69-1	Aroclor-1254	240	DJ
11096-82-5	Aroclor-1260	350	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ23

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.18

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

% Moisture: 16 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/03/99

Injection Volume: 0.5(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	26	P
319-85-7	beta-BHC	20	U
319-86-8	delta-BHC	20	U
58-89-9	gamma-BHC (Lindane)	20	U
76-44-8	Heptachlor	20	U
309-00-2	Aldrin	20	U
1024-57-3	Heptachlor epoxide	190	P
959-98-8	Endosulfan I	56	P
60-57-1	Dieldrin	390	P
72-55-9	4,4'-DDE	230	
72-20-8	Endrin	190	P
33213-65-9	Endosulfan II	39	P
72-54-8	4,4'-DDD	38	U
1031-07-8	Endosulfan sulfate	38	U
50-29-3	4,4'-DDT	1300	E
72-43-5	Methoxychlor	200	U
53494-70-5	Endrin ketone	160	
7421-93-4	Endrin aldehyde	48	P
5103-71-9	alpha-Chlordane	81	
5103-74-2	gamma-Chlordane	390	E
8001-35-2	Toxaphene	2000	U
12674-11-2	Aroclor-1016	380	U
11104-28-2	Aroclor-1221	780	U
11141-16-5	Aroclor-1232	380	U
53469-21-9	Aroclor-1242	380	U
12672-29-6	Aroclor-1248	380	U
11097-69-1	Aroclor-1254	5500	
11096-82-5	Aroclor-1260	380	U

ONLY PCB DATA WERE VALIDATED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ23DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.18DL

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

% Moisture: 16 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/03/99

Injection Volume: 0.5 (uL) Dilution Factor: 100.0

GPC Cleanup: (Y/N) Y pH: 5.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	200	U
319-85-7	beta-BHC	200	U
319-86-8	delta-BHC	200	U
58-89-9	gamma-BHC (Lindane)	200	U
76-44-8	Heptachlor	200	U
309-00-2	Aldrin	200	U
1024-57-3	Heptachlor epoxide	200	DP
959-98-8	Endosulfan I	200	U
60-57-1	Dieldrin	460	DP
72-55-9	4,4'-DDE	220	DPJ
72-20-8	Endrin	380	U
33213-65-9	Endosulfan II	380	U
72-54-8	4,4'-DDD	380	U
1031-07-8	Endosulfan sulfate	380	U
50-29-3	4,4'-DDT	1300	D
72-43-5	Methoxychlor	2000	U
53494-70-5	Endrin ketone	380	U
7421-93-4	Endrin aldehyde	380	U
5103-71-9	alpha-Chlordane	85	DPJ
5103-74-2	gamma-Chlordane	400	DP
8001-35-2	Toxaphene	20000	U
12674-11-2	Aroclor-1016	3800	U
11104-28-2	Aroclor-1221	7800	U
11141-16-5	Aroclor-1232	3800	U
53469-21-9	Aroclor-1242	3800	U
12672-29-6	Aroclor-1248	3800	U
11097-69-1	Aroclor-1254	5700	D
11096-82-5	Aroclor-1260	3800	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ24

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.19

Sample wt/vol: 30.2 (g/mL) G Lab File ID: _____

% Moisture: 14 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/03/99

Injection Volume: 0.5(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	42	P
319-85-7	beta-BHC	20	U
319-86-8	delta-BHC	20	U
58-89-9	gamma-BHC (Lindane)	20	U
76-44-8	Heptachlor	20	U
309-00-2	Aldrin	20	U
1024-57-3	Heptachlor epoxide	220	P
959-98-8	Endosulfan I	68	P
60-57-1	Dieldrin	450	P
72-55-9	4,4'-DDE	240	
72-20-8	Endrin	210	P
33213-65-9	Endosulfan II	49	P
72-54-8	4,4'-DDD	38	U
1031-07-8	Endosulfan sulfate	38	U
50-29-3	4,4'-DDT	1400	E
72-43-5	Methoxychlor	200	U
53494-70-5	Endrin ketone	160	
7421-93-4	Endrin aldehyde	54	P
5103-71-9	alpha-Chlordane	92	
5103-74-2	gamma-Chlordane	460	E
8001-35-2	Toxaphene	2000	U
12674-11-2	Aroclor-1016	380	U
11104-28-2	Aroclor-1221	770	U
11141-16-5	Aroclor-1232	380	U
53469-21-9	Aroclor-1242	380	U
12672-29-6	Aroclor-1248	380	U
11097-69-1	Aroclor-1254	6300	
11096-82-5	Aroclor-1260	380	U

