

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 10/16/14
INITIAL/DATE

COMMENTS:

SDG XP0141

SAF-RC-233

Rad only

Chem only

Rad & Chem

Complete

Partial

Sample Location: 100-B-35:1, electrical switchyard
IP



October 07, 2014

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

Re: RC-233 Soil
Work Order: 358013
SDG: XP0141

Dear Joan Kessner:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on October 03, 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-233-066 and RC-233-067
Enclosures



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Case Narrative

**Receipt Narrative
for
WC-HANFORD, INC.
SDG: XP0141
Work Order: 358013**

October 07, 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 October 03, 2014 for analysis.

Sample Identification: The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
358013001	J1V0L3
358013002	J1V0L4
358013003	J1V0L5
358013004	J1V0L6
358013005	J1V0L7
358013006	J1V0L8

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: Diesel Range Organics and GC Semivolatile PCB.



Orlette Johnson
Project Manager

Chain of Custody and Supporting Documentation

Washington Closure Hanford **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** RC-233-066 Page 1 of 1

Collector: *H. Weber* Company Contact: Joan Kessner Telephone No.: 375-4688 Project Coordinator: KESSNER, JH Price Code: 8A 3 DAY Data Turnaround

Project Designation: 100-IU-2 & 100-IU-6 Remaining Waste Sites Sampling Location: 100-B-35:1, Electrical Switchyard, IP, Field Logbook No.: EL-1667-02 COA: 010B352600 Method of Shipment: Commercial Carrier / FEDEX Bill of Lading/Air Bill No.: See OSPL

Offsite Property No.: A131256

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Cool 4C	Cool 4C	Type of Container	No. of Container(s)	Volume	Sample Analysis
J1V0L3	SOIL	10/1/14	0817	aG	125mL	125mL	aG	1	125mL	TPH-Diesel Range - WTPHD +
J1V0L4	SOIL	10/1/14	0822	aG	125mL	125mL	aG	1	125mL	TPH-Diesel Range - WTPHD +
J1V0L5	SOIL	10/1/14	0828	aG	125mL	125mL	aG	1	125mL	TPH-Diesel Range - WTPHD +
J1V0L6	SOIL	10/1/14	0833	aG	125mL	125mL	aG	1	125mL	TPH-Diesel Range - WTPHD +
J1V0L7	SOIL	10/1/14	0842	aG	125mL	125mL	aG	1	125mL	TPH-Diesel Range - WTPHD +

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

None

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<i>Katherine Weber/S. Sexton</i>	0854 10/01/14	<i>DW Sheehan/DW Sheehan</i>	0853 10/1/14
<i>DW Sheehan/DW Sheehan</i>	1715 10/1/14	<i>SM Sexton</i>	1715 10/1/14
<i>SM Sexton</i>	1718 10/1/14	<i>1060 Battelle Fridge 1A</i>	1718 10/1/14
<i>1060 Battelle Fridge 1A</i>	0710 10/2/14	<i>SM Sexton</i>	0710 10/2/14
<i>SM Sexton</i>	0715 10/2/14	<i>FED EX</i>	10/3/14 1000
<i>FED EX</i>	10/3/14 1000		



XP0141

Collector *H. Weber* Telephone No. 375-4688 Project Coordinator KESSNER, JH Price Code 8A 3 DAY
 Project Designation 100-IU-2 & 100-IU-6 Remaining Waste Sites Sampling Location 100-B-35.1, Electrical switchyard, IP
 Ice Chest No. WCH-12-029 Field Logbook No. EL-1667-02 COA 010B352600 Method of Shipment Commercial Carrier / FED EX
 Shipped To GEL Laboratories Charleston Offsite Property No. A131256 Bill of Lading/Air Bill No. See OSC

