

**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 12/2/14  
INITIAL/DATE

**COMMENTS:**

**SDG XP0163**

**SAF-RC-233**

Rad only

Chem only

Rad & Chem

Complete

Partial

**Sample Location: 600-20, tank cleaning site,  
N. SPA, pre-Ver**



November 19, 2014

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

Re: RC-233 Soil  
Work Order: 361074  
SDG: XP0163

Dear Joan Kessner:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on November 12, 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-233-075  
Enclosures



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# Case Narrative

**Receipt Narrative  
for  
WC-HANFORD, INC.  
SDG: XP0163  
Work Order: 361074**

**November 19, 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 November 12, 2014 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>
361074001	J1V1P0
361074002	J1V1P1

**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.



Orlette Johnson  
Project Manager

# **Chain of Custody and Supporting Documentation**

### CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

**Washington Closure Hanford**  
 Collector: STOWE, QG  
 Project Designation: 100-IU-2 & 100-IU-6 Remaining Waste Sites  
 Price Code: RC-233-075  
 Project Coordinator: KESSNER, JH  
 SAF No.: RC-233  
 Method of Shipment: Commercial Carrier - Fed Ex  
 Bill of Lading/Air Bill No.: See O5PC

Company Contact: Joan Kessner  
 Telephone No.: 375-4688  
 Sampling Location: 600-20, tank cleaning site, N. SPA, pre-Ver  
 Field Logbook No.: EL-1667-02  
 COA: 0600202000  
 Offsite Property No.: A131270

Shipped To: GEL Laboratories Charleston  
 Other Labs Shipped To: NA  
 Preservation: Cool 4C  
 Type of Container: aG  
 No. of Container(s): 1  
 Volume: 125mL  
 Sample Analysis: TPH-Diesel Range - WTPH-D +

Sample No.	Matrix	Sample Date	Sample Time
JIV1P0	SOIL	11/10/14	1340
JIV1P1	SOIL	11/10/14	1344
JIV1P2	SOIL	11-10-14 cm8	
JIV1P3	SOIL		
JIV1P4	SOIL		

POSSIBLE SAMPLE HAZARDS/REMARKS  
 Special Handling and/or Storage  
 1096

### SPECIAL INSTRUCTIONS

Received By/Removed From	Date/Time	Received By/Stored In	Date/Time	Sign/Print Names
Quincy Stone	11-10-14	MOShea DOWSHEA	11/10/14	
Dwshen DOWSHEA	11/10/14 1522	C. Bingham	11-10-14 1522	
C. Bingham	11-10-14 1525	1000 Battelle, Bridge #1A	11-10-14	
C. Bingham	11-11-14 0735	C. Bingham	11-11-14 0735	
C. Bingham	11-11-14 0740	fed EX		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	



XP0163

Disposed By

Disposal Method

FINAL SAMPLE DISPOSITION

WCH-EE-011

**SAMPLE RECEIPT & REVIEW FORM**

Client: <u>WETA</u>		SDG/AR/COC/Work Order: <u>361014</u>
Received By: <u>H. Taylor</u>		Date Received: <u>11/21/14</u>
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?	<input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0cpm</u>
Classified Radioactive II or III by RSO?	<input type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	<input type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input 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 type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	<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: <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"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>1305022466</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 type="checkbox"/>	<input type="checkbox"/>	<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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sample ID's and containers affected:
7 Are Encore containers present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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:
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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other <u>7718 1453 7387</u>

Comments (Use Continuation Form if needed):

# **Laboratory Certifications**

**List of current GEL Certifications as of 19 November 2014**

<b>State</b>	<b>Certification</b>
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	SC000122014-16
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 XP0163**

**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: 1436870  
Prep Batch Number: 1436869

**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>
361074001	J1V1P0
361074002	J1V1P1
1203211749	MB for batch 1436869
1203211750	Laboratory Control Sample (LCS)
1203211751	361074002(J1V1P1) Matrix Spike (MS)
1203211752	361074002(J1V1P1) 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 361074002 (J1V1P1) 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**

The samples in this SDG did not require dilutions.

