

SAF-RC-233
100-IU-2 & 100-IU-6 Remaining
Waste Sites – Soil In-Process
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt

H4-21

KW 9/3/14
INITIAL/DATE

COMMENTS:

SDG XP0119

SAF-RC-233

Rad only

Chem only

Rad & Chem

Complete

Partial

**Sample Location: 100-B-35:1, Electrical switch yard,
IP EXC**



August 18, 2014

Joan Kessner
WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354

Re: RC-233 Soil
Work Order: 354541
SDG: XP0119

Dear Joan Kessner:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on August 13, 2014. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 1616.

Sincerely,

Orlette Johnson
Project Manager

Purchase Order: 1510
Chain of Custody: RC-233-052
Enclosures



Table of Contents

Case Narrative.....	1
Chain of Custody and Supporting Documentation.....	3
Laboratory Certifications.....	6
PCB Analysis.....	8
Case Narrative.....	9
Sample Data Summary.....	18
Quality Control Summary.....	24
Miscellaneous.....	29

Case Narrative

**Receipt Narrative
for
WC-HANFORD, INC.
SDG: XP0119
Work Order: 354541**

August 18, 2014

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary:

Sample receipt: The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on August 13, 2014 for analysis.

Sample Identification: The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
354541001	J1TXJ5
354541002	J1TXJ6
354541003	J1TXJ7
354541004	J1TXJ8
354541005	J1TXJ9

Case Narrative:

Sample analyses were conducted using methodology as outlined in GEL's Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: GC Semivolatile PCB.



Orlette Johnson
Project Manager

Chain of Custody and Supporting Documentation

Washington Closure Hanford **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** RC-233-052 Page 1 of 1

Collector *H. Weber* Company Contact *Joan Kessner* Telephone No. 375-4688 Project Coordinator *KESSNER, JH* Price Code Data Turnaround

Project Designation 100-IU-2 & 100-IU-6 Remaining Waste Sites Sampling Location 100-B-35-1, Electrical switchyard, IP EX SAF No. RC-233 Method of Shipment *1 DAY TAT*

Ice Chest No. *WCH-11-072* Field Logbook No. EL-1667-02 COA 010B352600 Commercial Carrier *FED EX* Bill of Lading/Air Bill No. *See OSPC*

Shipped To **GEL Laboratories Charleston** Offsite Property No. *A131217*

Other Labs Shipped To *N/A*

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis
J1TXJ5	SOIL	8/12/14	0954	Cool 4C	ag	1	250mL	PCBs - 8082
J1TXJ6	SOIL	8/12/14	1000					
J1TXJ7	SOIL	8/12/14	1008					
J1TXJ8	SOIL	8/12/14	1012					
J1TXJ9	SOIL	8/12/14	1003					

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	Sign/Print Names	Date/Time
<i>H. Weber</i>	8/12/14 1017	<i>R. Fabian</i>	8/12/14 1017		
<i>R. Fabian</i>	8/12/14 1130	<i>SM Sexton</i>	8/12/14 1130		
<i>SM Sexton</i>	8/12/14 1135	<i>FED EX</i>	8/12/14		
<i>FED EX</i>	8/12/14	<i>P. Klant Patrone</i>	8/13/14 09:00		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	Disposal Method	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	Disposal Method	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	Disposal Method	Date/Time



XP0119



SAMPLE RECEIPT & REVIEW FORM

Client: <u>WCHN</u>		SDG/AR/COC/Work Order: <u>354541</u>
Received By: <u>P. Went</u>		Date Received: <u>8/13/14</u>
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?	<input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0CPM</u>
Classified Radioactive II or III by RSO?	<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?	<input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____
Samples identified as Foreign Soil?	<input checked="" type="checkbox"/>	

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: <u>Ice bags</u> Blue ice Dry ice None Other (describe) <u>2c</u> *all temperatures are recorded in Celsius
2a	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): <u>130462966</u>
3	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
4	Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	VOA vials free of headspace (defined as < 6mm bubble)?		<input checked="" type="checkbox"/>		Sample ID's and containers affected:
7	Are Encore containers present?			<input checked="" type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8	Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
11	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected:
12	Are sample containers identifiable as GEL provided?			<input checked="" type="checkbox"/>	
13	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
14	Carrier and tracking number.				Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other <u>7708 1755 4967</u> <u>7708 0742 0748</u>