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Cool 4C	Cool 4C	Type of Container	No. of Container(s)	Volume	Sample Analysis	TPH-Diesel Range - WTPH-D +
J1V0L8	SOIL	10/1/14	0838	Cool 4C	✓		aG	1	125mL	PCBs - 8082	
J1V0L9	SOIL	} DWS 10/1/14									
J1V0M0	SOIL										
J1V0M1	SOIL										
J1V0M2	SOIL										
POSSIBLE SAMPLE HAZARDS/REMARKS											
None											
Special Handling and/or Storage											
None											

CHAIN OF POSSESSION

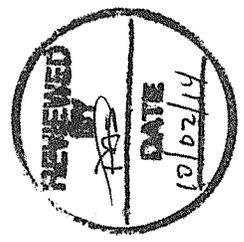
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<i>H. Weber</i>	0854	<i>DWShea</i>	10/1/14 0854
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<i>DWShea</i>	10/1/14 1715	<i>SM SEXTON</i>	10/1/14 1715
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<i>SM SEXTON</i>	10/1/14 1718	<i>1060 Battelle</i>	10/1/14 1718
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<i>1060 Battelle</i>	10/1/14 6710	<i>SM SEXTON</i>	10/1/14 6710
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<i>SM SEXTON</i>	10/2/14 0715	<i>FED EX</i>	10/2/14 0715
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<i>FedEx</i>	10/2/14	<i>WCH</i>	10/2/14
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<i>WCH</i>	10/2/14	<i>WCH</i>	10/2/14

SPECIAL INSTRUCTIONS

Disposal Method: *FedEx* Disposed By: *WCH* Date/Time: *10/3/14 1000*

FINAL SAMPLE DISPOSITION XP0141

WCH-EE-011





SAMPLE RECEIPT & REVIEW FORM

Client: WCHN		SDG/AR/COC/Work Order: 358013	
Received By: PS		Date Received: 10/3/14	
Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 cpm
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"/>			5°C Preservation Method: <u>Ice bags</u> Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: 140532792 Secondary Temperature Device Serial # (If Applicable):
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 7713 6185 2928

Comments (Use Continuation Form if needed):

Laboratory Certifications

List of current GEL Certifications as of 07 October 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

FID Diesel Range Organics Analysis

Case Narrative

**FID Diesel Range Organics
WC-HANFORD, INC. (WCHN)
SDG XP0141**

Method/Analysis Information

Procedure: Analysis of Diesel Range Organics by Flame Ionization Detector
Analytical Method: NWTPH-Dx in Soil
Prep Method: SW846 3541
Analytical Batch Number: 1424495
Prep Batch Number: 1424494

Sample Analysis

The following samples were analyzed using the analytical protocol as established in NWTPH-Dx in Soil:

Sample ID	Client ID
358013001	J1V0L3
358013002	J1V0L4
358013003	J1V0L5
358013004	J1V0L6
358013005	J1V0L7
358013006	J1V0L8
1203180595	MB for batch 1424494
1203180596	Laboratory Control Sample (LCS)
1203180597	358013001(J1V0L3) Matrix Spike (MS)
1203180598	358013001(J1V0L3) 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-003 REV# 24.

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

Initial Calibration

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

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria. Analyte peaks

eluted 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 this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 358013001 (J1V0L3) was selected for the matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS 1203180597 (J1V0L3) recoveries for this SDG were not within the acceptance limits. The failures confirm in the matrix spike duplicate and are attributed to matrix interference.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD 1203180598 (J1V0L3) recoveries for this SDG were not within the acceptance limits. The failures confirm in the matrix spike duplicate and are attributed to matrix interference.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the MS and MSD did not meet the acceptance limits due to relatively lower spike recovery in the MS.

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. Analyte peaks eluted within the established retention time windows for this method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Electronic Package Comment

This 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 Exception (DER) Documentation

Data exception report (DER) is generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. DER #1340710 was generated for this SDG.

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 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 additional comments were not required.

