

**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 2/3/15  
INITIAL/DATE

**COMMENTS:**

**SDG XP0196**

**SAF-RC-233**

Rad only

Chem only

Rad & Chem

Complete

Partial

**Sample Location: 100-B-35:1, 151-B Electrical Switchyard,**



January 27, 2015

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

Re: RC-233 Soil  
Work Order: 365512  
SDG: XP0196

Dear Joan Kessner:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on January 21, 2015. 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. 4505.

Sincerely,

Heather Shaffer  
Project Manager

Purchase Order: 1510  
Chain of Custody: RC-233-077  
Enclosures



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# Case Narrative

**Receipt Narrative  
for  
Eberline  
SDG: XP0196  
Work Order: 365512**

**January 27, 2015**

**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 January 21, 2015 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

**Sample Identification:** The laboratory received the following samples:

<b><u>Laboratory ID</u></b>	<b><u>Client ID</u></b>
365512001	J1V229
365512002	J1V230
365512003	J1V231
365512004	J1V232
365512005	J1V233
365512006	J1V234

**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.

*Heather Shaffer*

Heather Shaffer  
Project Manager

# **Chain of Custody and Supporting Documentation**



Washington Closure Hanford

Collector STOWE, QG

Project Designation 100-IU-2 & 100-IU-6 Remaining Waste Sites

Ice Chest No. RCC-07-008

Shipped To GEL Laboratories Charleston

Other Labs Shipped To NA

Company Contact Joan Kessner

Telephone No. 375-4688

Project Coordinator KESSNER, JH

Price Code 8B

SAF No. RC-233

Method of Shipment Commercial Carrier Fed Ex

Bill of Lading/Air Bill No. See OSPC

COA 010B352600

Offsite Property No. A13306

Field Logbook No. EL-1667-02

Sampling Location 100-B-35.1, 151-B Electrical switchyard

Telephone No. 375-4688

RC-233-077

Data Turnaround 7 days

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis	Special Instructions	
									Sign/Print Names	Date/Time
J1V234	SOIL	01/19/15	1115	Cool 4C	aG	1	125mL	TPH-Diesel Range - W/PHD +		
J1V235	SOIL			Cool 4C	aG	1	125mL	PCBs - 8082		
J1V236	SOIL									
J1V237	SOIL									
J1V238	SOIL									

POSSIBLE SAMPLE HAZARDS/REMARKS  
None

Special Handling and/or Storage  
cooling

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-19-15	C. Bingham	1-19-15
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
C. Bingham	1-19-15	C. Bingham	1-19-15
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C. Bingham	1-20-15	Fed Ex	1-20-15
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Fed Ex	1-20-15	M. Williams	1-21-15
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	1-20-15		0845

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FINAL SAMPLE DISPOSITION

Disposal Method

Disposed By

Date/Time

305512

REVIEWED BY K. Woodmansey

DATE 1-20-15

XP0196

WCH-EE-011

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SAMPLE RECEIPT & REVIEW FORM

Client: <u>WCHN</u>		SDG/AR/COC/Work Order: <u>305012</u>	
Received By: <u>ML</u>		Date Received: <u>1-21-15</u>	
Suspected Hazard Information		Yes	No
		<input checked="" type="checkbox"/>	<input type="checkbox"/>
COC/Samples marked as radioactive?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Classified Radioactive II or III by RSO?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
COC/Samples marked containing PCBs?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Package, COC, and/or Samples marked as beryllium or asbestos containing?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples identified as Foreign Soil?		<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Ice bags Blue ice Dry ice None Other (describe) <u>2.2°C</u> *all temperatures are recorded in Celsius
2a	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>130532776</u> Secondary Temperature Device Serial # (If Applicable):
3	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7	Are Encore containers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8	Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
11	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: <u>2 per ID</u>
12	Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
14	Carrier and tracking number.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other <u>7726 3855 0533</u>

Comments (Use Continuation Form if needed):

# **Laboratory Certifications**

**List of current GEL Certifications as of 27 January 2015**

<b>State</b>	<b>Certification</b>
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California	2940 Interim
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 SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA150001
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	SC000122014-16
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12

# **FID Diesel Range Organics Analysis**

# Case Narrative

**FID Diesel Range Organics  
Eberline (WCHN)  
SDG XP0196**

**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: 1452246  
Prep Batch Number: 1452245

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
365512001	J1V229
365512002	J1V230
365512003	J1V231
365512004	J1V232
365512005	J1V233
365512006	J1V234
1203249816	MB for batch 1452245
1203249817	Laboratory Control Sample (LCS)
1203249818	365512001(J1V229) Matrix Spike (MS)
1203249819	365512001(J1V229) 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**

Samples 365512003 (J1V231) and 365512005 (J1V233) did not meet surrogate recovery acceptance criteria due to dilution.

#### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recoveries met the acceptance limits.

#### **QC Sample Designation**

Sample 365512001 (J1V229) was selected for the matrix spike and matrix spike duplicate analysis.

#### **Matrix Spike (MS) Recovery Statement**

The MS recovery was within the established acceptance limits.

#### **Matrix Spike Duplicate (MSD) Recovery Statement**

The MSD recovery was 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. Analyte peaks eluted within the established retention time windows for this method.

#### **Sample Dilutions**

Samples 365512003 (J1V231) and 365512005 (J1V233) were diluted due to the presence of over-range target analytes.

#### **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 #1376012 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:

<b>Instrument ID</b>	<b>Instrument</b>	<b>System Configuration</b>	<b>Column ID</b>	<b>Column Description</b>
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**

<b>Mo.Day Yr.</b> 26-JAN-15	<b>Division:</b> Federal	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> GC/FID	<b>Test / Method:</b> NWTPH-Dx in Soil	<b>Matrix Type:</b> Solid	<b>Client Code:</b> WCHN
<b>Batch ID:</b> 1452246	<b>Sample Numbers:</b> See Below		

**Potentially affected work order(s)(SDG): 365512(XP0196)**

**Application Issues:**  
Failed Yield for Surrogates

<b>Specification and Requirements Exception Description:</b>	<b>DER Disposition:</b>
Samples 365512003 and 365512005 did not meet surrogate recovery acceptance limits.	Samples were diluted due to over-range target analyte. As a result, the surrogates were diluted out of the acceptance limits. Data were reported.

**Originator's Name:**  
Benjamin Taft 26-JAN-15

**Data Validator/Group Leader:**  
Cameron Bearden 27-JAN-15

# GEL LABORATORIES LLC

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

## Qualifier Definition Report for

WCHN001 Eberline

Client SDG: XP0196 GEL Work Order: 365512 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

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.

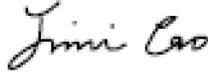
RE Indicates that sample is re-extracted.

### 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: 27 JAN 2015

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: January 27, 2015

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

Client SDG: XP0196

Client Sample ID: J1V229	Project: WCHN00313
Sample ID: 365512001	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 19–JAN–15 11:00	
Receive Date: 21–JAN–15	
Collector: Client	
Moisture: 6.42%	

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)	U	2320	2320	7120	ug/kg	1	BYT1	01/26/15	0250	1452246	1
Motor Oil (C20–C36)	J	2540	2320	7120	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	VXS1	01/23/15	1153	1452245

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"	499 ug/kg	712	70.0	(50%–150%)

**Notes:**

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Report Date: January 27, 2015

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

Client SDG: XP0196

Client Sample ID: J1V230	Project: WCHN00313
Sample ID: 365512002	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 19–JAN–15 11:03	
Receive Date: 21–JAN–15	
Collector: Client	
Moisture: 6.78%	

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)	U	2320	2320	7150	ug/kg	1	BYT1	01/26/15	0446	1452246	1
Motor Oil (C20–C36)	J	2650	2320	7150	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	VXS1	01/23/15	1153	1452245

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"	510 ug/kg	715	71.4	(50%–150%)

**Notes:**

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Report Date: January 27, 2015

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

Client SDG: XP0196

Client Sample ID: J1V231	Project: WCHN00313
Sample ID: 365512003	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 19–JAN–15 11:06	
Receive Date: 21–JAN–15	
Collector: Client	
Moisture: 9.22%	

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)	D	1020000	59700	184000	ug/kg	25	BYT1	01/26/15	1014	1452246	1
Motor Oil (C20–C36)	D	508000	59700	184000	ug/kg	25					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	VXS1	01/23/15	1153	1452245

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"	0.00 ug/kg	734	0.00*	(50%–150%)

**Notes:**

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Report Date: January 27, 2015