Comments (Use Continuation Form if needed):

Laboratory Certifications

List of current GEL Certifications as of 18 August 2014

State	Certification
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California NELAP	01151CA
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC000122013-10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-12-00283, P330-12-00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013-10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA130005
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC000122013-10
Nebraska	NE-OS-26-13
Nevada	SC000122014-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68-00485
Plant Material Permit	PDEP-12-00260
South Carolina Chemistry	10120001
South Carolina GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-14-9
Utah NELAP	SC000122014-14
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12
Wisconsin	999887790

PCB Analysis

Case Narrative

**PCB Case Narrative
WC-HANFORD, INC. (WCHN)
SDG XP0119**

Method/Analysis Information

Procedure: Analysis of Polychlorinated Biphenyls by ECD
Analytical Method: SW846 3541/8082A
Prep Method: SW846 3541
Analytical Batch Number: 1411146
Prep Batch Number: 1411145

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3541/8082A:

Sample ID	Client ID
354541002	J1TXJ6
354541003	J1TXJ7
354541004	J1TXJ8
354541005	J1TXJ9
1203147201	MB for batch 1411145
1203147202	Laboratory Control Sample (LCS)
1203147203	354539001(J1TXJ0) Matrix Spike (MS)
1203147204	354539001(J1TXJ0) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

Preparation/Analytical Method Verification

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-040 REV# 20.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package.

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standards (ICV or CCV) met the acceptance criteria for the target analytes. All analytes were within the established retention time windows for this method.

Surrogate recovery did not meet the acceptance criteria in one of the CCV standards analyzed for this SDG; however, this had no adverse effects on the data as all associated samples recovered well within the acceptance limits for the surrogate.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for the samples in this SDG in this batch.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 354541001 (J1TXJ5), along with its matrix QC samples MS/MSD, was originally extracted and analyzed in this batch; however, the data were not reportable due to mismatched results of the MS, MSD and the parent sample. Sample 354541001 (J1TXJ5) was re-extract and the results were reported in batch 1411452.

WCHN sample 354539001 (J1TXJ0) was also performed for the matrix spike and matrix spike duplicate analysis other than sample 354541001 (J1TXJ5) in this batch.

Matrix Spike (MS) Recovery Statement

The MS, performed on sample 354539001 (J1TXJ0), met spike recovery acceptance criteria.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD, performed on sample 354539001 (J1TXJ0), met spike recovery acceptance criteria.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the MS and MSD, performed on sample 354539001 (J1TXJ0), did not meet spike recovery acceptance criteria due to relatively lower spike recovery in the MSD.

Technical Information

Holding Time Specifications

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. All reported analyte detections in client and quality control samples were within the established retention time windows. Reported analyte concentrations were confirmed on dissimilar columns. All sample extracts were cleaned using alumina. Additionally, copper was added to all sample extracts to remove sulfur.

Sample Dilutions

The samples in this SDG and reported in this batch did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required for the samples reported in this batch.

Miscellaneous Information

Electronic Package Comment

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation

Data exception report (DER) is generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A DER was not required for the samples in this SDG in this batch.

Manual Integrations

Certain standards and samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this PCB fraction.

Additional Comments

The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The following additional comments were required:

The higher results from either column have been chosen and reported in the data package for the client samples, MB and LCS. The data reported for the MS and MSD are from the same analytical column as the parent sample.

Due to software issue, the surrogate recovery range was not indicated or possibly indicated incorrectly in Quantitation Report. Please see Surrogate Recovery Report for correct surrogate acceptance limits.

Due to rounding differences in the calculation between the forms, the data reported in Sample Summary (form 1) and Spike Recovery Report (form 3) may differ slightly from the data reported in Identification Summary (form 10).

Aroclors quantitated on the raw data report by ChemStation data system do not necessarily represent positive Aroclor identification. In order for positive identification to be made, the Aroclor must match in pattern and retention time; as well as quantitate relatively close between the primary and confirmation columns, as specified in SW846 method 8000. When these conditions are not met, the Aroclor is reported as a non-detect on the data report.

