

SAF-RC-074
100-D/DR Burial Grounds & Remaining
Sites – Soil In-Process
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt

H4-21

KW 10/21/14
INITIAL/DATE

COMMENTS:

SDG XP0142

SAF RC-074

Rad only

Chem only

Rad & Chem

Complete

Partial

**Waste Site: 100-D-75:1, 151-D, Primary Electrical
substation**



October 13, 2014

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

Re: RC-074 Soil
Work Order: 358491
SDG: XP0142

Dear Joan Kessner:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on October 08, 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-074-683
Enclosures



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Case Narrative

**Receipt Narrative
for
WC-HANFORD, INC.
SDG: XP0142
Work Order: 358491**

October 13, 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 08, 2014 for analysis.

Sample Identification: The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
358491001	J1V0X2
358491002	J1V0X3
358491003	J1V0X4
358491004	J1V0X5
358491005	J1V0X6
358491006	J1V0X7
358491007	J1V0X8
358491008	J1V0X9

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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Washington Closure Hanford	Company Contact Joan Kessner 375-4688	Telephone No. 375-4688	RC-074-683
Collector A. W. Ober	Project Coordinator KESSNER, JH	Price Code 3 days 8A	Data Turnaround
Project Designation 100-D/DR Field Remediation	Sampling Location 100-D-75:1, 151-D primary electrical substation	SAF No. RC-074	
Ice Chest No. ECL-02-007	Field Logbook No. EL-1662-02	Method of Shipment Commerical Carrier	Field EX
Shipped To GEL Laboratories Charlston	Offsite Property No. A131 257	Bill of Lading/Air Bill No. see O5PC	

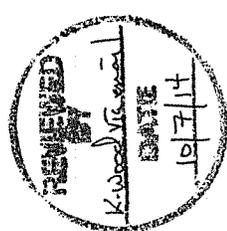
Sample No.	Matrix	Sample Date	Sample Time	Preservation	Cool 4C	Cool 4C
J1V0X2	SOIL	10/07/14	0910	ag	125mL	125mL
J1V0X3	SOIL	10/07/14	0913	1	125mL	125mL
J1V0X4	SOIL	10/07/14	0916	TPH-Diesel Range - WTPH-D +	125mL	125mL
J1V0X5	SOIL	10/07/14	0919	PCBs - 8082	125mL	125mL
J1V0X6	SOIL	10/07/14	0923		125mL	125mL

Special Handling and/or Storage	
None	None

POSSIBLE SAMPLE HAZARDS/REMARKS	
None	None

CHAIN OF POSSESSION	
Relinquished By/Removed From Walter Weber 10/07/2014	Received By/Stored In Dasha Dushka 10/7/14 0955
Relinquished By/Removed From Dasha Dushka 10/7/14 1134	Received By/Stored In SM Sexton 10/7/14 1134
Relinquished By/Removed From SM Sexton 10/7/14 1140	Received By/Stored In FED EX 10/7/14
Relinquished By/Removed From FED EX	Received By/Stored In P. Kent Patricia Dent 10/18/14
Relinquished By/Removed From	Received By/Stored In
Relinquished By/Removed From	Received By/Stored In
Relinquished By/Removed From	Received By/Stored In
Relinquished By/Removed From	Received By/Stored In

SPECIAL INSTRUCTIONS	
(358491)	XP0142



Client: <u>WCHN</u>		SDG/AR/COC/Work Order: _____
Received By: <u>P. Went</u>		Date Received: <u>10/8/14</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"/> <input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0/0cpm</u>
Classified Radioactive II or III by RSO?	<input type="checkbox"/> <input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	<input type="checkbox"/> <input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input type="checkbox"/> <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 type="checkbox"/> <input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____
Samples identified as Foreign Soil?	<input type="checkbox"/> <input checked="" type="checkbox"/>	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: <u>Ice bags</u> Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): <u>130462966</u>
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6 VOA vials free of headspace (defined as < 6mm bubble)?		<input checked="" type="checkbox"/>		Sample ID's and containers affected:
7 Are Encore containers present?			<input checked="" type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected:
12 Are sample containers identifiable as GEL provided?			<input checked="" type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
14 Carrier and tracking number.				Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other <u>7714 1300 1408 - 2c</u>

