SAF-RC-246
600-367 Field Remediation – Soil Full Protocol
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 5/26/15
INITIAL/DATE

COMMENTS:

SDG X0107 SAF-RC-246

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location: 600-367 Burial pit near Little Egypt

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171 F 843.766.1178

www.gel.com

May 20, 2015

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

Re: RC-246 Soil
Work Order: 372321
SDG: X0107

Dear Joan Kessner:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on May 05, 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

Heather Shaffer
Project Manager

Purchase Order: 1510
Chain of Custody: RC-246-002
Enclosures

Table of Contents

Case Narrative.....1

Chain of Custody and Supporting Documentation.....3

Laboratory Certifications.....6

HPLC Polynuclear Aromatic Hydrocarbon Analysis.....8

Sample Data Summary.....15

QC Summary.....17

Miscellaneous Data.....22

FID Diesel Range Organics Analysis.....24

Case Narrative.....25

Sample Data Summary.....31

Quality Control Summary.....33

Miscellaneous.....36

PCB Analysis.....38

Case Narrative.....39

Sample Data Summary.....45

Quality Control Summary.....47

Miscellaneous.....50

Metals Analysis.....52

Case Narrative.....53

Sample Data Summary.....60

Quality Control Summary.....63

Miscellaneous.....72

Case Narrative

Receipt Narrative
for
Eberline
SDG: X0107
Work Order: 372321

May 20, 2015

Laboratory Identification:

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

Summary:

Sample receipt: The sample arrived at GEL Laboratories LLC, Charleston, South Carolina on May 05, 2015 for analysis. The sample was 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 sample:

Laboratory ID	Client ID
372321001	J1V733

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, GC Semivolatile PCB, HPLC Polynuclear Aromatic Hydrocarbon and Metals.

Heather Shaffer

Heather Shaffer
Project Manager

Chain of Custody and Supporting Documentation

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-246-002 | Page 1 of 1

Collector: WHITE, EC	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 day		
Project Designation: 600-367 Remediation	Sampling Location: 600-367 burial pit near Little Egypt		SAF No.: RC-246
Ice Chest No.: WCH-11-059	Field Logbook No.: EL-1664-01	COA: 01.01.0603672000	Method of Shipment: Commerical Carrier
Shipped To: GEL Laboratories Charleston	Offsite Property No.: A131388		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To: ~~N/A~~ Denver 4/30/15 CMB

POSSIBLE SAMPLE HAZARDS/REMARKS
non rad close out samples

Special Handling and/or Storage
non rad close out samples

Preservation	None	Cool 4C	Cool 4C	Cool 4C								
Type of Container	G/P	aG	aG	aG								
No. of Container(s)	1	1	1	1								
Volume	250mL	250mL	250mL	250mL								
Sample Analysis	See item (1) in Special Instructions	(2) TPH-Diesel Range - WTPH-D +	PCBs - 8082	PAHs - 8310								

Sample No.	Matrix	Sample Date	Sample Time										
J1V733	SOIL	4-30-15	0842	✓	✓	✓	✓						

CHAIN OF POSSESSION / Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
E.White/S ~~NO~~	4-30-15 0902	Doug Dowers Dowers	4-30-15/0902
Doug Dowers Dowers	4-30-15/1051	C. Bingham CMB	4-30-15 1051
C. Bingham CMB WCH	4-30-15 1615	1060 Battelle, Fridge #39	1615 4-30-15
~~C. Bingham CMB~~	~~4-30-15 1615~~		4/30/15 CMB
1060 Battelle, fridge #34	5-4-15 0730	C. Bingham CMB	5-4-15 0730
C. Bingham CMB WCH	5-4-15 0740	Fed Ex	5-4-15
FedEx		Sarah Edwards Sarah Edwards	5.5.15 @ 0850

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Uranium, Vanadium, Zinc, Zirconium}; Mercury - 7471 - (CV) {Mercury}

(2) TPH - Diesel Range - WTPH - D(+).

5-4-15 CMB

~~372231~~ HS 5/5/15
372321

REVIEWED BY K. Wood Vlaenn
DATE 5-4-15

WCH-EE-011

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: WCHN	SDG/AR/COC/Work Order: HS 5/6/15 372231 372321
Received By: SE	Date Received: 5.5.15

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0cpm
Classified Radioactive II or III by RSO?		✓	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		✓	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		✓	

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: 201404537 Secondary Temperature Device Serial # (If Applicable):
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?		✓		Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples (EPA 6850) have headspace as required?		✓		Sample ID's and containers affected:
7	VOA vials free of headspace (defined as < 6mm bubble)?		✓		Sample ID's and containers affected:
8	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
9	Samples received within holding time?	✓			ID's and tests affected:
10	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
11	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
12	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
13	Are sample containers identifiable as GEL provided?			✓	
14	COC form is properly signed in relinquished/received sections?	✓			
15	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7735 2044 2740

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials HS Date 5/5/15 Page 1 of 1 GL-CHL-SR-001 Rev 1

Laboratory Certifications

List of current GEL Certifications as of 20 May 2015

State	Certification
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
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−15−10
Utah NELAP	SC000122015−17
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

HPLC Polynuclear Aromatic Hydrocarbon Analysis

HPLC Polynuclear Aromatic Hydrocarbon
Technical Case Narrative
Eberline (WCHN)
SDG #: X0107
Work Order #: 372321

Method/Analysis Information

Procedure:	**Polynuclear Aromatic Hydrocarbons**
Analytical Method:	SW846 8310
Prep Method:	SW846 3550B
Analytical Batch Number:	1478596
Prep Batch Number:	1478595

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 8310:

Sample ID	Client ID
372321001	J1V733
1203318390	Method Blank (MB)
1203318391	Laboratory Control Sample (LCS)
1203318392	372321001(J1V733) Matrix Spike (MS)
1203318393	372321001(J1V733) 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-030 REV# 16.

Raw data reports are processed and reviewed by the analyst using the Target software package. False positives have been removed from the Target quantitation reports per standard operating procedures (SOP) section 18.0.

Calibration Information

Due to software limitations, the files displayed at the beginning of the Form 6 are only the last files uploaded for each individual level. A complete listing of all files used in the current ICAL are shown on the Calibration History that is included with each Level 4 or higher package. The last file by date in each level is the one currently uploaded for that level.

The linear equation used in Target and indicated on the initial calibration summary form is not a conventional linear equation (slope intercept formula) and does not match the equation found in SW-846 method 8000B. The x and y axes are inversed in Target, so that the instrument response is treated as the independent variable (x) and the concentration ratio is treated as the dependent variable (y). The equation used in Target to calculate sample results is adjusted to account for the linear equation inversion and reciprocal slope. The adjusted calculation has been independently verified to produce valid results.