System Configuration

The Semi-Volatiles-PCB analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
ECD9A.I_1	Agilent 7890A Gas Chromatograph/Dual ECD w/ 7693 Autosampler	7890A GC/ECD	Restek Rtx-CLPest 1	30m x 0.25mm, 0.25um

ECD9A.I_2	Agilent 7890A Gas Chromatograph/Dual ECD w/ 7693 Autosampler	7890A GC/ECD	Restek Rtx-CLPest 2	30m x 0.25mm, 0.20um
-----------	--	--------------	---------------------	----------------------

Method/Analysis Information

Procedure: Analysis of Polychlorinated Biphenyls by ECD

Analytical Method: SW846 3541/8082A

Prep Method: SW846 3541

Analytical Batch Number: 1411452

Prep Batch Number: 1411449

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3541/8082A:

Sample ID	Client ID
354541001	J1TXJ5
1203147961	MB for batch 1411449
1203147962	Laboratory Control Sample (LCS)
1203148088	354539004(J1TXJ3) Matrix Spike (MS)
1203148089	354539004(J1TXJ3) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

Preparation/Analytical Method Verification

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-040 REV# 20.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package.

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standards (ICV or CCV) met the acceptance criteria. All analytes were within the established retention time windows for this method.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for the samples in this SDG in this batch.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

WCHN sample 354539004 (J1TXJ3) was selected for the matrix spike and matrix spike duplicate analysis for this batch of the samples.

Matrix Spike (MS) Recovery Statement

The MS recoveries in this batch were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries in this batch were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the MS and MSD was within the established acceptance limits for this SDG in this batch.

Technical Information

Holding Time Specifications

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. All reported analyte detections in client and quality control samples were within the established retention time windows. Reported analyte concentrations were confirmed on dissimilar columns. All sample extracts were cleaned using alumina. Additionally, copper was added to all sample extracts to remove sulfur.

Sample Dilutions

Sample 354541001 (J1TXJ5) was diluted due to high level of target analytes detected in the sample.

Sample Re-extraction/Re-analysis

Sample 354541001 (J1TXJ5) was re-extracted after the original analysis showed mismatched results of sample and its MS/MSD due to non-homogenous sample matrix. Please use the data with caution since the sample matrix was not uniform and the data were fluctuate.

Miscellaneous Information

Electronic Package Comment

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation

Data exception report (DER) is generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A DER was not required for the samples in this SDG in this batch.

Manual Integrations

Certain standards and samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this PCB fraction.

Additional Comments

The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The following additional comments were required:

The back column has been chosen as the primary column. The data are reported from the back column for all samples in this batch.

Due to software issue, the surrogate recovery range was not indicated in Quantitation Report. Please see Surrogate Recovery Report for correct surrogate acceptance limits.

Due to rounding differences in the calculation between the forms, the data reported in Sample Summary (form 1) and Spike Recovery Report (form 3) may differ slightly from the data reported in Identification Summary (form 10).

Aroclors quantitated on the raw data report by ChemStation data system do not necessarily represent positive Aroclor identification. In order for positive identification to be made, the Aroclor must match in pattern and retention time; as well as quantitate relatively close between the primary and confirmation columns, as specified in SW846 method 8000. When these conditions are not met, the Aroclor is reported as a non-detect on the data report.

System Configuration

The Semi-Volatiles-PCB analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
ECD9A.I_1	Agilent 7890A Gas Chromatograph/Dual ECD w/ 7693 Autosampler	7890A GC/ECD	Restek Rtx-CLPest 1	30m x 0.25mm, 0.25um
ECD9A.I_2	Agilent 7890A Gas Chromatograph/Dual ECD w/ 7693 Autosampler	7890A GC/ECD	Restek Rtx-CLPest 2	30m x 0.25mm, 0.20um

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the

requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report for

WCHN001 WC-HANFORD, INC.