Comments (Use Continuation Form if needed):

Laboratory Certifications

List of current GEL Certifications as of 13 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 XP0142**

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: 1425706
Prep Batch Number: 1425704

Sample Analysis

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

Sample ID	Client ID
358491001	J1V0X2
358491002	J1V0X3
358491003	J1V0X4
358491004	J1V0X5
358491005	J1V0X6
358491006	J1V0X7
358491007	J1V0X8
358491008	J1V0X9
1203183629	MB for batch 1425704
1203183630	Laboratory Control Sample (LCS)
1203183631	358491001(J1V0X2) Matrix Spike (MS)
1203183632	358491001(J1V0X2) 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

The associated calibration verification standards (ICV or CCV) did not meet the acceptance criteria.

The CCV standard that was analyzed prior to this batch of the samples recovered slightly below the acceptance limits while all other CCV standards bracketing the samples in this SDG met recovery acceptance criteria. Samples 358491001 (J1V0X2), 358491002 (J1V0X3), 358491003 (J1V0X4), 358491004 (J1V0X5), 358491005 (J1V0X6) and 358491006 (J1V0X7) were affected and were re-analyzed along with the QC samples following an acceptable CCV standard; however, the ending bracketing CCV standard failed with positive bias. Although the CCV standards failed with negative or positive bias in both analyses, the results of the affected samples matched well between the two analyses. Therefore, the failing CCV was not likely to affect sample results. The first analysis was reported.

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 358491001 (J1V0X2) was selected for the matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS recovery was not within the established acceptance limits due to extraction efficiency issue.

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 358491001 (J1V0X2), 358491002 (J1V0X3), 358491003 (J1V0X4), 358491004 (J1V0X5), 358491005 (J1V0X6) and 358491006 (J1V0X7), along with QC samples, were analyzed twice due to CCV issue. The first

analysis was reported. The raw data for the second analysis were included in the Miscellaneous Data section for confirmation.

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 #1342962 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. 11-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: 1425706	Sample Numbers: See Below		

Potentially affected work order(s)(SDG): 358491(XP0142),358495(XP0143)

Application Issues:

Failed Recovery for MS/PS
Failed RPD for MS/MSD, or PS/PSD
Failed Yield for Surrogates

**Specification and Requirements
Exception Description:**

DER Disposition:

1. Sample 358495003 did not meet surrogate recovery acceptance limits.
2. The MS(1203183631) did not meet spike recovery acceptance limits for diesel range organics and motor oil.
3. The RPD between the MS and MSD did not meet the acceptance criteria.

1. Sample was diluted 1:10 due to over-range target analyte. As a result, the surrogate was diluted out of its acceptance limits. Data were reported.
2. The failure was possibly due to extraction efficiency issue. The LCS and MSD recovery well for the spiked analytes and the parent sample recovered well for the surrogate. The data were reported.
3. The failure was due to low spike recovery in the MS.

Originator's Name:

Benjamin Taft 11-OCT-14

Data Validator/Group Leader:

Jimin Cao 17-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: XP0142 GEL Work Order: 358491 Project: RC-074 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.

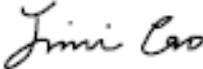
RA Indicates that sample is re-analyzed without re-extraction.