Initial Calibration
All initial calibration requirements have been met for this SDG.

CCV Requirements
All associated calibration verification standards (ICV or CCV) 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 the 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
Client sample 372321001 (J1V733) was chosen for 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 RPDs between the MS and MSD met the acceptance limits.

Technical Information:

Holding Time Specifications
All samples in this SDG in this analytical batch met the specified holding time. GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection or 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.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP.

Sample Dilutions
The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis
Re-extractions or re-analyses were not required for this SDG.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents.

A data exception report (DER) was not generated for this SDG.

Manual Integrations
Some initial calibration standards, continuing calibration standards, and QC samples 1203318391 (LCS), 1203318392 (J1V733MS) and 1203318393 (J1V733MSD). required manual integrations due to software limitations.

Please see the raw data in the Miscellaneous Section.

Additional Comments
The Form 8 is used only as a sequence of the analysis.

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. An electronic signature page inserted after the case narrative of each electronic package will indicate the analyst, reviewer, and report specialist names associated with the generation of the data and package. 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.

System Configuration

The laboratory utilizes a high performance liquid chromatography (HPLC) instrument configuration for Polynuclear Aromatic Hydrocarbons analyses.

The chromatographic hardware system consists of a HP Model 1100 HPLC with programmable gradient pumping and a 100uL loop injector.

The HPLC 1100 is coupled to a HP Model G1315A Diode Array UV detector which monitors absorbance at the following five wavelengths: 1) 224 nm; 2) 250 nm; 3) 270 nm; 4) 234 nm; 5) 300 nm.

The HPLC 1100 is also coupled to a HP Model G1321A Fluorescence Detector in series which monitors the following varying excitations and emissions 1) EX 230 nm EM 330 nm; 2) EX 210 nm EM 314 nm; 3) EX 250 nm EM 368 nm; 4) EX 237 nm EM 440 nm; 5) EX 277 nm EM 376 nm; 6) EX 255 nm EM 420 nm; 7) EX 230 nm EM 453 nm.

The Diode Array UV detector is used as the primary detector and the Fluorescence Detector is used as the confirmation detector. All results are reported from the primary Diode Array UV detector.

The HPLC system is identified with a designation of HPLC E in the raw data printouts.

Chromatographic Columns

Chromatographic separation of Polynuclear Aromatic Hydrocarbons is accomplished through analysis on the following reversed phase columns:

Phenomenex: Luna C18 (2), 100 A, 250 mm x 4.6 mm containing 5 um size particle.

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: X0107 GEL Work Order: 372321 Project: RC-246 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: Michael A. Penny Jr. **Name: Michael Penny**

Date: 20 MAY 2015 **Title: Group Leader**

Roadmap for WCHN X0107 HPLC_PAH

This roadmap was analyzed by cww on 05-20-2015, 13:51.
This roadmap was reviewed by map on 05-20-2015, 14:35.
This roadmap was packaged by map on 05-20-2015, 15:01.

Sample

exclude	manual	datafile	smpid	injdate	injtime	sublist	clientid	dilution	batchid	comment
☐	N	/chem/hplce.i/p051915.b/ph5e1917.d	372321001	20-MAY-2015	01:56	X0107.sub	J1V733	1	1478596	

QC Sample

exclude	manual	datafile	smpid	sampletype	injdate	injtime	sublist	clientid	dilution	batchid	comment
☐	N	/chem/hplce.i/p051915.b/ph5e1915.d	1203318390	mb	20-MAY-2015	00:32	X0107.sub	PAHBLK01	1	1478596	
☐	N	/chem/hplce.i/p051915.b/ph5e1916.d	1203318391	lcs	20-MAY-2015	01:14	X0107.sub	PAHBLK01LCS	1	1478596	Pass
☐	N	/chem/hplce.i/p051915.b/ph5e1918.d	1203318392	ms	20-MAY-2015	02:38	X0107.sub	J1V733MS	1	1478596	Pass
☐	N	/chem/hplce.i/p051915.b/ph5e1919.d	1203318393	msd	20-MAY-2015	03:20	X0107.sub	J1V733MSD	1	1478596	Pass

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: May 20, 2015

Company : WC-Hanford, Inc.
Address : 2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354
Contact: Joan Kessner
Project: RC-246 Soil
Client SDG: X0107

Client Sample ID: J1V733
Sample ID: 372321001
Matrix: SOIL
Collect Date: 30-APR-15 08:42
Receive Date: 05-MAY-15
Collector: Client
Moisture: .963%
Project: WCHN0RC246
Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
HPLC-PAH											
8310/3550 PAH Std list Soil "Dry Weight Corrected"											
Acenaphthene	U	5.04	5.04	16.8	ug/kg	1	CWW	05/20/15	0156	1478596	1
Acenaphthylene	U	5.04	5.04	16.8	ug/kg	1					
Anthracene	U	1.68	1.68	16.8	ug/kg	1					
Benzo(a)anthracene	U	0.538	0.538	1.68	ug/kg	1					
Benzo(a)pyrene	U	0.538	0.538	1.68	ug/kg	1					
Benzo(b)fluoranthene	U	0.538	0.538	1.68	ug/kg	1					
Benzo(ghi)perylene	U	0.538	0.538	1.68	ug/kg	1					
Benzo(k)fluoranthene	U	0.269	0.269	0.840	ug/kg	1					
Chrysene	U	0.538	0.538	1.68	ug/kg	1					
Dibenzo(a,h)anthracene	U	0.538	0.538	1.68	ug/kg	1					
Fluoranthene	U	0.538	0.538	1.68	ug/kg	1					
Fluorene	U	5.04	5.04	16.8	ug/kg	1					
Indeno(1,2,3-cd)pyrene	U	0.538	0.538	1.68	ug/kg	1					
Naphthalene	U	5.04	5.04	16.8	ug/kg	1					
Phenanthrene	U	5.04	5.04	16.8	ug/kg	1					
Pyrene	U	0.538	0.538	1.68	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3550B	3550B PAH BY HPLC Prep in soil	SJW1	05/14/15	1012	1478595

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8310	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	8310/3550 PAH Std list Soil "Dry Weight Corrected"	6940 ug/kg	8400	82.6	(46%-101%)

Notes:

QC Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: May 20, 2015

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

Contact: **Joan Kessner**

Workorder: **372321** **Client SDG:** X0107 **Project Description:** RC-246 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
HPLC-PAH										
Batch 1478596										
QC1203318391 LCS										
Acenaphthene	1670			1550	ug/kg		92.9	(66%-98%)	CWW	05/20/15 01:14
Acenaphthylene	1670			1480	ug/kg		89	(65%-95%)		
Anthracene	1670			1490	ug/kg		89.2	(71%-107%)		
Benzo(a)anthracene	167			151	ug/kg		90.8	(72%-103%)		
Benzo(a)pyrene	167			141	ug/kg		84.4	(68%-98%)		
Benzo(b)fluoranthene	167			152	ug/kg		91	(72%-99%)		
Benzo(ghi)perylene	167			155	ug/kg		93.1	(69%-98%)		
Benzo(k)fluoranthene	83.3			82.5	ug/kg		99	(62%-103%)		
Chrysene	167			151	ug/kg		90.5	(80%-113%)		
Dibenzo(a,h)anthracene	167			155	ug/kg		93	(83%-115%)		
Fluoranthene	167			148	ug/kg		88.7	(68%-98%)		
Fluorene	1670			1550	ug/kg		92.8	(68%-99%)		
Indeno(1,2,3-cd)pyrene	167			159	ug/kg		95.2	(76%-105%)		
Naphthalene	1670			1400	ug/kg		84.1	(62%-93%)		
Phenanthrene	1670			1510	ug/kg		90.6	(70%-98%)		
Pyrene	167			143	ug/kg		85.7	(73%-104%)		
**Decafluorobiphenyl	8330			6970	ug/kg		83.7	(46%-101%)		
QC1203318390 MB										
Acenaphthene			U	5.00	ug/kg					05/20/15 00:32
Acenaphthylene			U	5.00	ug/kg					

QC Summary

Workorder: 372321 **Client SDG:** X0107 **Project Description:** RC-246 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
HPLC-PAH											
Batch 1478596											
Anthracene				U	1.67	ug/kg					
Benzo(a)anthracene				U	0.533	ug/kg				CWW	05/20/15 00:32
Benzo(a)pyrene				U	0.533	ug/kg					
Benzo(b)fluoranthene				U	0.533	ug/kg					
Benzo(ghi)perylene				U	0.533	ug/kg					
Benzo(k)fluoranthene				U	0.266	ug/kg					
Chrysene				U	0.533	ug/kg					
Dibenzo(a,h)anthracene				U	0.533	ug/kg					
Fluoranthene				U	0.533	ug/kg					
Fluorene				U	5.00	ug/kg					
Indeno(1,2,3-cd)pyrene				U	0.533	ug/kg					
Naphthalene				U	5.00	ug/kg					
Phenanthrene				U	5.00	ug/kg					
Pyrene				U	0.533	ug/kg					
**Decafluorobiphenyl	8330				6390	ug/kg		76.7	(46%-101%)		
QC1203318392 372321001 MS											
Acenaphthene	1680	U	5.04		1400	ug/kg		83.1	(57%-97%)		05/20/15 02:38
Acenaphthylene	1680	U	5.04		1340	ug/kg		79.9	(55%-94%)		
Anthracene	1680	U	1.68		1470	ug/kg		87.2	(65%-103%)		
Benzo(a)anthracene	168	U	0.538		150	ug/kg		88.9	(53%-110%)		
Benzo(a)pyrene	168	U	0.538		137	ug/kg		81.5	(53%-105%)		
Benzo(b)fluoranthene	168	U	0.538		150	ug/kg		89.2	(52%-110%)		
Benzo(ghi)perylene	168	U	0.538		151	ug/kg		89.7	(44%-107%)		

QC Summary

Workorder: 372321 **Client SDG:** X0107 **Project Description:** RC-246 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
HPLC-PAH											
Batch 1478596											
Benzo(k)fluoranthene	84.1	U	0.269		81.4	ug/kg		96.7	(48%-116%)	CWW	05/20/15 02:38
Chrysene	168	U	0.538		149	ug/kg		88.7	(61%-118%)		
Dibenzo(a,h)anthracene	168	U	0.538		153	ug/kg		91.2	(63%-119%)		
Fluoranthene	168	U	0.538		144	ug/kg		85.6	(56%-100%)		
Fluorene	1680	U	5.04		1430	ug/kg		85.2	(59%-97%)		
Indeno(1,2,3-cd)pyrene	168	U	0.538		156	ug/kg		93	(53%-115%)		
Naphthalene	1680	U	5.04		1270	ug/kg		75.7	(54%-88%)		
Phenanthrene	1680	U	5.04		1440	ug/kg		85.4	(60%-99%)		
Pyrene	168	U	0.538		140	ug/kg		82.9	(54%-112%)		
**Decafluorobiphenyl	8410		6940		6170	ug/kg		73.3	(46%-101%)		
QC1203318393 372321001 MSD											
Acenaphthene	1680	U	5.04		1620	ug/kg	14.7	96.3	(0%-30%)		05/20/15 03:20
Acenaphthylene	1680	U	5.04		1560	ug/kg	14.8	92.7	(0%-30%)		
Anthracene	1680	U	1.68		1550	ug/kg	5.73	92.4	(0%-30%)		
Benzo(a)anthracene	168	U	0.538		159	ug/kg	5.90	94.4	(0%-30%)		
Benzo(a)pyrene	168	U	0.538		148	ug/kg	7.94	88.2	(0%-30%)		
Benzo(b)fluoranthene	168	U	0.538		160	ug/kg	6.49	95.2	(0%-30%)		
Benzo(ghi)perylene	168	U	0.538		164	ug/kg	8.26	97.5	(0%-30%)		
Benzo(k)fluoranthene	84.1	U	0.269		86.4	ug/kg	6.00	103	(0%-30%)		
Chrysene	168	U	0.538		160	ug/kg	7.17	95.3	(0%-30%)		
Dibenzo(a,h)anthracene	168	U	0.538		164	ug/kg	6.56	97.4	(0%-30%)		
Fluoranthene	168	U	0.538		156	ug/kg	7.98	92.7	(0%-30%)		

QC Summary

Workorder: 372321 **Client SDG:** X0107 **Project Description:** RC-246 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
HPLC-PAH											
Batch 1478596											
Fluorene	1680	U	5.04		1620	ug/kg	12.0	96.1	(0%-30%)	CWW	05/20/15 03:20
Indeno(1,2,3-cd)pyrene	168	U	0.538		168	ug/kg	7.04	99.8	(0%-30%)		
Naphthalene	1680	U	5.04		1460	ug/kg	13.8	87.1	(0%-30%)		
Phenanthrene	1680	U	5.04		1570	ug/kg	8.97	93.4	(0%-30%)		
Pyrene	168	U	0.538		151	ug/kg	7.78	89.7	(0%-30%)		
**Decafluorobiphenyl	8410		6940		7170	ug/kg		85.2	(46%-101%)		