Client SDG: XP0119 GEL Work Order: 354541 Project: RC-233 Soil

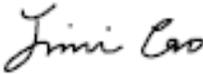
The Qualifiers in this report are defined as follows:

- D Results are reported from a diluted aliquot of sample.
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Jimin Cao

Date: 18 AUG 2014

Title: Data Validator

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: August 15, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-233 Soil

Client SDG: XP0119

Client Sample ID: J1TXJ7	Project: WCHN00313
Sample ID: 354541003	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 12-AUG-14 10:08	
Receive Date: 13-AUG-14	
Collector: Client	
Moisture: 5.58%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-PCB											
SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"											
Aroclor-1016	U	1.18	1.18	3.53	ug/kg	1	YS1	08/13/14	2128	1411146	1
Aroclor-1221	U	1.18	1.18	3.53	ug/kg	1					
Aroclor-1232	U	1.18	1.18	3.53	ug/kg	1					
Aroclor-1242	U	1.18	1.18	3.53	ug/kg	1					
Aroclor-1248	U	1.18	1.18	3.53	ug/kg	1					
Aroclor-1254	J	2.96	1.18	3.53	ug/kg	1					
Aroclor-1260	PT	9.98	1.18	3.53	ug/kg	1					
Aroclor-1262	U	1.18	1.18	3.53	ug/kg	1					
Aroclor-1268	U	1.18	1.18	3.53	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	SJW1	08/13/14	1255	1411145

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3541/8082A	
2	SW846 3541/8082A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
4cmx	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	4.65 ug/kg	7.06	65.8	(44%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	4.96 ug/kg	7.06	70.3	(35%-119%)

Notes:

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: August 15, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-233 Soil

Client SDG: XP0119

Client Sample ID: J1TXJ8	Project: WCHN00313
Sample ID: 354541004	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 12-AUG-14 10:12	
Receive Date: 13-AUG-14	
Collector: Client	
Moisture: 5.09%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-PCB											
SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"											
Aroclor-1016	U	1.17	1.17	3.50	ug/kg	1	YS1	08/13/14	2139	1411146	1
Aroclor-1221	U	1.17	1.17	3.50	ug/kg	1					
Aroclor-1232	U	1.17	1.17	3.50	ug/kg	1					
Aroclor-1242	U	1.17	1.17	3.50	ug/kg	1					
Aroclor-1248	U	1.17	1.17	3.50	ug/kg	1					
Aroclor-1262	U	1.17	1.17	3.50	ug/kg	1					
Aroclor-1268	U	1.17	1.17	3.50	ug/kg	1					
Aroclor-1254		4.61	1.17	3.50	ug/kg	1	YS1	08/13/14	2139	1411146	2
Aroclor-1260	T	9.36	1.17	3.50	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	SJW1	08/13/14	1255	1411145

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3541/8082A	
2	SW846 3541/8082A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
4cmx	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	4.09 ug/kg	7.00	58.4	(44%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	4.55 ug/kg	7.00	65.0	(35%-119%)

Notes:

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: August 15, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-233 Soil

Client SDG: XP0119

Client Sample ID: J1TXJ9	Project: WCHN00313
Sample ID: 354541005	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 12-AUG-14 10:03	
Receive Date: 13-AUG-14	
Collector: Client	
Moisture: 5.44%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-PCB											
SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"											
Aroclor-1016	U	1.17	1.17	3.53	ug/kg	1	YS1	08/13/14	2150	1411146	1
Aroclor-1221	U	1.17	1.17	3.53	ug/kg	1					
Aroclor-1232	U	1.17	1.17	3.53	ug/kg	1					
Aroclor-1242	U	1.17	1.17	3.53	ug/kg	1					
Aroclor-1248	U	1.17	1.17	3.53	ug/kg	1					
Aroclor-1262	U	1.17	1.17	3.53	ug/kg	1					
Aroclor-1268	U	1.17	1.17	3.53	ug/kg	1					
Aroclor-1254		5.70	1.17	3.53	ug/kg	1	YS1	08/13/14	2150	1411146	2
Aroclor-1260	T	5.08	1.17	3.53	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	SJW1	08/13/14	1255	1411145

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3541/8082A	
2	SW846 3541/8082A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
4cmx	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	4.32 ug/kg	7.05	61.3	(44%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	4.68 ug/kg	7.05	66.4	(35%-119%)

Notes:

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: August 18, 2014

Page 1 of 4

WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H4-21
Richland, Washington
Contact: Joan Kessner