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: 17 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 13, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0142

Client Sample ID: J1V0X3 Project: WCHN00716
 Sample ID: 358491002 Client ID: WCHN001
 Matrix: Soil
 Collect Date: 07-OCT-14 09:13
 Receive Date: 08-OCT-14
 Collector: Client
 Moisture: 4.68%

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)	JT	3030	2230	6850	ug/kg	1	BYT1	10/09/14	2238	1425706	1
Motor Oil (C20-C36)	JT	6370	2230	6850	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	MXD2	10/09/14	1018	1425704

The following Analytical Methods were performed:

Method	Description	Analyst	Result	Nominal	Recovery%	Acceptable Limits
1	NWTPH-Dx in Soil					
Surrogate/Tracer Recovery	Test					
o-Terphenyl	SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected"		431 ug/kg	685	63.0	(50%-150%)

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: October 13, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0142

Client Sample ID: J1V0X4	Project: WCHN00716
Sample ID: 358491003	Client ID: WCHN001
Matrix: Soil	
Collect Date: 07-OCT-14 09:16	
Receive Date: 08-OCT-14	
Collector: Client	
Moisture: 1.44%	

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	6760	ug/kg	1	BYT1	10/09/14	2317	1425706	1
Motor Oil (C20-C36)	JT	5070	2200	6760	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	MXD2	10/09/14	1018	1425704

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"		443 ug/kg	676	65.5	(50%-150%)

Notes:

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: October 13, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0142

Client Sample ID: J1V0X5	Project: WCHN00716
Sample ID: 358491004	Client ID: WCHN001
Matrix: Soil	
Collect Date: 07-OCT-14 09:19	
Receive Date: 08-OCT-14	
Collector: Client	
Moisture: 2.23%	

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	6810	ug/kg	1	BYT1	10/09/14	2355	1425706	1
Motor Oil (C20-C36)	T	10000	2210	6810	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	MXD2	10/09/14	1018	1425704

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"	471 ug/kg	681	69.0	(50%-150%)

Notes:

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: October 13, 2014

Company : WC-Hanford, Inc.
Address : 2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354
Contact: Joan Kessner
Project: RC-074 Soil

Client SDG: XP0142

Client Sample ID: J1V0X6
Sample ID: 358491005
Matrix: Soil
Collect Date: 07-OCT-14 09:28
Receive Date: 08-OCT-14
Collector: Client
Moisture: 1.42%

Project: WCHN00716
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	6760	ug/kg	1	BYT1	10/10/14	0034	1425706	1
Motor Oil (C20-C36)	T	9640	2200	6760	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	MXD2	10/09/14	1018	1425704

The following Analytical Methods were performed:

Method	Description	Analyst	Result	Nominal	Recovery%	Acceptable Limits
1	NWTPH-Dx in Soil					
Surrogate/Tracer Recovery	Test					
o-Terphenyl	SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected"		473 ug/kg	676	69.9	(50%-150%)

Notes:

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: October 13, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354

Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0142

Client Sample ID: J1V0X7
 Sample ID: 358491006
 Matrix: Soil
 Collect Date: 07-OCT-14 09:31
 Receive Date: 08-OCT-14
 Collector: Client
 Moisture: 3.17%

Project: WCHN00716
 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	6870	ug/kg	1	BYT1	10/10/14	0113	1425706	1
Motor Oil (C20-C36)	JT	6640	2230	6870	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	MXD2	10/09/14	1018	1425704

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"	481 ug/kg	687	70.0	(50%-150%)

Notes:

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Certificate of Analysis

Report Date: October 13, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0142

Client Sample ID: J1V0X8	Project: WCHN00716
Sample ID: 358491007	Client ID: WCHN001
Matrix: Soil	
Collect Date: 07-OCT-14 09:33	
Receive Date: 08-OCT-14	
Collector: Client	
Moisture: 2.02%	

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	6760	ug/kg	1	BYT1	10/10/14	0309	1425706	1
Motor Oil (C20-C36)	JT	3310	2200	6760	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	MXD2	10/09/14	1018	1425704

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"	496 ug/kg	676	73.4	(50%-150%)

Notes:

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Certificate of Analysis

Report Date: October 13, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0142

Client Sample ID: J1V0X9	Project: WCHN00716
Sample ID: 358491008	Client ID: WCHN001
Matrix: Soil	
Collect Date: 07-OCT-14 09:36	
Receive Date: 08-OCT-14	
Collector: Client	
Moisture: 2.46%	