ONLY PCB DATA WERE VALIDATED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ24DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.19DL

Sample wt/vol: 30.2 (g/mL) G Lab File ID: _____

% Moisture: 14 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/03/99

Injection Volume: 0.5 (uL) Dilution Factor: 100.0

GPC Cleanup: (Y/N) Y pH: 5.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	200	U
319-85-7	beta-BHC	200	U
319-86-8	delta-BHC	200	U
58-89-9	gamma-BHC (Lindane)	200	U
76-44-8	Heptachlor	200	U
309-00-2	Aldrin	200	U
1024-57-3	Heptachlor epoxide	260	DP
959-98-8	Endosulfan I	200	U
60-57-1	Dieldrin	720	DP
72-55-9	4,4'-DDE	320	DJ
72-20-8	Endrin	380	U
33213-65-9	Endosulfan II	550	D
72-54-8	4,4'-DDD	380	U
1031-07-8	Endosulfan sulfate	380	U
50-29-3	4,4'-DDT	1500	DP
72-43-5	Methoxychlor	2000	U
53494-70-5	Endrin ketone	380	U
7421-93-4	Endrin aldehyde	370	DPJ
5103-71-9	alpha-Chlordane	140	DPJ
5103-74-2	gamma-Chlordane	650	D
8001-35-2	Toxaphene	20000	U
12674-11-2	Aroclor-1016	3800	U
11104-28-2	Aroclor-1221	7700	U
11141-16-5	Aroclor-1232	3800	U
53469-21-9	Aroclor-1242	3800	U
12672-29-6	Aroclor-1248	3800	U
11097-69-1	Aroclor-1254	7300	DPJ
11096-82-5	Aroclor-1260	3800	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ25

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.20

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

% Moisture: 20 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/03/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	3.9	P
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	6.8	P
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	49	PE
959-98-8	Endosulfan I	22	P
60-57-1	Dieldrin	120	PE
72-55-9	4,4'-DDE	100	E
72-20-8	Endrin	54	P
33213-65-9	Endosulfan II	25	P
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	440	E
72-43-5	Methoxychlor	140	P
53494-70-5	Endrin ketone	4.1	U
7421-93-4	Endrin aldehyde	26	P
5103-71-9	alpha-Chlordane	57	PE
5103-74-2	gamma-Chlordane	50	PE
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	84	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	1600	
11096-82-5	Aroclor-1260	41	U

ONLY PCB DATA WERE VALIDATED

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWZ25DL

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 27133 SAS No.: SDG No.: BWZ06

Matrix: (soil/water) SOIL Lab Sample ID: 39092.20DL

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

% Moisture: 20 decanted: (Y/N) N Date Received: 06/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/22/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/03/99

Injection Volume: 0.5 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 5.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	21	U
319-85-7	beta-BHC	21	U
319-86-8	delta-BHC	21	U
58-89-9	gamma-BHC (Lindane)	21	U
76-44-8	Heptachlor	21	U
309-00-2	Aldrin	21	U
1024-57-3	Heptachlor epoxide	58	DP
959-98-8	Endosulfan I	30	DP
60-57-1	Dieldrin	170	DP
72-55-9	4,4'-DDE	100	D
72-20-8	Endrin	67	DP
33213-65-9	Endosulfan II	36	DPJ
72-54-8	4,4'-DDD	41	U
1031-07-8	Endosulfan sulfate	41	U
50-29-3	4,4'-DDT	520	DP
72-43-5	Methoxychlor	210	U
53494-70-5	Endrin ketone	41	U
7421-93-4	Endrin aldehyde	47	DP
5103-71-9	alpha-Chlordane	52	DP
5103-74-2	gamma-Chlordane	170	D
8001-35-2	Toxaphene	2100	U
12674-11-2	Aroclor-1016	410	U
11104-28-2	Aroclor-1221	840	U
11141-16-5	Aroclor-1232	410	U
53469-21-9	Aroclor-1242	410	U
12672-29-6	Aroclor-1248	410	U
11097-69-1	Aroclor-1254	2000	D
11096-82-5	Aroclor-1260	410	U