Workorder: 354541

Client SDG: XP0119

Project Description: RC-233 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-PCB											
Batch	1411146										
QC1203147202	LCS										
Aroclor-1016	33.3			25.5	ug/kg		76.7	(39%-120%)	YS1	08/13/14	19:00
Aroclor-1260	33.3			29.6	ug/kg		88.9	(50%-116%)			
**4cmx	6.66			4.73	ug/kg		71.1	(44%-106%)			
**Decachlorobiphenyl	6.66			5.47	ug/kg		82.1	(35%-119%)			
QC1203147201	MB										
Aroclor-1016			U	1.11	ug/kg					08/13/14	18:49
Aroclor-1221			U	1.11	ug/kg						
Aroclor-1232			U	1.11	ug/kg						
Aroclor-1242			U	1.11	ug/kg						
Aroclor-1248			U	1.11	ug/kg						
Aroclor-1254			U	1.11	ug/kg						
Aroclor-1260			U	1.11	ug/kg						
Aroclor-1262			U	1.11	ug/kg						
Aroclor-1268			U	1.11	ug/kg						
**4cmx	6.67			4.72	ug/kg		70.8	(44%-106%)			
**Decachlorobiphenyl	6.67			5.35	ug/kg		80.3	(35%-119%)			
QC1203147203	354539001	MS									
Aroclor-1016	33.9	U	1.13	22.7	ug/kg		66.9	(25%-125%)		08/13/14	19:23
Aroclor-1260	33.9	J	2.71	29.3	ug/kg		78.4	(28%-127%)			
**4cmx	6.78		4.37	4.40	ug/kg		64.9	(44%-106%)			
**Decachlorobiphenyl	6.78		5.39	5.20	ug/kg		76.7	(35%-119%)			

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 354541

Client SDG: XP0119

Project Description: RC-233 Soil

Page 2 of 4

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-PCB											
Batch	1411146										
QC1203147204	354539001	MSD									
Aroclor-1016	33.9	U	1.13	16.1	ug/kg	34.1*	47.4	(0%-30%)	YS1	08/13/14	19:34
Aroclor-1260	33.9	J	2.71	21.9	ug/kg	29.0	56.5	(0%-30%)			
**4cmx	6.78		4.37	2.67	ug/kg		39.4*	(44%-106%)			
**Decachlorobiphenyl	6.78		5.39	3.66	ug/kg		54	(35%-119%)			
Batch	1411452										
QC1203147962	LCS										
Aroclor-1016	33.3			24.2	ug/kg		72.6	(39%-120%)	YS1	08/14/14	18:17
Aroclor-1260	33.3			29.0	ug/kg		87.1	(50%-116%)			
**4cmx	6.67			5.05	ug/kg		75.8	(44%-106%)			
**Decachlorobiphenyl	6.67			5.68	ug/kg		85.3	(35%-119%)			
QC1203147961	MB										
Aroclor-1016			U	1.11	ug/kg					08/14/14	18:06
Aroclor-1221			U	1.11	ug/kg						
Aroclor-1232			U	1.11	ug/kg						
Aroclor-1242			U	1.11	ug/kg						
Aroclor-1248			U	1.11	ug/kg						
Aroclor-1254			U	1.11	ug/kg						
Aroclor-1260			U	1.11	ug/kg						
Aroclor-1262			U	1.11	ug/kg						
Aroclor-1268			U	1.11	ug/kg						
**4cmx	6.66			5.34	ug/kg		80.2	(44%-106%)			
**Decachlorobiphenyl	6.66			5.91	ug/kg		88.8	(35%-119%)			
QC1203148088	354539004	MS									

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 354541

Client SDG: XP0119

Project Description: RC-233 Soil

Page 3 of 4

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-PCB											
Batch	1411452										
Aroclor-1016	34.7	U	1.16	25.8	ug/kg		74.5	(25%-125%)		08/14/14	18:40
Aroclor-1260	34.7		28.6	52.4	ug/kg		68.4	(28%-127%)	YS1		
**4cmx	6.94		5.36	5.40	ug/kg		77.8	(44%-106%)			
**Decachlorobiphenyl	6.94		5.54	5.41	ug/kg		78	(35%-119%)			
QC1203148089 354539004 MSD											
Aroclor-1016	34.6	U	1.16	25.4	ug/kg	1.64	73.4	(0%-30%)		08/14/14	18:53
Aroclor-1260	34.6		28.6	61.9	ug/kg	16.7	96	(0%-30%)			
**4cmx	6.93		5.36	5.07	ug/kg		73.1	(44%-106%)			
**Decachlorobiphenyl	6.93		5.54	5.39	ug/kg		77.9	(35%-119%)			