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

Client SDG: XP0196

Client Sample ID: J1V232	Project: WCHN00313
Sample ID: 365512004	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 19–JAN–15 11:09	
Receive Date: 21–JAN–15	
Collector: Client	
Moisture: 8.24%	

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)	U	2360	2360	7260	ug/kg	1	BYT1	01/26/15	0604	1452246	1
Motor Oil (C20–C36)	J	3030	2360	7260	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	VXS1	01/23/15	1153	1452245

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"	563 ug/kg	726	77.7	(50%–150%)

**Notes:**



# GEL LABORATORIES LLC

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

## Certificate of Analysis

Report Date: January 27, 2015

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

Client SDG: XP0196

Client Sample ID: J1V234	Project: WCHN00313
Sample ID: 365512006	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 19–JAN–15 11:15	
Receive Date: 21–JAN–15	
Collector: Client	
Moisture: 8.55%	

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)	U	2370	2370	7290	ug/kg	1	BYT1	01/26/15	0722	1452246	1
Motor Oil (C20–C36)	J	3570	2370	7290	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	VXS1	01/23/15	1153	1452245

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"	596 ug/kg	729	81.9	(50%–150%)

**Notes:**

# **Quality Control Summary**

# GEL LABORATORIES LLC

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

## QC Summary

Report Date: January 27, 2015

Page 1 of 1

**WC–Hanford, Inc.**  
**2620 Fermi Avenue**  
**MSIN H4–21**  
**Richland, Washington**

**Contact:** Joan Kessner

**Workorder:** 365512

**Client SDG:** XP0196

**Project Description:** RC–233 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Diesel Range Organics</b>											
Batch	1452246										
QC1203249817	LCS										
Diesel Range Organics (C10–C20)	66700			49200	ug/kg		73.8	(70%–130%)	BYT1	01/26/15	11
Motor Oil (C20–C36)	66700			64400	ug/kg		96.7	(70%–130%)			
**o–Terphenyl	667			587	ug/kg		88.1	(50%–150%)			
QC1203249816	MB										
Diesel Range Organics (C10–C20)			U	2170	ug/kg					01/26/15	01
Motor Oil (C20–C36)			U	2170	ug/kg						
**o–Terphenyl	666			499	ug/kg		74.9	(50%–150%)			
QC1203249818	365512001 MS										
Diesel Range Organics (C10–C20)	71200	U	2320	55100	ug/kg		77.4	(70%–130%)		01/26/15	03
Motor Oil (C20–C36)	71200	J	2540	63100	ug/kg		85.1	(70%–130%)			
**o–Terphenyl	712		499	577	ug/kg		81	(50%–150%)			
QC1203249819	365512001 MSD										
Diesel Range Organics (C10–C20)	71100	U	2320	59000	ug/kg	6.82	82.9	(0%–20%)		01/26/15	04
Motor Oil (C20–C36)	71100	J	2540	67100	ug/kg	6.07	90.8	(0%–20%)			
**o–Terphenyl	711		499	584	ug/kg		82.1	(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

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## QC Summary

Workorder: 365512

Client SDG: XP0196

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:** 1452245      **Verified by:** \_\_\_\_\_  
**Analyst:** Vince Sandifer  
**Method:** SW846 3541

**Lab SOP:** GL-OA-E-010 REV# 24  
**Instrument:** Semi-Volatiles Manual

Sample ID	Run Date	Aliquot (g)	Prepped Aliquot (mL)	Prepped Factor (mL/g)
1203249816 MB	23-JAN-2015 11:53:00	30.02	1	0.03331
1203249817 LCS	23-JAN-2015 11:53:00	30	1	0.03333
365512001	23-JAN-2015 11:53:00	30	1	0.03333
1203249818 MS (365512001)	23-JAN-2015 11:53:00	30	1	0.03333
1203249819 MSD (365512001)	23-JAN-2015 11:53:00	30.04	1	0.03329
365512002	23-JAN-2015 11:53:00	30.02	1	0.03331
365512003	23-JAN-2015 11:53:00	30	1	0.03333
365512004	23-JAN-2015 11:53:00	30.04	1	0.03329
365512005	23-JAN-2015 11:53:00	30	1	0.03333
365512006	23-JAN-2015 11:53:00	30.01	1	0.03332

Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1203249817	AZDRO SPIKE LCS STD,4000ug/ml	WF1150117-62	1	mL	Final Solvent CH2Cl2
MS	1203249818	AZDRO SPIKE LCS STD,4000ug/ml	WF1150117-62	1	mL	Verified by SW
MSD	1203249819	AZDRO SPIKE LCS STD,4000ug/ml	WF1150117-62	1	mL	
SURR	All	20 ppm surrogate	WE141120-04	1	mL	All samples contained rocks.
REGNT	All	Methylene Chloride	2197913-D	120	mL	
SOURC	All	SODIUM SULFATE	2193342	30	g	

# PCB Analysis

# Case Narrative

**PCB Case Narrative  
Eberline (WCHN)  
SDG XP0196**

**Method/Analysis Information**

**Procedure:** Analysis of Polychlorinated Biphenyls by ECD  
Analytical Method: SW846 3541/8082A  
Prep Method: SW846 3541  
Analytical Batch Number: 1452378  
Prep Batch Number: 1452377

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
365512001	J1V229
365512002	J1V230
365512003	J1V231
365512004	J1V232
365512005	J1V233
365512006	J1V234
1203250107	MB for batch 1452377
1203250108	Laboratory Control Sample (LCS)
1203250109	365512001(J1V229) Matrix Spike (MS)
1203250110	365512001(J1V229) 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**

Sample 365512001 (J1V229) was selected for the matrix spike and matrix spike duplicate analysis.

#### **Matrix Spike (MS) Recovery Statement**

The MS recoveries were within the established acceptance limits.

#### **Matrix Spike Duplicate (MSD) Recovery Statement**

The MSD recoveries 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 in this batch 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 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:

<b>Instrument ID</b>	<b>Instrument</b>	<b>System Configuration</b>	<b>Column ID</b>	<b>Column Description</b>
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.

# GEL LABORATORIES LLC

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

## Qualifier Definition Report for

WCHN001 Eberline

Client SDG: XP0196 GEL Work Order: 365512 Project: RC-233 Soil

### The Qualifiers in this report are defined as follows:

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: 28 JAN 2015

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: January 27, 2015

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

Client SDG: XP0196

Client Sample ID: J1V229	Project: WCHN00313
Sample ID: 365512001	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 19-JAN-15 11:00	
Receive Date: 21-JAN-15	
Collector: Client	
Moisture: 6.42%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Semi-Volatiles-PCB</b>											
<b>SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"</b>											
Aroclor-1016	U	1.18	1.18	3.55	ug/kg	1	JXM	01/27/15	0734	1452378	1
Aroclor-1221	U	1.18	1.18	3.55	ug/kg	1					
Aroclor-1232	U	1.18	1.18	3.55	ug/kg	1					
Aroclor-1242	U	1.18	1.18	3.55	ug/kg	1					
Aroclor-1248	U	1.18	1.18	3.55	ug/kg	1					
Aroclor-1254	U	1.18	1.18	3.55	ug/kg	1					
Aroclor-1260	U	1.18	1.18	3.55	ug/kg	1					
Aroclor-1262	U	1.18	1.18	3.55	ug/kg	1					
Aroclor-1268	U	1.18	1.18	3.55	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	01/26/15	1026	1452377

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"	6.53 ug/kg	7.11	92.0	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	7.01 ug/kg	7.11	98.7	(25%-131%)

**Notes:**

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Report Date: January 27, 2015

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

Client SDG: XP0196

Client Sample ID: J1V230	Project: WCHN00313
Sample ID: 365512002	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 19-JAN-15 11:03	
Receive Date: 21-JAN-15	
Collector: Client	
Moisture: 6.78%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Semi-Volatiles-PCB</b>											
<b>SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"</b>											
Aroclor-1016	U	1.18	1.18	3.55	ug/kg	1	JXM	01/27/15	0810	1452378	1
Aroclor-1221	U	1.18	1.18	3.55	ug/kg	1					
Aroclor-1232	U	1.18	1.18	3.55	ug/kg	1					
Aroclor-1242	U	1.18	1.18	3.55	ug/kg	1					
Aroclor-1248	U	1.18	1.18	3.55	ug/kg	1					
Aroclor-1254	U	1.18	1.18	3.55	ug/kg	1					
Aroclor-1260	U	1.18	1.18	3.55	ug/kg	1					
Aroclor-1262	U	1.18	1.18	3.55	ug/kg	1					
Aroclor-1268	U	1.18	1.18	3.55	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	01/26/15	1026	1452377