System Configuration

The Diesel Range Organics analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
FID7.I	Agilent Gas Chromatograph	Agilent 6890N GC/FID	DB-5MS	30m x 0.25mm, 0.25um(J&W)

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.

DATA EXCEPTION REPORT

Mo.Day Yr. 06-OCT-14	Division: Federal	Quality Criteria: Specifications	Type: Process
Instrument Type: GC/FID	Test / Method: NWTPH-Dx in Soil	Matrix Type: Solid	Client Code: WCHN
Batch ID: 1424495	Sample Numbers: See Below		

Potentially affected work order(s)(SDG): 358013(XP0141)

Application Issues:

- Failed Recovery for MS/PS
- Failed RPD for MS/MSD, or PS/PSD
- Failed Recovery for MSD/PSD

Specification and Requirements Exception Description:	DER Disposition:
<ol style="list-style-type: none"> 1. The MS(1203180597) and MSD(1203180598) recovered diesel range organics and motor oil below their established acceptance limits. 2. The MS/MSD RPD value was 23%(SPC Limit: 20%) for Diesel Range Organics. 	<ol style="list-style-type: none"> 1. As the MS and MSD displayed similar recoveries, the failures were attributed to sample matrix interference and the data have been reported. 2. The MS/MSD pair had poor recoveries for the analytes. The results are reported.

Originator's Name:

Benjamin Taft 06-OCT-14

Data Validator/Group Leader:

Jimin Cao 06-OCT-14

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: XP0141 GEL Work Order: 358013 Project: RC-233 Soil

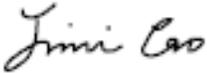
The Qualifiers in this report are defined as follows:

- 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
- 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: 14 OCT 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: October 6, 2014

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

Client SDG: XP0141

Client Sample ID: J1V0L3
Sample ID: 358013001
Matrix: SOIL
Collect Date: 01-OCT-14 08:17
Receive Date: 03-OCT-14
Collector: Client
Moisture: 4.69%

Project: WCHN00313
Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Diesel Range Organics											
SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected"											
Diesel Range Organics (C10-C20)	TU	2270	2270	6990	ug/kg	1	BYT1	10/06/14	0457	1424495	1
Motor Oil (C20-C36)	T	46700	2270	6990	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	SXW3	10/03/14	1903	1424494

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	NWTPH-Dx in Soil	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
o-Terphenyl	SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected"	477 ug/kg	699	68.3	(50%-150%)

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: October 6, 2014

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

Client SDG: XP0141

Client Sample ID: J1V0L4	Project: WCHN00313
Sample ID: 358013002	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 01-OCT-14 08:22	
Receive Date: 03-OCT-14	
Collector: Client	
Moisture: 3.52%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Diesel Range Organics											
SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected"											
Diesel Range Organics (C10-C20)	TU	2240	2240	6900	ug/kg	1	BYT1	10/06/14	0653	1424495	1
Motor Oil (C20-C36)	T	11500	2240	6900	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	SXW3	10/03/14	1903	1424494

The following Analytical Methods were performed:

Method	Description	Analyst Comments			
1	NWTPH-Dx in Soil				

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
o-Terphenyl	SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected"	538 ug/kg	690	78.0	(50%-150%)

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: October 6, 2014

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

Client SDG: XP0141

Client Sample ID: J1V0L5
Sample ID: 358013003
Matrix: SOIL
Collect Date: 01-OCT-14 08:28
Receive Date: 03-OCT-14
Collector: Client
Moisture: 3.09%

Project: WCHN00313
Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Diesel Range Organics											
SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected"											
Diesel Range Organics (C10-C20)	TU	2230	2230	6880	ug/kg	1	BYT1	10/06/14	0732	1424495	1
Motor Oil (C20-C36)	T	8580	2230	6880	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	SXW3	10/03/14	1903	1424494

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	NWTPH-Dx in Soil	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
o-Terphenyl	SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected"	467 ug/kg	688	67.9	(50%-150%)