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 40% 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 (0rganics 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 Data

Prep Logbook

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

Batch ID: **1478595** **Verified by:** _____

Analyst: **Sirena White**

Method: **SW846 3550B**

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)
1203318390 MB	14-MAY-2015 10:12:00	30.02	1	0.03331
1203318391 LCS	14-MAY-2015 10:12:00	30.01	1	0.03332
372321001	14-MAY-2015 10:12:00	30.04	1	0.03329
1203318392 MS (372321001)	14-MAY-2015 10:12:00	30	1	0.03333
1203318393 MSD (372321001)	14-MAY-2015 10:12:00	30.02	1	0.03331

Type	Sample Id	Description	Serial Number	Spike Amt	Units
LCS	1203318391	8310 PAH SPIKE	UE150219-10	1	mL
MS	1203318392	8310 PAH SPIKE	UE150219-10	1	mL
MSD	1203318393	8310 PAH SPIKE	UE150219-10	1	mL
SURR	All	Decafluorobiphenyl 250 mg/L	WE150224-35	1	mL
REGNT	All	Methylene Chloride	150511-D	300	mL
REGNT	All	HPLC Grade Acetonitrile	2230048	5	mL
SOURC	All	SODIUM SULFATE	2193342	30	g

Comments:

Verified By: MD

Final Solvent: ACN

Clean Up SOP: GL-OA-E-036 REV.1

FID Diesel Range Organics Analysis

Case Narrative

Diesel Range Organics
Technical Case Narrative
Eberline (WCHN)
SDG #: X0107
Work Order #: 372321

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:	1477948
Prep Batch Number:	1477947

Sample Analysis

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

Sample ID	Client ID
372321001	J1V733
1203316496	Method Blank (MB)
1203316497	Laboratory Control Sample (LCS)
1203316498	372321001(J1V733) Matrix Spike (MS)
1203316499	372321001(J1V733) 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# 25.

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/LCSD) Recovery
The LCS/LCSD spike recoveries met the acceptance limits.

QC Sample Designation
Sample 372321001 (J1V733) was selected for the MS and MSD analyses.

Matrix Spike (MS/MSD) Recovery Statement
The MS (See Below) recovered slightly below the acceptance limits. This non-compliance is not likely to affect sample results as the MS and MSD displayed similar spike recovery and the parent sample met surrogate recovery acceptance criteria.

Sample	Analyte	Value
1203316498 (J1V733MS)	Diesel Range Organics	65.3* (70%-130%)
	Motor Oil	68.9* (70%-130%)

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
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) 1410848 was generated for the sample in this SDG/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:

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.	Division:	Quality Criteria:	Type:
15-MAY-15	Federal	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
GC/FID	NWTPH-Dx in Soil	Solid	WCHN
Batch ID:	**Sample Numbers:**		
1477948	See Below		

Potentially affected work order(s)(SDG): 372321(X0107)

Application Issues:

Failed Recovery for MS/MSD, or PS/PSD

Specification and Requirements Exception Description:	DER Disposition:
1. QC sample 1203316498(MS) recovered slightly below the spike recovery acceptance limits.	1. The MS (See Below) recovered slightly below the acceptance limits. This non-compliance is not likely to affect sample results as the MS and MSD displayed similar spike recovery and the parent sample met surrogate recovery acceptance criteria. 1203316498 (J1V733MS) Diesel Range Organics [65.3* (70%-130%)] and Motor Oil [68.9* (70%-130%)].

Originator's Name:

Lindsey Jensen 15-MAY-15

Data Validator/Group Leader:

Jimin Cao 15-MAY-15

GEL LABORATORIES LLC

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Qualifier Definition Report
for

WCHN001 Eberline

Client SDG: X0107 GEL Work Order: 372321 Project: RC−246 Soil

The Qualifiers in this report are defined as follows:

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: Jimin Cao **Name: Jimin Cao**

Date: 15 MAY 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: May 15, 2015

Company :	WC-Hanford, Inc.		
Address :	2620 Fermi Avenue MSIN H4-21 Richland, Washington 99354		
Contact:	Joan Kessner	Client SDG:	X0107
Project:	RC-246 Soil		

Client Sample ID:	J1V733	Project:	WCHN0RC246
Sample ID:	372321001	Client ID:	WCHN001
Matrix:	SOIL		
Collect Date:	30-APR-15 08:42		
Receive Date:	05-MAY-15		
Collector:	Client		
Moisture:	.963%		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Diesel Range Organics											
SW 3541/NWTPH-Dx in Soil (DRO + Motor Oil) "Dry Weight Corrected"											
Diesel Range Organics (C10-C20)	TU	2180	2180	6720	ug/kg	1	LXA1	05/14/15	1419	1477948	1
Motor Oil (C20-C36)	TU	2180	2180	6720	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	SJW1	05/12/15	1112	1477947

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 (DRO + Motor Oil) "Dry Weight Corrected"	408 ug/kg	672	60.8	(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: May 15, 2015

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

Contact: **Joan Kessner**

Workorder: **372321** **Client SDG:** X0107 **Project Description:** RC-246 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Diesel Range Organics											
Batch 1477948											
QC1203316497 LCS											
Diesel Range Organics (C10-C20)	66700				49500	ug/kg		74.2	(70%-130%)	LXA1	05/14/15 13:41
Motor Oil (C20-C36)	66700				53300	ug/kg		79.9	(70%-130%)		
**o-Terphenyl	667				513	ug/kg		76.9	(50%-150%)		
QC1203316496 MB											
Diesel Range Organics (C10-C20)				U	2160	ug/kg					05/14/15 13:02
Motor Oil (C20-C36)				U	2160	ug/kg					
**o-Terphenyl	666				433	ug/kg		65.1	(50%-150%)		
QC1203316498 372321001 MS											
Diesel Range Organics (C10-C20)	67300	TU	2180	T	44000	ug/kg		65.3*	(70%-130%)		05/14/15 14:58
Motor Oil (C20-C36)	67300	TU	2180	T	46400	ug/kg		68.9*	(70%-130%)		
**o-Terphenyl	673		408		466	ug/kg		69.3	(50%-150%)		
QC1203316499 372321001 MSD											
Diesel Range Organics (C10-C20)	67300	TU	2180		47200	ug/kg	7.09	70.1	(0%-20%)		05/14/15 15:36
Motor Oil (C20-C36)	67300	TU	2180		50600	ug/kg	8.61	75.2	(0%-20%)		
**o-Terphenyl	673		408		483	ug/kg		71.7	(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