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	2190	2190	6740	ug/kg	1	BYT1	10/10/14	0347	1425706	1
Motor Oil (C20-C36)	JT	3720	2190	6740	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	MXD2	10/09/14	1018	1425704

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"	481 ug/kg	674	71.3	(50%-150%)

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: October 13, 2014

Page 1 of 2

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

Workorder: 358491

Client SDG: XP0142

Project Description: RC-074 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Diesel Range Organics											
Batch	1425706										
QC1203183630	LCS										
Diesel Range Organics (C10-C20)	66600			48300	ug/kg		72.4	(70%-130%)	BYT1	10/09/14	20:02
Motor Oil (C20-C36)	66600			55000	ug/kg		82.6	(70%-130%)			
**o-Terphenyl	666			500	ug/kg		75	(50%-150%)			
QC1203183629	MB										
Diesel Range Organics (C10-C20)			U	2160	ug/kg					10/09/14	19:23
Motor Oil (C20-C36)			U	2160	ug/kg						
**o-Terphenyl	666			347	ug/kg		52.1	(50%-150%)			
QC1203183631	358491001 MS										
Diesel Range Organics (C10-C20)	69000	TU	2240	T	37800	ug/kg	54.8*	(70%-130%)		10/09/14	21:20
Motor Oil (C20-C36)	69000	JT	2990	T	46500	ug/kg	63.1*	(70%-130%)			
**o-Terphenyl	690		503		412	ug/kg	59.7	(50%-150%)			
QC1203183632	358491001 MSD										
Diesel Range Organics (C10-C20)	69000	TU	2240		52300	ug/kg	32.3*	75.9	(0%-20%)	10/09/14	21:59
Motor Oil (C20-C36)	69000	JT	2990		63300	ug/kg	30.5*	87.4	(0%-20%)		
**o-Terphenyl	690		503		543	ug/kg	78.8	(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: 358491

Client SDG: XP0142

Project Description: RC-074 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: 1425704 Verified by: _____
 Analyst: Mia DeLee
 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)
1203183629 MB	09-OCT-2014 10:18:00	30.04	1	0.03329
1203183630 LCS	09-OCT-2014 10:18:00	30.02	1	0.03331
358491001	09-OCT-2014 10:18:00	30	1	0.03333
1203183631 MS (358491001)	09-OCT-2014 10:18:00	30	1	0.03333
1203183632 MSD (358491001)	09-OCT-2014 10:18:00	30.01	1	0.03332
358491002	09-OCT-2014 10:18:00	30.63	1	0.03265
358491003	09-OCT-2014 10:18:00	30.02	1	0.03331
358491004	09-OCT-2014 10:18:00	30.02	1	0.03331
358491005	09-OCT-2014 10:18:00	30.01	1	0.03332
358491006	09-OCT-2014 10:18:00	30.06	1	0.03327
358491007	09-OCT-2014 10:18:00	30.18	1	0.03313
358491008	09-OCT-2014 10:18:00	30.42	1	0.03287
358495001	09-OCT-2014 10:18:00	30.34	1	0.03296
1203183633 MS (358495001)	09-OCT-2014 10:18:00	30.33	1	0.03297
1203183634 MSD (358495001)	09-OCT-2014 10:18:00	30.14	1	0.03318
358495002	09-OCT-2014 10:18:00	30.03	1	0.0333
358495003	09-OCT-2014 10:18:00	30.18	1	0.03313
358495004	09-OCT-2014 10:18:00	30	1	0.03333
358495005	09-OCT-2014 10:18:00	30.29	1	0.03301
358495006	09-OCT-2014 10:18:00	30.06	1	0.03327
358495007	09-OCT-2014 10:18:00	30.19	1	0.03312
358495008	09-OCT-2014 10:18:00	30.16	1	0.03316
358495009	09-OCT-2014 10:18:00	30.24	1	0.03307
358495010	09-OCT-2014 10:18:00	30.09	1	0.03323

Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1203183630	AZDRO SPIKE LCS STD,4000ug/ml	WFI140918-62	1	mL	Final Solvent: CH2Cl2
MS	1203183631	AZDRO SPIKE LCS STD,4000ug/ml	WFI140918-62	1	mL	Verified by: SJW
MS	1203183633	AZDRO SPIKE LCS STD,4000ug/ml	WFI140918-62	1	mL	All samples consisted of a mixture of soil and rocks (large and small).
MSD	1203183632	AZDRO SPIKE LCS STD,4000ug/ml	WFI140918-62	1	mL	
MSD	1203183634	AZDRO SPIKE LCS STD,4000ug/ml	WFI140918-62	1	mL	

Prep Logbook

Batch ID: 1425704
Analyst: Mia DeLee
Method: SW846 3541

Verified by: _____

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)	
SURR All	20 ppm surrogate		WE140819-04	1	mL
REGNT All	Methylene Chloride		2165776-D	120	mL
SOURC All	SODIUM SULFATE		2148821	30	g

PCB Analysis

Case Narrative

**PCB Case Narrative
WC-HANFORD, INC. (WCHN)
SDG XP0142**

Method/Analysis Information

Procedure: Analysis of Polychlorinated Biphenyls by ECD
Analytical Method: SW846 3541/8082A
Prep Method: SW846 3541
Analytical Batch Number: 1425709
Prep Batch Number: 1425708

Sample Analysis

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

Sample ID	Client ID
358491001	J1V0X2
358491002	J1V0X3
358491003	J1V0X4
358491004	J1V0X5
358491005	J1V0X6
358491006	J1V0X7
358491007	J1V0X8
358491008	J1V0X9
1203183635	MB for batch 1425708
1203183636	Laboratory Control Sample (LCS)
1203183637	358491002(J1V0X3) Matrix Spike (MS)
1203183638	358491002(J1V0X3) 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 recovery acceptance criteria in Aroclor-1260 standards analyzed for the samples in this batch; 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 358491002 (J1V0X3) 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.

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:

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

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

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Qualifier Definition Report for

WCHN001 WC-HANFORD, INC.

Client SDG: XP0142 GEL Work Order: 358491 Project: RC-074 Soil

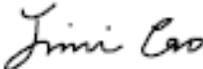
The Qualifiers in this report are defined as follows:

- 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: 17 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 10, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0142

Client Sample ID: J1V0X2	Project: WCHN00716
Sample ID: 358491001	Client ID: WCHN001
Matrix: Soil	
Collect Date: 07-OCT-14 09:10	
Receive Date: 08-OCT-14	
Collector: Client	
Moisture: 3.37%	

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	1.15	1.15	3.44	ug/kg	1	YS1	10/09/14	0839	1425709	1
Aroclor-1221	U	1.15	1.15	3.44	ug/kg	1					
Aroclor-1232	U	1.15	1.15	3.44	ug/kg	1					
Aroclor-1242	U	1.15	1.15	3.44	ug/kg	1					
Aroclor-1248	U	1.15	1.15	3.44	ug/kg	1					
Aroclor-1254	JP	2.47	1.15	3.44	ug/kg	1					
Aroclor-1260	J	2.81	1.15	3.44	ug/kg	1					
Aroclor-1262	U	1.15	1.15	3.44	ug/kg	1					
Aroclor-1268	U	1.15	1.15	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	10/08/14	1714	1425708

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 - 3 day TAT "Dry Weight Corrected"	6.13 ug/kg	6.89	88.9	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	7.03 ug/kg	6.89	102	(25%-131%)

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: October 10, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0142

Client Sample ID: J1V0X3	Project: WCHN00716
Sample ID: 358491002	Client ID: WCHN001
Matrix: Soil	
Collect Date: 07-OCT-14 09:13	
Receive Date: 08-OCT-14	
Collector: Client	
Moisture: 4.68%	