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (Organics only)

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 354541

Client SDG: XP0119

Project Description: RC-233 Soil

Page 4 of 4

<u>Parmname</u>	<u>NOM</u>	<u>Sample Qual</u>	<u>QC</u>	<u>Units</u>	<u>RPD%</u>	<u>REC%</u>	<u>Range</u>	<u>Anlst</u>	<u>Date</u>	<u>Time</u>
-----------------	------------	--------------------	-----------	--------------	-------------	-------------	--------------	--------------	-------------	-------------

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Miscellaneous

Prep Logbook

Automated Soxhlet Extraction

Batch ID: 1411145 Verified by: _____
 Analyst: Sirena White
 Method: SW846 3541

Lab SOP: GL-OA-E-066 REV# 5
 Instrument: Semi-Volatiles Manual

Sample ID	Run Date	Aliquot (g)	Clean Up 1 Amount 1 (mL)	Clean Up Post Clean Up Amount 1 (mL)	Final Volume (mL)	Prepped Factor (mL/g)
1203147201 MB	13-AUG-2014 12:55:00	30	H2SO4/KM 2 nO4	9	1	0.03333
1203147202 LCS	13-AUG-2014 12:55:00	30.02	H2SO4/KM 2 nO4	9	1	0.03331
354539001	13-AUG-2014 12:55:00	30.06	H2SO4/KM 2 nO4	9	1	0.03327
1203147203 MS (354539001)	13-AUG-2014 12:55:00	30.03	H2SO4/KM 2 nO4	9	1	0.0333
1203147204 MSD (354539001)	13-AUG-2014 12:55:00	30.04	H2SO4/KM 2 nO4	9	1	0.03329
354539002	13-AUG-2014 12:55:00	30.11	H2SO4/KM 2 nO4	9	1	0.03321
354539003	13-AUG-2014 12:55:00	30.12	H2SO4/KM 2 nO4	9	1	0.0332
354539004	13-AUG-2014 12:55:00	30.14	H2SO4/KM 2 nO4	9	1	0.03318
354541001	13-AUG-2014 12:55:00	30.1	H2SO4/KM 2 nO4	9	1	0.03322
1203147239 MS (354541001)	13-AUG-2014 12:55:00	30.02	H2SO4/KM 2 nO4	9	1	0.03331
1203147240 MSD (354541001)	13-AUG-2014 12:55:00	30.11	H2SO4/KM 2 nO4	9	1	0.03321
354541002	13-AUG-2014 12:55:00	30.05	H2SO4/KM 2 nO4	9	1	0.03328
354541003	13-AUG-2014 12:55:00	30	H2SO4/KM 2 nO4	9	1	0.03333
354541004	13-AUG-2014 12:55:00	30.09	H2SO4/KM 2 nO4	9	1	0.03323
354541005	13-AUG-2014 12:55:00	30	H2SO4/KM 2 nO4	9	1	0.03333

Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1203147202	PCB Laboratory Control	WE140714-10	1	mL	Final Solvent: Hexane
MS	1203147203	PCB Laboratory Control	WE140714-10	1	mL	Verified by: MD
MS	1203147239	PCB Laboratory Control	WE140714-10	1	mL	Clean-up: H2SO4/KMnO4
MSD	1203147204	PCB Laboratory Control	WE140714-10	1	mL	Prior to clean-up: 2mL
MSD	1203147240	PCB Laboratory Control	WE140714-10	1	mL	Clean-up initials: SJW
SURR	All	PEST LOW LEVEL SURROGATE 200 UG/L	WE140516-01	1	mL	Clean-up SOP: GL-OA-E-037 Rev.1
REGNT	All	1:1 sulfuric acid	2130267	5	mL	Clean-up date: 08/13/14
REGNT	All	Hexane	2134327-B10	120	mL	
REGNT	All	5% Potassium Permanganate	2134734	5	mL	
SOURC	All	SODIUM SULFATE	2127169	30	g	