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: October 6, 2014

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

Client SDG: XP0141

Client Sample ID: J1V0L7
Sample ID: 358013005
Matrix: SOIL
Collect Date: 01-OCT-14 08:42
Receive Date: 03-OCT-14
Collector: Client
Moisture: 2.02%

Project: WCHN00313
Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Diesel Range Organics											
SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected"											
Diesel Range Organics (C10-C20)	TU	2210	2210	6800	ug/kg	1	BYT1	10/06/14	0849	1424495	1
Motor Oil (C20-C36)	JT	3540	2210	6800	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	SXW3	10/03/14	1903	1424494

The following Analytical Methods were performed:

Method	Description	Analyst	Result	Nominal	Recovery%	Acceptable Limits
1	NWTPH-Dx in Soil					
Surrogate/Tracer Recovery	Test		Result	Nominal	Recovery%	Acceptable Limits
o-Terphenyl	SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected"		382 ug/kg	680	56.2	(50%-150%)

Notes:

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: October 6, 2014

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

Client SDG: XP0141

Client Sample ID: J1V0L8
Sample ID: 358013006
Matrix: SOIL
Collect Date: 01-OCT-14 08:38
Receive Date: 03-OCT-14
Collector: Client
Moisture: 1.78%

Project: WCHN00313
Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Diesel Range Organics											
SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected"											
Diesel Range Organics (C10-C20)	TU	2200	2200	6780	ug/kg	1	BYT1	10/06/14	0928	1424495	1
Motor Oil (C20-C36)	JT	3410	2200	6780	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	SXW3	10/03/14	1903	1424494

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	NWTPH-Dx in Soil	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
o-Terphenyl	SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected"	448 ug/kg	678	66.2	(50%-150%)

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: October 6, 2014

Page 1 of 2

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

Workorder: 358013

Client SDG: XP0141

Project Description: RC-233 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Diesel Range Organics											
Batch	1424495										
QC1203180596	LCS										
Diesel Range Organics (C10-C20)	66600			59700	ug/kg		89.7	(70%-130%)	BYT1	10/06/14	04:18
Motor Oil (C20-C36)	66600			80700	ug/kg		121	(70%-130%)			
**o-Terphenyl	666			703	ug/kg		106	(50%-150%)			
QC1203180595	MB										
Diesel Range Organics (C10-C20)			U	2160	ug/kg					10/06/14	03:40
Motor Oil (C20-C36)			U	2160	ug/kg						
**o-Terphenyl	666			378	ug/kg		56.8	(50%-150%)			
QC1203180597	358013001 MS										
Diesel Range Organics (C10-C20)	69900	TU	2270	T	36500	ug/kg	52.2*	(70%-130%)		10/06/14	05:36
Motor Oil (C20-C36)	69900	T	46700	T	64900	ug/kg	26*	(70%-130%)			
**o-Terphenyl	699		477		470	ug/kg	67.1	(50%-150%)			
QC1203180598	358013001 MSD										
Diesel Range Organics (C10-C20)	69800	TU	2270	T	46100	ug/kg	23.2*	66*	(0%-20%)	10/06/14	06:14
Motor Oil (C20-C36)	69800	T	46700	T	71200	ug/kg	9.23	35.1*	(0%-20%)		
**o-Terphenyl	698		477		523	ug/kg		75	(50%-150%)		

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

GEL LABORATORIES LLC

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QC Summary

Workorder: 358013

Client SDG: XP0141

Project Description: RC-233 Soil

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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)										

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

Extraction of Semivolatile and Nonvolatile Organic Compounds from Soil, Sludge, and Other Miscellaneous Solid Samples

Batch ID: 1424494 Verified by: _____
 Analyst: Shannon Whitehead
 Method: SW846 3541