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	3.49	ug/kg	1	YS1	10/09/14	0852	1425709	1
Aroclor-1221	U	1.16	1.16	3.49	ug/kg	1					
Aroclor-1232	U	1.16	1.16	3.49	ug/kg	1					
Aroclor-1242	U	1.16	1.16	3.49	ug/kg	1					
Aroclor-1248	U	1.16	1.16	3.49	ug/kg	1					
Aroclor-1254	U	1.16	1.16	3.49	ug/kg	1					
Aroclor-1260	J	3.40	1.16	3.49	ug/kg	1					
Aroclor-1262	U	1.16	1.16	3.49	ug/kg	1					
Aroclor-1268	U	1.16	1.16	3.49	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	10/08/14	1714	1425708

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 - 3 day TAT "Dry Weight Corrected"	5.13 ug/kg	6.98	73.6	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	5.96 ug/kg	6.98	85.4	(25%-131%)

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: October 10, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0142

Client Sample ID: J1V0X4	Project: WCHN00716
Sample ID: 358491003	Client ID: WCHN001
Matrix: Soil	
Collect Date: 07-OCT-14 09:16	
Receive Date: 08-OCT-14	
Collector: Client	
Moisture: 1.44%	

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	1.12	1.12	3.37	ug/kg	1	YS1	10/09/14	0932	1425709	1
Aroclor-1221	U	1.12	1.12	3.37	ug/kg	1					
Aroclor-1232	U	1.12	1.12	3.37	ug/kg	1					
Aroclor-1242	U	1.12	1.12	3.37	ug/kg	1					
Aroclor-1248	U	1.12	1.12	3.37	ug/kg	1					
Aroclor-1254	U	1.12	1.12	3.37	ug/kg	1					
Aroclor-1260	J	2.25	1.12	3.37	ug/kg	1					
Aroclor-1262	U	1.12	1.12	3.37	ug/kg	1					
Aroclor-1268	U	1.12	1.12	3.37	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	10/08/14	1714	1425708

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 - 3 day TAT "Dry Weight Corrected"	5.21 ug/kg	6.75	77.3	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	6.04 ug/kg	6.75	89.5	(25%-131%)

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: October 10, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0142

Client Sample ID: J1V0X5	Project: WCHN00716
Sample ID: 358491004	Client ID: WCHN001
Matrix: Soil	
Collect Date: 07-OCT-14 09:19	
Receive Date: 08-OCT-14	
Collector: Client	
Moisture: 2.23%	

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	YS1	10/09/14	0946	1425709	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		4.15	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	10/08/14	1714	1425708

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 - 3 day TAT "Dry Weight Corrected"	6.04 ug/kg	6.79	88.9	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	6.49 ug/kg	6.79	95.5	(25%-131%)

Notes:

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: October 10, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0142

Client Sample ID: J1V0X6	Project: WCHN00716
Sample ID: 358491005	Client ID: WCHN001
Matrix: Soil	
Collect Date: 07-OCT-14 09:28	
Receive Date: 08-OCT-14	
Collector: Client	
Moisture: 1.42%	

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	3.38	ug/kg	1	YS1	10/09/14	0959	1425709	1
Aroclor-1221	U	1.13	1.13	3.38	ug/kg	1					
Aroclor-1232	U	1.13	1.13	3.38	ug/kg	1					
Aroclor-1242	U	1.13	1.13	3.38	ug/kg	1					
Aroclor-1248	U	1.13	1.13	3.38	ug/kg	1					
Aroclor-1254	U	1.13	1.13	3.38	ug/kg	1					
Aroclor-1262	U	1.13	1.13	3.38	ug/kg	1					
Aroclor-1268	U	1.13	1.13	3.38	ug/kg	1					
Aroclor-1260	J	2.40	1.13	3.38	ug/kg	1	YS1	10/09/14	0959	1425709	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	AXV1	10/08/14	1714	1425708

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 - 3 day TAT "Dry Weight Corrected"	5.80 ug/kg	6.76	85.9	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	6.41 ug/kg	6.76	94.9	(25%-131%)

Notes:

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Certificate of Analysis

Report Date: October 10, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0142