QC Summary

Workorder: **372321** **Client SDG:** X0107 **Project Description:** RC-246 Soil

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

P	Aroclor target analyte with greater than 40% 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 (0rganics 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: **1477947** **Verified by:** _____

Analyst: **Sirena White**

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)
1203316496 MB	12-MAY-2015 11:12:00	30.05	1	0.03328
1203316497 LCS	12-MAY-2015 11:12:00	30	1	0.03333
372321001	12-MAY-2015 11:12:00	30.06	1	0.03327
1203316498 MS (372321001)	12-MAY-2015 11:12:00	30	1	0.03333
1203316499 MSD (372321001)	12-MAY-2015 11:12:00	30.01	1	0.03332

Type	Sample Id	Description	Serial Number	Spike Amt	Units
LCS	1203316497	AZDRO SPIKE LCS STD,4000ug/ml	WFI150408-62	1	mL
MS	1203316498	AZDRO SPIKE LCS STD,4000ug/ml	WFI150408-62	1	mL
MSD	1203316499	AZDRO SPIKE LCS STD,4000ug/ml	WFI150408-62	1	mL
SURR	All	20 ppm surrogate	WE150212-04	1	mL
REGNT	All	Methylene Chloride	2247902-D	120	mL
SOURC	All	SODIUM SULFATE	2193342	30	g

Comments:

Final Solvent: CH2Cl2
Verified by: MD

PCB Analysis

Case Narrative

GC Semivolatile PCB
Technical Case Narrative
Eberline (WCHN)
SDG #: X0107
Work Order #: 372321

Method/Analysis Information

Procedure:	**Analysis of Polychlorinated Biphenyls by ECD**
Analytical Method:	SW846 3541/8082A
Prep Method:	SW846 3541
Analytical Batch Number:	1478878
Prep Batch Number:	1478876

Sample Analysis

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

Sample ID	Client ID
372321001	J1V733
1203319133	Method Blank (MB)
1203319134	Laboratory Control Sample (LCS)
1203319135	372321001(J1V733) Matrix Spike (MS)
1203319136	372321001(J1V733) 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/LCSD) Recovery
The LCS/LCSD spike recoveries met the acceptance limits.

QC Sample Designation
Sample 372321001 (J1V733) was selected for the matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS/MSD) Recovery Statement
The MS/MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement
The relative percent difference (RPD) between the MS and MSD (See Below) was not within the required acceptance limits. As the spike recoveries were within the acceptance limits, the data results were not adversely impacted.

Sample	Analyte	Value
1203319135MS and 1203319136MSD (J1V733)	Aroclor-1260	35.5* (0%-30%)

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 samples and QC in this batch were cleaned using alumina in order to remove oil and other high molecular weight interferences. All samples and QC in this batch were cleaned with activated copper in order to remove sulfur. 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.

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) 1411696 was generated for the samples in this SDG/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 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
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.

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
19-MAY-15	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
GC/ECD	SW846 3541/8082A	Solid	WCHN
Batch ID:	**Sample Numbers:**		
1478878	See Below		

Potentially affected work order(s)(SDG): 372321(X0107)

Application Issues:

Failed RPD for MS/MSD, or PS/PSD

Specification and Requirements Exception Description:	DER Disposition:
1. The RPD between the MS and MSD did not meet the acceptance criteria.	1. The relative percent difference (RPD) between the MS and MSD (See Below) was not within the required acceptance limits. As the spike recoveries were within the acceptance limits, the data results were not adversely impacted. 1203319135MS and 1203319136MSD (J1V733) Aroclor-1260 [35.2* (0%-30%)] and Aroclor-1260 [35.5* (0%-30%)].

Originator's Name:

James Maestas 19-MAY-15

Data Validator/Group Leader:

Jimin Cao 19-MAY-15

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Qualifier Definition Report
for

WCHN001 Eberline

Client SDG: X0107 GEL Work Order: 372321 Project: RC−246 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: Jimin Cao **Name:** **Jimin Cao**

Date: **19 MAY 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: May 19, 2015

Company :	WC-Hanford, Inc.
Address :	2620 Fermi Avenue MSIN H4-21 Richland, Washington 99354
Contact:	Joan Kessner
Project:	RC-246 Soil

Client SDG: X0107

Client Sample ID:	J1V733	Project:	WCHN0RC246
Sample ID:	372321001	Client ID:	WCHN001
Matrix:	SOIL		
Collect Date:	30-APR-15 08:42		
Receive Date:	05-MAY-15		
Collector:	Client		
Moisture:	.963%		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-PCB											
SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"											
Aroclor-1016	U	1.12	1.12	3.36	ug/kg	1	JXM	05/18/15	1309	1478878	1
Aroclor-1221	U	1.12	1.12	3.36	ug/kg	1					
Aroclor-1232	U	1.12	1.12	3.36	ug/kg	1					
Aroclor-1242	U	1.12	1.12	3.36	ug/kg	1					
Aroclor-1248	U	1.12	1.12	3.36	ug/kg	1					
Aroclor-1254	U	1.12	1.12	3.36	ug/kg	1					
Aroclor-1260	U	1.12	1.12	3.36	ug/kg	1					
Aroclor-1262	U	1.12	1.12	3.36	ug/kg	1					
Aroclor-1268	U	1.12	1.12	3.36	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	05/15/15	1031	1478876

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"	4.83 ug/kg	6.73	71.8	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	5.42 ug/kg	6.73	80.5	(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: May 19, 2015

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

Contact: **Joan Kessner**

Workorder: **372321** **Client SDG:** X0107 **Project Description:** RC-246 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Semi-Volatiles-PCB										
Batch 1478878										
QC1203319134 LCS										
Aroclor-1016	33.3			22.6	ug/kg		67.8	(44%-97%)	JXM	05/18/15 12:57
Aroclor-1260	33.3			27.3	ug/kg		82.1	(49%-109%)		
**4cmx	6.66			4.54	ug/kg		68.2	(29%-106%)		
**Decachlorobiphenyl	6.66			4.89	ug/kg		73.5	(25%-131%)		
QC1203319133 MB										
Aroclor-1016			U	1.11	ug/kg					05/18/15 12:44
Aroclor-1221			U	1.11	ug/kg					
Aroclor-1232			U	1.11	ug/kg					
Aroclor-1242			U	1.11	ug/kg					
Aroclor-1248			U	1.11	ug/kg					
Aroclor-1254			U	1.11	ug/kg					
Aroclor-1260			U	1.11	ug/kg					
Aroclor-1262			U	1.11	ug/kg					
Aroclor-1268			U	1.11	ug/kg					
**4cmx	6.66			4.47	ug/kg		67.1	(29%-106%)		
**Decachlorobiphenyl	6.66			4.97	ug/kg		74.6	(25%-131%)		
QC1203319135 372321001 MS										
Aroclor-1016	33.7	U	1.12	28.1	ug/kg		83.6	(22%-127%)		05/18/15 13:21
Aroclor-1260	33.7	U	1.12	39.1	ug/kg		116	(18%-130%)		
**4cmx	6.73		4.83	6.08	ug/kg		90.2	(29%-106%)		
**Decachlorobiphenyl	6.73		5.42	8.49	ug/kg		126	(25%-131%)		