Lab SOP: GL-OA-E-010 REV# 22
 Instrument: Semi-Volatiles Manual

Sample ID	Run Date	Aliquot (g)	Prepped Aliquot (mL)	Prepped Factor (mL/g)
1203180595 MB	03-OCT-2014 19:03:00	30.04	1	0.03329
1203180596 LCS	03-OCT-2014 19:03:00	30.04	1	0.03329
358013001	03-OCT-2014 19:03:00	30.03	1	0.0333
1203180597 MS (358013001)	03-OCT-2014 19:03:00	30	1	0.03333
1203180598 MSD (358013001)	03-OCT-2014 19:03:00	30.05	1	0.03328
358013002	03-OCT-2014 19:03:00	30.03	1	0.0333
358013003	03-OCT-2014 19:03:00	30.01	1	0.03332
358013004	03-OCT-2014 19:03:00	30	1	0.03333
358013005	03-OCT-2014 19:03:00	30.03	1	0.0333
358013006	03-OCT-2014 19:03:00	30.05	1	0.03328

Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1203180596	AZDRO SPIKE LCS STD,4000ug/ml	WFI140918-62	1	mL	Verified By: AV Final Solvent: CH2Cl2
MS	1203180597	AZDRO SPIKE LCS STD,4000ug/ml	WFI140918-62	1	mL	
MSD	1203180598	AZDRO SPIKE LCS STD,4000ug/ml	WFI140918-62	1	mL	
SURR	All	20 ppm surrogate	WE140819-04	1	mL	
REGNT	All	Methylene Chloride	2159559-D	120	mL	
SOURC	All	SODIUM SULFATE	2148821	30	g	

PCB Analysis

Case Narrative

**PCB Case Narrative
WC-HANFORD, INC. (WCHN)
SDG XP0141**

Method/Analysis Information

Procedure: Analysis of Polychlorinated Biphenyls by ECD
Analytical Method: SW846 3541/8082A
Prep Method: SW846 3541
Analytical Batch Number: 1424502
Prep Batch Number: 1424501

Sample Analysis

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

Sample ID	Client ID
358013001	J1V0L3
358013002	J1V0L4
358013003	J1V0L5
358013004	J1V0L6
358013005	J1V0L7
358013006	J1V0L8
1203180603	MB for batch 1424501
1203180604	Laboratory Control Sample (LCS)
1203180605	358013002(J1V0L4) Matrix Spike (MS)
1203180606	358013002(J1V0L4) 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.

One of the five quantified peaks did not meet the acceptance criteria in Aroclor-1260 standard analyzed for this SDG; however, the average concentration of the five quantified peaks met the acceptance criteria.

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 358013002 (J1V0L4) was selected for the matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS recoveries for this SDG were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries for this SDG were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the MS and MSD met the acceptance limits.

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 did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG 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 column 1 has been chosen as the primary column. The data are reported from the column 1 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
ECD8A.I_1	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	Rtx-CLP I	30m x 0.25mm, 0.25um (Rtx-CLPesticide I)
ECD8A.I_2	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	Rtx-CLP II	30m x 0.25mm, 0.20um (Rtx-CLPesticide II)

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.

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Qualifier Definition Report for

WCHN001 WC-HANFORD, INC.

Client SDG: XP0141 GEL Work Order: 358013 Project: RC-233 Soil

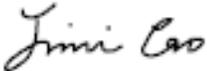
The Qualifiers in this report are defined as follows:

- 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.
- 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: 10 OCT 2014