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"	5.99 ug/kg	7.11	84.2	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	7.23 ug/kg	7.11	102	(25%-131%)

**Notes:**



# GEL LABORATORIES LLC

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

## Certificate of Analysis

Report Date: January 27, 2015

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

Client SDG: XP0196

Client Sample ID: J1V232	Project: WCHN00313
Sample ID: 365512004	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 19-JAN-15 11:09	
Receive Date: 21-JAN-15	
Collector: Client	
Moisture: 8.24%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Semi-Volatiles-PCB</b>											
<b>SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"</b>											
Aroclor-1016	U	1.20	1.20	3.62	ug/kg	1	JXM	01/27/15	0835	1452378	1
Aroclor-1221	U	1.20	1.20	3.62	ug/kg	1					
Aroclor-1232	U	1.20	1.20	3.62	ug/kg	1					
Aroclor-1242	U	1.20	1.20	3.62	ug/kg	1					
Aroclor-1248	U	1.20	1.20	3.62	ug/kg	1					
Aroclor-1254	U	1.20	1.20	3.62	ug/kg	1					
Aroclor-1260	U	1.20	1.20	3.62	ug/kg	1					
Aroclor-1262	U	1.20	1.20	3.62	ug/kg	1					
Aroclor-1268	U	1.20	1.20	3.62	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	01/26/15	1026	1452377

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"	6.48 ug/kg	7.23	89.7	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	6.22 ug/kg	7.23	86.0	(25%-131%)

**Notes:**

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## Certificate of Analysis

Report Date: January 27, 2015

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

Client SDG: XP0196

Client Sample ID: J1V233	Project: WCHN00313
Sample ID: 365512005	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 19-JAN-15 11:12	
Receive Date: 21-JAN-15	
Collector: Client	
Moisture: 8.72%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Semi-Volatiles-PCB</b>											
<b>SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"</b>											
Aroclor-1016	U	1.22	1.22	3.65	ug/kg	1	JXM	01/27/15	0847	1452378	1
Aroclor-1221	U	1.22	1.22	3.65	ug/kg	1					
Aroclor-1232	U	1.22	1.22	3.65	ug/kg	1					
Aroclor-1242	U	1.22	1.22	3.65	ug/kg	1					
Aroclor-1248	U	1.22	1.22	3.65	ug/kg	1					
Aroclor-1254	U	1.22	1.22	3.65	ug/kg	1					
Aroclor-1262	U	1.22	1.22	3.65	ug/kg	1					
Aroclor-1268	U	1.22	1.22	3.65	ug/kg	1					
Aroclor-1260		15.4	1.22	3.65	ug/kg	1	JXM	01/27/15	0847	1452378	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	SJW1	01/26/15	1026	1452377

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"	4.61 ug/kg	7.30	63.2	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	5.37 ug/kg	7.30	73.6	(25%-131%)

**Notes:**

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## Certificate of Analysis

Report Date: January 27, 2015

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

Client SDG: XP0196

Client Sample ID: J1V234	Project: WCHN00313
Sample ID: 365512006	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 19-JAN-15 11:15	
Receive Date: 21-JAN-15	
Collector: Client	
Moisture: 8.55%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Semi-Volatiles-PCB</b>											
<b>SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"</b>											
Aroclor-1016	U	1.20	1.20	3.61	ug/kg	1	JXM	01/27/15	0901	1452378	1
Aroclor-1221	U	1.20	1.20	3.61	ug/kg	1					
Aroclor-1232	U	1.20	1.20	3.61	ug/kg	1					
Aroclor-1242	U	1.20	1.20	3.61	ug/kg	1					
Aroclor-1248	U	1.20	1.20	3.61	ug/kg	1					
Aroclor-1254	U	1.20	1.20	3.61	ug/kg	1					
Aroclor-1260	U	1.20	1.20	3.61	ug/kg	1					
Aroclor-1262	U	1.20	1.20	3.61	ug/kg	1					
Aroclor-1268	U	1.20	1.20	3.61	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	01/26/15	1026	1452377

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"	6.11 ug/kg	7.21	84.7	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	6.42 ug/kg	7.21	89.0	(25%-131%)