GEL LABORATORIES LLC

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

QC Summary

Workorder: **372321** **Client SDG:** X0107 **Project Description:** RC-246 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Semi-Volatiles-PCB											
Batch 1478878											
QC1203319136 372321001 MSD											
Aroclor-1016	33.6	U	1.12		21.0	ug/kg	28.9	62.6	(0%-30%)	JXM	05/18/15 13:33
Aroclor-1260	33.6	U	1.12		27.3	ug/kg	35.5*	81.3	(0%-30%)		
**4cmx	6.72		4.83		4.35	ug/kg		64.7	(29%-106%)		
**Decachlorobiphenyl	6.72		5.42		5.33	ug/kg		79.3	(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 40% 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 (0rganics 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: **1478876** **Verified by:** _____

Analyst: **Sirena White**

Method: **SW846 3541**

Lab SOP: **GL-OA-E-066 REV# 5**

Instrument: **Semi-Volatiles Manual**

Sample ID	Run Date	Aliquot (g)	Clean Up 1	Clean Up Amount 1 (mL)	Post Clean Up Amount 1 (mL)	Final Volume (mL)	Prepped Factor (mL/g)
1203319133 MB	15-MAY-2015 10:31:00	30.05	H2SO4/KMnO4	2	9	1	0.03328
1203319134 LCS	15-MAY-2015 10:31:00	30.05	H2SO4/KMnO4	2	9	1	0.03328
372321001	15-MAY-2015 10:31:00	30.01	H2SO4/KMnO4	2	9	1	0.03332
1203319135 MS (372321001)	15-MAY-2015 10:31:00	30	H2SO4/KMnO4	2	9	1	0.03333
1203319136 MSD (372321001)	15-MAY-2015 10:31:00	30.03	H2SO4/KMnO4	2	9	1	0.0333

Type	Sample Id	Description	Serial Number	Spike Amt	Units
LCS	1203319134	PCB Laboratory Control	WE150416-06	1	mL
MS	1203319135	PCB Laboratory Control	WE150416-06	1	mL
MSD	1203319136	PCB Laboratory Control	WE150416-06	1	mL
SURR	All	PEST LOW LEVEL SURROGATE 200 UG/L	WE150421-02	1	mL
REGNT	All	5% Potassium Permanganate	2243365	5	mL
REGNT	All	1:1 sulfuric acid	2252563	5	mL
REGNT	All	Hexane	2254594-B10	120	mL
SOURC	All	SODIUM SULFATE	2193342	30	g

Comments:

Final Solvent: Hexane
Verified by: MD

Clean-up: H2SO4/KMnO4
Prior to clean-up: 2mL
Clean-up initials: SJW
Clean-up SOP: GL-OA-E-037 Rev. 7
Clean-up date: 05-15-15

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
Eberline (WCHN)
SDG #: X0107
Work Order #: 372321

Sample ID	**Client ID**
372321001	J1V733
1203312696	Method Blank (MB)**ICP**
1203312697	Laboratory Control Sample (LCS)
1203312700	372321001(J1V733L) Serial Dilution (SD)
1203312698	372321001(J1V733D) Sample Duplicate (DUP)
1203312699	372321001(J1V733S) Matrix Spike (MS)
1203315298	372321001(J1V733PS) Post Spike (PS)
1203312641	Method Blank (MB)**ICP-MS**
1203312642	Laboratory Control Sample (LCS)
1203312645	372321001(J1V733L) Serial Dilution (SD)
1203312643	372321001(J1V733D) Sample Duplicate (DUP)
1203312644	372321001(J1V733S) Matrix Spike (MS)
1203317571	Method Blank (MB)**CVAA**
1203317572	Laboratory Control Sample (LCS)
1203317575	372321001(J1V733L) Serial Dilution (SD)
1203317573	372321001(J1V733D) Sample Duplicate (DUP)
1203317574	372321001(J1V733S) Matrix Spike (MS)

Sample Analysis

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

Method/Analysis Information

Analytical Batch:	1476482, 1476458 and 1478328
Prep Batch :	1476481, 1476457 and 1478327
Standard Operating Procedures:	GL-MA-E-013 REV# 23, GL-MA-E-009 REV# 25, GL-MA-E-014 REV# 26 and GL-MA-E-010 REV# 29
Analytical Method:	SW846 3050B/6010C, SW846 3050B/6020A and SW846 7471B
Prep Method :	SW846 3050B and SW846 7471B Prep

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The Metals analysis-ICP was performed on a P E 5300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with an ESI SC-FAST introduction, cyclonic spray

chamber, and yttrium or scandium internal standard.

The Metals analysis - ICPMS was performed on a Perkin Elmer ELAN DRC-e inductively coupled plasma mass spectrometer (ICP-MS). The instrument is equipped with a cross-flow nebulizer, quadrupole mass spectrometer, and dual mode electron multiplier detector, and dynamic reaction cell. The DRC-e uses a dynamic reaction cell to eliminate polyatomic interferences. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

The Metals analysis-Mercury was performed on a Perkin-Elmer Flow Injection Mercury System (FIMS-100) automated mercury analyzer. The instrument consists of a cold vapor atomic absorption spectrometer set to detect mercury at a wavelength of 253.7 nm.

Calibration Information

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

CRDL/PQL Requirements
The PQL standard recoveries for SW846 6010C met the control limits with the exception of sodium and zinc. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 372321001 (J1V733)-ICP.

ICSA/ICSAB Statement
All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blanks (CCB) Requirements
All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements
All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Statement
The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement
The following samples were selected as the quality control (QC) samples for this SDG: 372321001 (J1V733)-ICP, ICP-MS and CVAA.