Title: Data Validator

Sample Data Summary

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Certificate of Analysis

Report Date: October 7, 2014

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

Client SDG: XP0141

Client Sample ID: J1V0L3	Project: WCHN00313
Sample ID: 358013001	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 01-OCT-14 08:17	
Receive Date: 03-OCT-14	
Collector: Client	
Moisture: 4.69%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-PCB											
SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"											
Aroclor-1016	U	1.16	1.16	3.48	ug/kg	1	JXM	10/06/14	1528	1424502	1
Aroclor-1221	U	1.16	1.16	3.48	ug/kg	1					
Aroclor-1232	U	1.16	1.16	3.48	ug/kg	1					
Aroclor-1242	U	1.16	1.16	3.48	ug/kg	1					
Aroclor-1248	U	1.16	1.16	3.48	ug/kg	1					
Aroclor-1254	J	3.04	1.16	3.48	ug/kg	1					
Aroclor-1260	J	1.58	1.16	3.48	ug/kg	1					
Aroclor-1262	U	1.16	1.16	3.48	ug/kg	1					
Aroclor-1268	U	1.16	1.16	3.48	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	AXV1	10/03/14	2015	1424501

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3541/8082A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
4cmx	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	4.92 ug/kg	6.96	70.6	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	4.09 ug/kg	6.96	58.8	(25%-131%)

Notes:

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Certificate of Analysis

Report Date: October 7, 2014

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

Client SDG: XP0141

Client Sample ID: J1V0L4	Project: WCHN00313
Sample ID: 358013002	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 01-OCT-14 08:22	
Receive Date: 03-OCT-14	
Collector: Client	
Moisture: 3.52%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-PCB											
SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"											
Aroclor-1016	U	1.14	1.14	3.44	ug/kg	1	JXM	10/06/14	1543	1424502	1
Aroclor-1221	U	1.14	1.14	3.44	ug/kg	1					
Aroclor-1232	U	1.14	1.14	3.44	ug/kg	1					
Aroclor-1242	U	1.14	1.14	3.44	ug/kg	1					
Aroclor-1248	U	1.14	1.14	3.44	ug/kg	1					
Aroclor-1254	J	2.56	1.14	3.44	ug/kg	1					
Aroclor-1260	J	1.28	1.14	3.44	ug/kg	1					
Aroclor-1262	U	1.14	1.14	3.44	ug/kg	1					
Aroclor-1268	U	1.14	1.14	3.44	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	AXV1	10/03/14	2015	1424501

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3541/8082A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
4cmx	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	4.86 ug/kg	6.87	70.7	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	3.57 ug/kg	6.87	52.0	(25%-131%)

Notes:

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Certificate of Analysis

Report Date: October 7, 2014

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

Client SDG: XP0141

Client Sample ID: J1V0L5	Project: WCHN00313
Sample ID: 358013003	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 01-OCT-14 08:28	
Receive Date: 03-OCT-14	
Collector: Client	
Moisture: 3.09%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-PCB											
SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"											
Aroclor-1016	U	1.14	1.14	3.42	ug/kg	1	JXM	10/06/14	1626	1424502	1
Aroclor-1221	U	1.14	1.14	3.42	ug/kg	1					
Aroclor-1232	U	1.14	1.14	3.42	ug/kg	1					
Aroclor-1242	U	1.14	1.14	3.42	ug/kg	1					
Aroclor-1248	U	1.14	1.14	3.42	ug/kg	1					
Aroclor-1254	JP	1.88	1.14	3.42	ug/kg	1					
Aroclor-1260	U	1.14	1.14	3.42	ug/kg	1					
Aroclor-1262	U	1.14	1.14	3.42	ug/kg	1					
Aroclor-1268	U	1.14	1.14	3.42	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	AXV1	10/03/14	2015	1424501

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3541/8082A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
4cmx	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	4.67 ug/kg	6.84	68.3	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	4.18 ug/kg	6.84	61.1	(25%-131%)

Notes:

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Certificate of Analysis

Report Date: October 7, 2014

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

Client SDG: XP0141

Client Sample ID: J1V0L6
 Sample ID: 358013004
 Matrix: SOIL
 Collect Date: 01-OCT-14 08:33
 Receive Date: 03-OCT-14
 Collector: Client
 Moisture: 2.76%