Client Sample ID: J1V0X7	Project: WCHN00716
Sample ID: 358491006	Client ID: WCHN001
Matrix: Soil	
Collect Date: 07-OCT-14 09:31	
Receive Date: 08-OCT-14	
Collector: Client	
Moisture: 3.17%	

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	1.15	1.15	3.44	ug/kg	1	YS1	10/09/14	1012	1425709	1
Aroclor-1221	U	1.15	1.15	3.44	ug/kg	1					
Aroclor-1232	U	1.15	1.15	3.44	ug/kg	1					
Aroclor-1242	U	1.15	1.15	3.44	ug/kg	1					
Aroclor-1248	U	1.15	1.15	3.44	ug/kg	1					
Aroclor-1254	U	1.15	1.15	3.44	ug/kg	1					
Aroclor-1260		15.2	1.15	3.44	ug/kg	1					
Aroclor-1262	U	1.15	1.15	3.44	ug/kg	1					
Aroclor-1268	U	1.15	1.15	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	10/08/14	1714	1425708

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 - 3 day TAT "Dry Weight Corrected"	6.20 ug/kg	6.88	90.0	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	6.26 ug/kg	6.88	90.9	(25%-131%)

Notes:

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Certificate of Analysis

Report Date: October 10, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0142

Client Sample ID: J1V0X8	Project: WCHN00716
Sample ID: 358491007	Client ID: WCHN001
Matrix: Soil	
Collect Date: 07-OCT-14 09:33	
Receive Date: 08-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	YS1	10/09/14	1049	1425709	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		34.1	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	10/08/14	1714	1425708

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"	6.44 ug/kg	6.80	94.8	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	7.09 ug/kg	6.80	104	(25%-131%)

Notes:

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: October 10, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0142

Client Sample ID: J1V0X9	Project: WCHN00716
Sample ID: 358491008	Client ID: WCHN001
Matrix: Soil	
Collect Date: 07-OCT-14 09:36	
Receive Date: 08-OCT-14	
Collector: Client	
Moisture: 2.46%	

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	YS1	10/09/14	1102	1425709	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	U	1.14	1.14	3.41	ug/kg	1					
Aroclor-1260		28.2	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	10/08/14	1714	1425708

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"	4.54 ug/kg	6.82	66.5	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	5.06 ug/kg	6.82	74.2	(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: October 10, 2014

Page 1 of 2

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

Workorder: 358491

Client SDG: XP0142

Project Description: RC-074 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-PCB											
Batch	1425709										
QC1203183636	LCS										
Aroclor-1016	33.3			23.9	ug/kg		71.9	(44%-97%)	YS1	10/09/14	08:27
Aroclor-1260	33.3			23.6	ug/kg		71	(49%-109%)			
**4cmx	6.66			5.31	ug/kg		79.7	(29%-106%)			
**Decachlorobiphenyl	6.66			6.18	ug/kg		92.7	(25%-131%)			
QC1203183635	MB										
Aroclor-1016			U	1.11	ug/kg					10/09/14	08:16
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	6.65			5.40	ug/kg		81.2	(29%-106%)			
**Decachlorobiphenyl	6.65			6.40	ug/kg		96.2	(25%-131%)			
QC1203183637	358491002	MS									
Aroclor-1016	35.0	U	1.16	21.5	ug/kg		61.6	(22%-127%)		10/09/14	09:06
Aroclor-1260	35.0	J	3.40	25.6	ug/kg		63.6	(18%-130%)			
**4cmx	6.99		5.13	4.84	ug/kg		69.2	(29%-106%)			
**Decachlorobiphenyl	6.99		5.96	5.60	ug/kg		80	(25%-131%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 358491