Matrix Spike (MS/MSD) Recovery Statement
The percent recoveries (%R) obtained from the MS/MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The MS/MSD (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analyte. The post spike recovery was within the required control limits. This verifies the absence of a matrix interference in the post-spike digested sample. The recovery may be attributed to possible sample matrix interference and/or non-homogeneity.

Sample	Analyte	Value
1203312699 (J1V733MS)	Vanadium	132* (75%-125%)

The MS/MSD (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analyte. The post spike also did not meet the required control limits; thus, confirming matrix interferences and/or sample non-homogeneity.

Sample	Analyte	Value
1203312699 (J1V733MS)	Silicon	37.5* (75%-125%)

Duplicate Relative Percent Difference (RPD) Statement
The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required reporting limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of +/-RL is used to evaluate the DUP results. The relative percent differences (RPD) between the sample and its duplicate (DUP) were within acceptable limits for all applicable analytes.

Post Spike (PS) Recovery Statement
The percent recoveries (%R) obtained from the PS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The PS did not meet the recommended quality control acceptance criteria for percent recoveries for all applicable analytes and verifies the presence of matrix interferences.

Sample	Analyte	Value
1203315298 (J1V733PS)	Silicon	154* (80%-120%)

Serial Dilution % Difference Statement
All applicable analytes in the serial dilution (SDILT) demonstrated acceptable correlation to its associated sample and met the established acceptance percent difference criteria.

Technical Information

Holding Time Specifications
GEL assigns holding times based on the associated methodology. Holding time is measured by comparison of the date and time of sample collection to the date and time of sample preparation and analysis. 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. Method SW-846 3050B is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Sample Dilutions
Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. Sample was diluted for titanium in order to bring raw values within the linear range of the instrument, and for the analytes interfered with, in order to ensure that the inter-element correction factors were valid for antimony, cobalt, vanadium and zinc. 372321001 (J1V733)-ICP. The ICPMS solid samples in this SDG were diluted the standard two times. ICP-MS.

Analyte	372321
	001
Antimony	5X
Cobalt	5X
Selenium	2X
Uranium	2X
Vanadium	5X
Zinc	5X
Zirconium	2X

Preparation Information
The samples in this SDG were not diluted and prepared according to the cited SOP.

Miscellaneous Information

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to 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. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation
A Data exception report (DER) was generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) 1408975 was generated for samples 1203312699 (J1V733MS) and 1203315298 (J1V733PS)-ICP in this SDG/batch.

Additional Comments
Additional comments were not required for this SDG.

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.	Division:	Quality Criteria:	Type:
11-MAY-15	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
ICP	SW846 3050B/6010C	Solid	WCHN
Batch ID:	**Sample Numbers:**		
1476482	See Below		

Potentially affected work order(s)(SDG): 372321(X0107)

Application Issues:

Failed Recovery for MS/MSD, or PS/PSD

Failed Recovery for PS/PSD

Specification and Requirements Exception Description:	DER Disposition:
1. Failed Recovery for MS/MSD, or PS/PSD: QC 1203312699MS 2. Failed Recovery for PS/PSD: QC 1203315298PS	1. The MS/MSD (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analyte. The post spike also did not meet the required control limits; thus, confirming matrix interferences and/or sample non-homogeneity. 1203312699 (J1V733MS) Silicon [37.5* (75%-125%)]. The MS/MSD (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analyte. The post spike recovery was within the required control limits. This verifies the absence of a matrix interference in the post-spike digested sample. The recovery may be attributed to possible sample matrix interference and/or non-homogeneity. 1203312699 (J1V733MS) Vanadium [132* (75%-125%)]. 2. The PS did not meet the recommended quality control acceptance criteria for percent recoveries for all applicable analytes and verifies the presence of matrix interferences. 1203315298 (J1V733PS) Silicon [154* (80%-120%)].

Originator's Name:

Helen Camello 11-MAY-15

Data Validator/Group Leader:

Jerry Wigfall 14-MAY-15

GEL LABORATORIES LLC

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

Qualifier Definition Report
for

WCHN001 Eberline

Client SDG: X0107 GEL Work Order: 372321 Project: RC-246 Soil

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

B 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).

C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.

D Results are reported from a diluted aliquot of sample.

N Spike 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.

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: Nik-Cole A. Elmore **Name: Nik-Cole Elmore**

Date: 19 MAY 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: May 19, 2015

Company : WC-Hanford, Inc.
Address : 2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354
Contact: Joan Kessner
Project: RC-246 Soil

Client SDG: X0107

Client Sample ID: J1V733
Sample ID: 372321001
Matrix: SOIL
Collect Date: 30-APR-15 08:42
Receive Date: 05-MAY-15
Collector: Client
Moisture: .963%

Project: WCHN0RC246
Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA											
SW846 7471B Mercury in Solid "Dry Weight Corrected"											
Mercury	U	0.00395	0.00395	0.0118	mg/kg	1	AXS5	05/15/15	1217	1478328	1
Metals Analysis-ICP											
ICP METALS 6010TR Client List "Dry Weight Corrected"											
Aluminum		4190	6.37	18.7	mg/kg	1	HSC	05/07/15	1655	1476482	2
Arsenic	B	2.12	0.468	2.81	mg/kg	1					
Barium		72.7	0.0937	0.468	mg/kg	1					
Beryllium		1.68	0.0937	0.468	mg/kg	1					
Boron		9.51	0.937	4.68	mg/kg	1					
Cadmium	B	0.213	0.0937	0.468	mg/kg	1					
Calcium		8540	7.49	23.4	mg/kg	1					
Chromium		4.34	0.140	0.468	mg/kg	1					
Copper		16.7	0.281	0.937	mg/kg	1					
Iron		25300	7.49	23.4	mg/kg	1					
Lead		5.94	0.309	0.937	mg/kg	1					
Magnesium		4180	7.96	28.1	mg/kg	1					
Manganese		345	0.187	0.937	mg/kg	1					
Molybdenum	B	0.470	0.187	0.937	mg/kg	1					
Nickel		7.09	0.140	0.468	mg/kg	1					
Potassium		563	5.99	23.4	mg/kg	1					
Silicon	N	395	1.40	9.37	mg/kg	1					
Silver		0.494	0.0937	0.468	mg/kg	1					
Sodium	C	152	6.56	23.4	mg/kg	1					
Strontium		29.3	0.0937	0.468	mg/kg	1					
Antimony	D	14.9	1.55	4.68	mg/kg	5	HSC	05/08/15	2050	1476482	3
Cobalt	D	10.3	0.702	2.34	mg/kg	5					
Vanadium	DN	83.6	0.468	2.34	mg/kg	5					
Zinc	D	54.1	1.87	4.68	mg/kg	5					
Metals Analysis-ICP-MS											
SW846 3050B/6020A Se, U, Zr (3 metals) "Dry Weight Corrected"											
Selenium	DU	0.310	0.310	1.00	mg/kg	2	BCD1	05/08/15	2352	1476458	4
Uranium	D	0.389	0.0124	0.0376	mg/kg	2					
Zirconium	D	32.2	0.094	1.88	mg/kg	2	BCD1	05/11/15	1510	1476458	5