Project: WCHN00313
 Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-PCB											
SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"											
Aroclor-1016	U	1.14	1.14	3.41	ug/kg	1	JXM	10/06/14	1640	1424502	1
Aroclor-1221	U	1.14	1.14	3.41	ug/kg	1					
Aroclor-1232	U	1.14	1.14	3.41	ug/kg	1					
Aroclor-1242	U	1.14	1.14	3.41	ug/kg	1					
Aroclor-1248	U	1.14	1.14	3.41	ug/kg	1					
Aroclor-1254	J	1.48	1.14	3.41	ug/kg	1					
Aroclor-1260	U	1.14	1.14	3.41	ug/kg	1					
Aroclor-1262	U	1.14	1.14	3.41	ug/kg	1					
Aroclor-1268	U	1.14	1.14	3.41	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	AXV1	10/03/14	2015	1424501

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3541/8082A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
4cmx	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	5.14 ug/kg	6.82	75.4	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	5.16 ug/kg	6.82	75.6	(25%-131%)

Notes:

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Certificate of Analysis

Report Date: October 7, 2014

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

Client SDG: XP0141

Client Sample ID: J1V0L7	Project: WCHN00313
Sample ID: 358013005	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 01-OCT-14 08:42	
Receive Date: 03-OCT-14	
Collector: Client	
Moisture: 2.02%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-PCB											
SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"											
Aroclor-1016	U	1.13	1.13	3.40	ug/kg	1	JXM	10/06/14	1655	1424502	1
Aroclor-1221	U	1.13	1.13	3.40	ug/kg	1					
Aroclor-1232	U	1.13	1.13	3.40	ug/kg	1					
Aroclor-1242	U	1.13	1.13	3.40	ug/kg	1					
Aroclor-1248	U	1.13	1.13	3.40	ug/kg	1					
Aroclor-1254	U	1.13	1.13	3.40	ug/kg	1					
Aroclor-1260	U	1.13	1.13	3.40	ug/kg	1					
Aroclor-1262	U	1.13	1.13	3.40	ug/kg	1					
Aroclor-1268	U	1.13	1.13	3.40	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	AXV1	10/03/14	2015	1424501

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3541/8082A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
4cmx	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	5.65 ug/kg	6.79	83.2	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	5.26 ug/kg	6.79	77.4	(25%-131%)

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: October 7, 2014

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

Client SDG: XP0141

Client Sample ID: J1V0L8	Project: WCHN00313
Sample ID: 358013006	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 01-OCT-14 08:38	
Receive Date: 03-OCT-14	
Collector: Client	
Moisture: 1.78%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-PCB											
SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"											
Aroclor-1016	U	1.13	1.13	3.39	ug/kg	1	JXM	10/06/14	1734	1424502	1
Aroclor-1221	U	1.13	1.13	3.39	ug/kg	1					
Aroclor-1232	U	1.13	1.13	3.39	ug/kg	1					
Aroclor-1242	U	1.13	1.13	3.39	ug/kg	1					
Aroclor-1248	U	1.13	1.13	3.39	ug/kg	1					
Aroclor-1254	U	1.13	1.13	3.39	ug/kg	1					
Aroclor-1260	U	1.13	1.13	3.39	ug/kg	1					
Aroclor-1262	U	1.13	1.13	3.39	ug/kg	1					
Aroclor-1268	U	1.13	1.13	3.39	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	AXV1	10/03/14	2015	1424501

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3541/8082A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
4cmx	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	5.69 ug/kg	6.78	84.0	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	5.89 ug/kg	6.78	86.9	(25%-131%)

Notes:

Quality Control Summary

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QC Summary

Report Date: October 7, 2014

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

Workorder: 358013

Client SDG: XP0141

Project Description: RC-233 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-PCB											
Batch	1424502										
QC1203180604	LCS										
Aroclor-1016	33.3			19.3	ug/kg		57.9	(44%-97%)	JXM	10/06/14	15:02
Aroclor-1260	33.3			20.8	ug/kg		62.6	(49%-109%)			
**4cmx	6.66			4.76	ug/kg		71.5	(29%-106%)			
**Decachlorobiphenyl	6.66			5.98	ug/kg		89.9	(25%-131%)			
QC1203180603	MB										
Aroclor-1016			U	1.11	ug/kg					10/06/14	14:49
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	6.66			4.76	ug/kg		71.5	(29%-106%)			
**Decachlorobiphenyl	6.66			5.86	ug/kg		88	(25%-131%)			
QC1203180605	358013002	MS									
Aroclor-1016	34.5	U	1.14	19.0	ug/kg		55.1	(22%-127%)		10/06/14	15:57
Aroclor-1260	34.5	J	1.28	18.4	ug/kg		49.6	(18%-130%)			
**4cmx	6.90		4.86	4.97	ug/kg		72.1	(29%-106%)			
**Decachlorobiphenyl	6.90		3.57	3.85	ug/kg		55.9	(25%-131%)			

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QC Summary

Workorder: 358013

Client SDG: XP0141

Project Description: RC-233 Soil

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-PCB											
Batch	1424502										
QC1203180606 358013002 MSD											
Aroclor-1016	34.5	U	1.14	20.5	ug/kg	7.59	59.4	(0%-30%)	JXM	10/06/14	16:12
Aroclor-1260	34.5	J	1.28	20.0	ug/kg	8.42	54.2	(0%-30%)			
**4cmx	6.90		4.86	5.30	ug/kg		76.7	(29%-106%)			
**Decachlorobiphenyl	6.90		3.57	4.08	ug/kg		59.1	(25%-131%)			

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)

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: 1424501 Verified by: _____
 Analyst: Alberto Velasco
 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)
1203180603 MB	03-OCT-2014 20:15:00	30.03	H2SO4/KM 2 nO4	9	1	0.0333
1203180604 LCS	03-OCT-2014 20:15:00	30.05	H2SO4/KM 2 nO4	9	1	0.03328
356950001 - 3	03-OCT-2014 20:15:00	30.04	H2SO4/KM 2 nO4	9	1	0.03329
356957031 - 2	03-OCT-2014 20:15:00	30.06	H2SO4/KM 2 nO4	9	1	0.03327
358013001	03-OCT-2014 20:15:00	30.15	H2SO4/KM 2 nO4	9	1	0.03317
358013002	03-OCT-2014 20:15:00	30.17	H2SO4/KM 2 nO4	9	1	0.03315
1203180605 MS (358013002)	03-OCT-2014 20:15:00	30.06	H2SO4/KM 2 nO4	9	1	0.03327
1203180606 MSD (358013002)	03-OCT-2014 20:15:00	30.03	H2SO4/KM 2 nO4	9	1	0.0333
358013003	03-OCT-2014 20:15:00	30.18	H2SO4/KM 2 nO4	9	1	0.03313
358013004	03-OCT-2014 20:15:00	30.17	H2SO4/KM 2 nO4	9	1	0.03315
358013005	03-OCT-2014 20:15:00	30.06	H2SO4/KM 2 nO4	9	1	0.03327
358013006	03-OCT-2014 20:15:00	30.05	H2SO4/KM 2 nO4	9	1	0.03328

Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1203180604	PCB Laboratory Control	WE141001-06	1	mL	Final Solvent: Hexane Clean up Initials: AV Verified By: SLW Clean up SOP: GL-OA-E-037 Clean up Date: 10-3-14
MS	1203180605	PCB Laboratory Control	WE141001-06	1	mL	
MSD	1203180606	PCB Laboratory Control	WE141001-06	1	mL	
SURR	All	PEST LOW LEVEL SURROGATE 200 UG/L	WE140922-01	1	mL	
REGNT	All	5% Potassium Permanganate	2159385	5	mL	
REGNT	All	1:1 sulfuric acid	2159476	5	mL	
REGNT	All	Hexane	2160260-B10	120	mL	
SOURC	All	SODIUM SULFATE	2148821	30	g	