### **Sample Re-extraction/Re-analysis**

Samples 361074001 (J1V1P0) and 361074002 (J1V1P1) were extracted and analyzed twice due to low LCS recovery in the first analysis. The second analysis was reported.

## **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. A DER was not required for 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 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.

**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: XP0163 GEL Work Order: 361074 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

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.

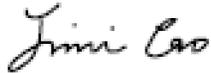
RA Indicates that sample is re-analyzed without re-extraction.

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: 21 NOV 2014**

**Title: Data Validator**

# **Sample Data Summary**





# **Quality Control Summary**

# GEL LABORATORIES LLC

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

## QC Summary

Report Date: November 21, 2014

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

**Contact:** Joan Kessner

**Workorder:** 361074

**Client SDG:** XP0163

**Project Description:** RC-233 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Diesel Range Organics</b>											
Batch	1436870										
QC1203211750	LCS										
Diesel Range Organics (C10–C20)	66600			51300	ug/kg		77.1	(70%–130%)	BYT1	11/18/14	04
Motor Oil (C20–C36)	66600			60200	ug/kg		90.4	(70%–130%)			
**o–Terphenyl	666			542	ug/kg		81.4	(50%–150%)			
QC1203211749	MB										
Diesel Range Organics (C10–C20)			U	2170	ug/kg					11/18/14	03
Motor Oil (C20–C36)			U	2170	ug/kg						
**o–Terphenyl	667			514	ug/kg		77.1	(50%–150%)			
QC1203211751	361074002 MS										
Diesel Range Organics (C10–C20)	67300	U	2200	56300	ug/kg		83.6	(70%–130%)		11/18/14	06
Motor Oil (C20–C36)	67300	J	4690	63800	ug/kg		87.8	(70%–130%)			
**o–Terphenyl	673		504	575	ug/kg		85.5	(50%–150%)			
QC1203211752	361074002 MSD										
Diesel Range Organics (C10–C20)	67500	U	2200	55300	ug/kg	1.80	81.9	(0%–20%)		11/18/14	07
Motor Oil (C20–C36)	67500	J	4690	62000	ug/kg	2.85	84.9	(0%–20%)			
**o–Terphenyl	675		504	555	ug/kg		82.3	(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

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

## QC Summary

Workorder: 361074

Client SDG: XP0163

Project Description: RC-233 Soil

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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:** 1436869      **Verified by:** \_\_\_\_\_  
**Analyst:** Sirena White  
**Method:** SW846 3541

**Lab SOP:** GL-OA-E-010 REV# 23  
**Instrument:** Semi-Volatiles Manual

Sample ID	Run Date	Aliquot (g)	Prepped Aliquot (mL)	Prepped Factor (mL/g)
1203211749 MB	17-NOV-2014 10:55:00	30	1	0.03333
1203211750 LCS	17-NOV-2014 10:55:00	30.05	1	0.03328
361074001 - 2	17-NOV-2014 10:55:00	30	1	0.03333
361074002 - 2	17-NOV-2014 10:55:00	30.02	1	0.03331
1203211751 - 2 MS (361074002)	17-NOV-2014 10:55:00	30.14	1	0.03318
1203211752 - 2 MSD (361074002)	17-NOV-2014 10:55:00	30.07	1	0.03326

Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1203211750	AZDRO SPIKE LCS STD,4000ug/ml	WF1141107-62	1	mL	Final Solvent: CH2Cl2 Verified by: MD
MS	1203211751	AZDRO SPIKE LCS STD,4000ug/ml	WF1141107-62	1	mL	
MSD	1203211752	AZDRO SPIKE LCS STD,4000ug/ml	WF1141107-62	1	mL	
SURR	All	20 ppm surrogate	WE141001-04	1	mL	
REGNT	All	Methylene Chloride	2174485-D	120	mL	
SOURC	All	SODIUM SULFATE	2168618	30	g	