Prep Logbook

Automated Soxhlet Extraction

Batch ID: 1411449
Analyst: Sirena White
Method: SW846 3541

Verified by: _____

Lab SOP: GL-OA-E-066 REV# 5
Instrument: Semi-Volatiles Manual

Sample ID	Run Date	Aliquot (g)	Clean Up 1 Amount 1 (mL)	Clean Up Post Clean Up Amount 1 (mL)	Final Volume (mL)	Prepped Factor (mL/g)
1203147961 MB	14-AUG-2014 10:30:00	30.02	H2SO4/KM 2 nO4	9	1	0.03331
1203147962 LCS	14-AUG-2014 10:30:00	30	H2SO4/KM 2 nO4	9	1	0.03333
354539004 - 2	14-AUG-2014 10:30:00	30.03	H2SO4/KM 2 nO4	9	1	0.0333
1203148088 - 2 MS (354539004)	14-AUG-2014 10:30:00	30.03	H2SO4/KM 2 nO4	9	1	0.0333
1203148089 - 2 MSD (354539004)	14-AUG-2014 10:30:00	30.08	H2SO4/KM 2 nO4	9	1	0.03324
354541001 - 2	14-AUG-2014 10:30:00	30.08	H2SO4/KM 2 nO4	9	1	0.03324
354565002	14-AUG-2014 10:30:00	10.376	H2SO4/KM 2 nO4	9	1	0.09638
354566001	14-AUG-2014 10:30:00	30.08	H2SO4/KM 2 nO4	9	1	0.03324
1203147963 MS (354566001)	14-AUG-2014 10:30:00	30.01	H2SO4/KM 2 nO4	9	1	0.03332
1203147964 MSD (354566001)	14-AUG-2014 10:30:00	30.08	H2SO4/KM 2 nO4	9	1	0.03324
354568002	14-AUG-2014 10:30:00	10.302	H2SO4/KM 2 nO4	9	1	0.09707
354578002	14-AUG-2014 10:30:00	10.159	H2SO4/KM 2 nO4	9	1	0.09843
354580002	14-AUG-2014 10:30:00	10.082	H2SO4/KM 2 nO4	9	1	0.09919
354646001	14-AUG-2014 10:30:00	10.17	H2SO4/KM 2 nO4	9	1	0.09833
354646002	14-AUG-2014 10:30:00	10.07	H2SO4/KM 2 nO4	9	1	0.0993

Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1203147962	PCB Laboratory Control	WE140714-10	1	mL	Final Solvent: Hexane Verified by: MD Clean-up Initials: SJW Clean-up SOP: GL-OA-E_037 REV.1 Clean-up date: 08/14/2014
MS	1203147963	PCB Laboratory Control	WE140714-10	1	mL	
MS	1203148088	PCB Laboratory Control	WE140714-10	1	mL	
MSD	1203147964	PCB Laboratory Control	WE140714-10	1	mL	
MSD	1203148089	PCB Laboratory Control	WE140714-10	1	mL	Prior to Clean-up: 2mL
SURR	All	PEST LOW LEVEL SURROGATE 200 UG/L	WE140812-01	1	mL	Samples 354646001 and 354646002 consist of very lightweight material only 10g was able to be aliquoted for each sample.
REGNT	All	Hexane	2126073-B10	120	mL	
REGNT	All	1:1 sulfuric acid	2130267	5	mL	Samples 354539004 and its MS/MSD, 354541001, and 354566001 contained soil and rocks.
REGNT	All	5% Potassium Permanganate	2134734	5	mL	
SOURC	All	SODIUM SULFATE	2127169	30	g	

Prep Logbook

Batch ID: 1411449
Analyst: Sirena White
Method: SW846 3541

Verified by: _____

Lab SOP: GL-OA-E-066 REV# 5
Instrument: Semi-Volatiles Manual

Sample ID	Run Date	Aliquot (g)	Clean Up 1	Clean Up Amount 1 (mL)	Post Clean Up Amount 1 (mL)	Final Volume (mL)	Prepped Factor (mL/g)
-----------	----------	----------------	------------	------------------------------	--------------------------------------	-------------------------	-----------------------------