**Notes:**

# **Quality Control Summary**

# GEL LABORATORIES LLC

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

## QC Summary

Report Date: January 27, 2015

Page 1 of 2

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

**Workorder: 365512**

**Client SDG: XP0196**

**Project Description: RC-233 Soil**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatiles-PCB</b>											
Batch	1452378										
QC1203250108	LCS										
Aroclor-1016	33.3			22.2	ug/kg		66.5	(44%-97%)	JXM	01/27/15	07:21
Aroclor-1260	33.3			26.8	ug/kg		80.4	(49%-109%)			
**4cmx	6.66			5.47	ug/kg		82.1	(29%-106%)			
**Decachlorobiphenyl	6.66			5.95	ug/kg		89.3	(25%-131%)			
QC1203250107	MB										
Aroclor-1016			U	1.11	ug/kg					01/27/15	07:09
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			5.97	ug/kg		89.7	(29%-106%)			
**Decachlorobiphenyl	6.66			6.39	ug/kg		96	(25%-131%)			
QC1203250109	365512001	MS									
Aroclor-1016	35.4	U	1.18	20.2	ug/kg		57.1	(22%-127%)		01/27/15	07:46
Aroclor-1260	35.4	U	1.18	25.6	ug/kg		72.5	(18%-130%)			
**4cmx	7.07		6.53	5.88	ug/kg		83.2	(29%-106%)			
**Decachlorobiphenyl	7.07		7.01	6.45	ug/kg		91.3	(25%-131%)			

# GEL LABORATORIES LLC

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## QC Summary

Workorder: 365512

Client SDG: XP0196

Project Description: RC-233 Soil

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatiles-PCB</b>											
Batch	1452378										
QC1203250110	365512001	MSD									
Aroclor-1016	35.4	U	1.18	18.8	ug/kg	7.34	53	(0%-30%)	JXM	01/27/15	07:58
Aroclor-1260	35.4	U	1.18	24.4	ug/kg	4.92	68.9	(0%-30%)			
**4cmx	7.08		6.53	5.34	ug/kg		75.4	(29%-106%)			
**Decachlorobiphenyl	7.08		7.01	5.80	ug/kg		81.9	(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:** 1452377  
**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)
1203250107 MB	26-JAN-2015 10:26:00	30.05	H2SO4/KM 2 nO4	9	1	0.03328
1203250108 LCS	26-JAN-2015 10:26:00	30.01	H2SO4/KM 2 nO4	9	1	0.03332
365512001	26-JAN-2015 10:26:00	30.08	H2SO4/KM 2 nO4	9	1	0.03324
1203250109 MS (365512001)	26-JAN-2015 10:26:00	30.22	H2SO4/KM 2 nO4	9	1	0.03309
1203250110 MSD (365512001)	26-JAN-2015 10:26:00	30.18	H2SO4/KM 2 nO4	9	1	0.03313
365512002	26-JAN-2015 10:26:00	30.18	H2SO4/KM 2 nO4	9	1	0.03313
365512003	26-JAN-2015 10:26:00	30.07	H2SO4/KM 2 nO4	9	1	0.03326
365512004	26-JAN-2015 10:26:00	30.14	H2SO4/KM 2 nO4	9	1	0.03318
365512005	26-JAN-2015 10:26:00	30.01	H2SO4/KM 2 nO4	9	1	0.03332
365512006	26-JAN-2015 10:26:00	30.32	H2SO4/KM 2 nO4	9	1	0.03298

Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1203250108	PCB Laboratory Control	WE141210-06	1	mL	Final Solvent: Hexane Verified by: MD Clean-up Initials: SJW Clean-up SOP: GL-OAE-037 REV.1 Clean-up date: 01/26/2015
MS	1203250109	PCB Laboratory Control	WE141210-06	1	mL	
MSD	1203250110	PCB Laboratory Control	WE141210-06	1	mL	
SURR	All	PEST LOW LEVEL SURROGATE 200 UG/L	WE150114-01	1	mL	
REGNT	All	5% Potassium Permanganate	2176611	5	mL	Samples 365512001 (its MS/MSD), 365512001-365512006 all were moist mud mixtures with large and small rocks.
REGNT	All	Hexane	2182920-B10	120	mL	
REGNT	All	1:1 sulfuric acid	2197162	5	mL	
SOURC	All	SODIUM SULFATE	2193342	30	g	