Client SDG: XP0142

Project Description: RC-074 Soil

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-PCB											
Batch	1425709										
QC1203183638 358491002 MSD											
Aroclor-1016	34.9	U	1.16	24.4	ug/kg	12.4	69.8	(0%-30%)	YS1	10/09/14	09:19
Aroclor-1260	34.9	J	3.40	27.5	ug/kg	7.21	69.1	(0%-30%)			
**4cmx	6.99		5.13	5.56	ug/kg		79.6	(29%-106%)			
**Decachlorobiphenyl	6.99		5.96	6.32	ug/kg		90.4	(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: 1425708 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)
1203183635 MB	08-OCT-2014 17:14:00	30.06	H2SO4/KM 2 nO4	9	1	0.03327
1203183636 LCS	08-OCT-2014 17:14:00	30.02	H2SO4/KM 2 nO4	9	1	0.03331
358491001	08-OCT-2014 17:14:00	30.04	H2SO4/KM 2 nO4	9	1	0.03329
358491002	08-OCT-2014 17:14:00	30.08	H2SO4/KM 2 nO4	9	1	0.03324
1203183637 MS (358491002)	08-OCT-2014 17:14:00	30.01	H2SO4/KM 2 nO4	9	1	0.03332
1203183638 MSD (358491002)	08-OCT-2014 17:14:00	30.03	H2SO4/KM 2 nO4	9	1	0.0333
358491003	08-OCT-2014 17:14:00	30.08	H2SO4/KM 2 nO4	9	1	0.03324
358491004	08-OCT-2014 17:14:00	30.12	H2SO4/KM 2 nO4	9	1	0.0332
358491005	08-OCT-2014 17:14:00	30.02	H2SO4/KM 2 nO4	9	1	0.03331
358491006	08-OCT-2014 17:14:00	30.01	H2SO4/KM 2 nO4	9	1	0.03332
358491007	08-OCT-2014 17:14:00	30.03	H2SO4/KM 2 nO4	9	1	0.0333
358491008	08-OCT-2014 17:14:00	30.06	H2SO4/KM 2 nO4	9	1	0.03327
358495001	08-OCT-2014 17:14:00	30.04	H2SO4/KM 2 nO4	9	1	0.03329
358495002	08-OCT-2014 17:14:00	30.05	H2SO4/KM 2 nO4	9	1	0.03328
1203183639 MS (358495002)	08-OCT-2014 17:14:00	30.01	H2SO4/KM 2 nO4	9	1	0.03332
1203183640 MSD (358495002)	08-OCT-2014 17:14:00	30.04	H2SO4/KM 2 nO4	9	1	0.03329
358495003	08-OCT-2014 17:14:00	30.01	H2SO4/KM 2 nO4	9	1	0.03332
358495004	08-OCT-2014 17:14:00	30.01	H2SO4/KM 2 nO4	9	1	0.03332
358495005	08-OCT-2014 17:14:00	30.09	H2SO4/KM 2 nO4	9	1	0.03323
358495006	08-OCT-2014 17:14:00	30.1	H2SO4/KM 2 nO4	9	1	0.03322
358495007	08-OCT-2014 17:14:00	30.04	H2SO4/KM 2 nO4	9	1	0.03329
358495008	08-OCT-2014 17:14:00	30.1	H2SO4/KM 2 nO4	9	1	0.03322
358495009	08-OCT-2014 17:14:00	30.08	H2SO4/KM 2 nO4	9	1	0.03324
358495010	08-OCT-2014 17:14:00	30.11	H2SO4/KM 2 nO4	9	1	0.03321

Prep Logbook

Batch ID: 1425708 **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 Amount 1 (mL)	Post Clean Up Amount 1 (mL)	Final Volume (mL)	Prepped Factor (mL/g)
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Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1203183636	PCB Laboratory Control	WE141001-06	1	mL	Final Solvent: Hexane Clean up Initials: AV Verified By: SJW Clean up SOP: GL-OA-E-037 Clean up Date: 10-8-14
MS	1203183637	PCB Laboratory Control	WE141001-06	1	mL	
MS	1203183639	PCB Laboratory Control	WE141001-06	1	mL	
MSD	1203183638	PCB Laboratory Control	WE141001-06	1	mL	
MSD	1203183640	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	