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: May 19, 2015

Company :	WC-Hanford, Inc.		
Address :	2620 Fermi Avenue MSIN H4-21 Richland, Washington 99354		
Contact:	Joan Kessner	Client SDG:	X0107
Project:	RC-246 Soil		

Client Sample ID:	J1V733	Project:	WCHN0RC246
Sample ID:	372321001	Client ID:	WCHN001

SW846 3050B	ICP-MS 3050BS PREP	JXM5	05/06/15	0800	1476457
SW846 3050B	SW846 3050B Prep for 6010C	JXM5	05/06/15	0800	1476481
SW846 7471B Prep	SW846 7471B Mercury Prep Soil	AXS5	05/14/15	1430	1478327

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 7471B	
2	SW846 3050B/6010C	
3	SW846 3050B/6010C	
4	SW846 3050B/6020A	
5	SW846 3050B/6020A	

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: May 19, 2015

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

Contact: **Joan Kessner**

Workorder: **372321** **Client SDG:** X0107 **Project Description:** RC-246 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1476458											
QC1203312643 372321001 DUP											
Selenium		DU	0.310	DU	0.316	mg/kg	N/A			BCD1	05/08/15 23:56
Uranium		D	0.389	D	0.392	mg/kg	0.864		(0%-20%)		
Zirconium		D	32.2	D	31.7	mg/kg	1.57		(0%-20%)		05/11/15 15:13
QC1203312642 LCS											
Selenium	4.65			D	4.44	mg/kg		95.5	(80%-120%)		05/08/15 23:40
Uranium	4.65			D	4.57	mg/kg		98.4	(80%-120%)		
Zirconium	4.65			D	4.89	mg/kg		105	(80%-120%)		05/11/15 15:06
QC1203312641 MB											
Selenium				DU	0.304	mg/kg					05/08/15 23:36
Uranium				DU	0.0122	mg/kg					
Zirconium				DU	0.0921	mg/kg					05/11/15 15:03
QC1203312644 372321001 MS											
Selenium	4.96	DU	0.310	D	4.33	mg/kg		87.3	(75%-125%)		05/08/15 23:59
Uranium	4.96	D	0.389	D	5.07	mg/kg		94.3	(75%-125%)		
Zirconium	4.96	D	32.2	D	39.5	mg/kg		N/A	(75%-125%)		05/11/15 15:16
QC1203312645 372321001 SDILT											
Selenium		DU	-0.515	DU	1.55	ug/L	N/A		(0%-10%)		05/09/15 00:07
Uranium		D	2.07	D	0.449	ug/L	8.61		(0%-10%)		
Zirconium		D	171	D	34.4	ug/L	.348		(0%-10%)		05/11/15 15:23
Metals Analysis-ICP											
Batch 1476482											
QC1203312698 372321001 DUP											
Aluminum			4190		4210	mg/kg	0.539		(0%-20%)	HSC	05/07/15 16:58
Antimony		D	14.9	D	15.8	mg/kg	6.02 ^		(+/-4.79)		05/08/15 20:53

QC Summary

Workorder: 372321 **Client SDG:** X0107 **Project Description:** RC-246 Soil

Metals Analysis-ICP
Batch 1476482

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Arsenic	B	2.12	B	2.00	mg/kg	6.01 ^		(+/-2.87)	HSC	05/07/15 16:58
Barium		72.7		66.6	mg/kg	8.75		(0%-20%)		
Beryllium		1.68		1.73	mg/kg	2.77 ^		(+/-0.479)		
Boron		9.51		8.89	mg/kg	6.74 ^		(+/-4.79)		
Cadmium	B	0.213	B	0.204	mg/kg	4.54 ^		(+/-0.479)		
Calcium		8540		8710	mg/kg	1.96		(0%-20%)		
Chromium		4.34		4.38	mg/kg	0.982		(0%-20%)		
Cobalt	D	10.3	D	11.0	mg/kg	6.59 ^		(+/-2.39)		05/08/15 20:53
Copper		16.7		16.4	mg/kg	1.42		(0%-20%)		05/07/15 16:58
Iron		25300		26000	mg/kg	2.70		(0%-20%)		
Lead		5.94		5.60	mg/kg	5.84		(0%-20%)		
Magnesium		4180		4330	mg/kg	3.45		(0%-20%)		
Manganese		345		285	mg/kg	19.1		(0%-20%)		
Molybdenum	B	0.470	B	0.511	mg/kg	8.43 ^		(+/-0.958)		
Nickel		7.09		7.77	mg/kg	9.20		(0%-20%)		
Potassium		563		486	mg/kg	14.7		(0%-20%)		
Silicon	N	395		397	mg/kg	0.651		(0%-20%)		
Silver		0.494	B	0.464	mg/kg	6.26 ^		(+/-0.479)		
Sodium	C	152		175	mg/kg	14.1		(0%-20%)		
Strontium		29.3		26.9	mg/kg	8.51		(0%-20%)		
Vanadium	DN	83.6	D	91.3	mg/kg	8.70		(0%-20%)		05/08/15 20:53

QC Summary

Workorder: 372321 **Client SDG:** X0107 **Project Description:** RC-246 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP										
Batch 1476482										
Zinc	D	54.1	D	56.4	mg/kg	4.22		(0%-20%)		
QC1203312697 LCS										
Aluminum	434			440	mg/kg		101	(80%-120%)	HSC	05/07/15 16:51
Antimony	43.4			44.7	mg/kg		103	(80%-120%)		05/08/15 20:43
Arsenic	43.4			45.1	mg/kg		104	(80%-120%)		05/07/15 16:51
Barium	43.4			44.6	mg/kg		103	(80%-120%)		
Beryllium	43.4			46.8	mg/kg		108	(80%-120%)		
Boron	43.4			46.9	mg/kg		108	(80%-120%)		
Cadmium	43.4			45.5	mg/kg		105	(80%-120%)		
Calcium	434			452	mg/kg		104	(80%-120%)		
Chromium	43.4			43.9	mg/kg		101	(80%-120%)		
Cobalt	43.4			44.7	mg/kg		103	(80%-120%)		05/08/15 20:43
Copper	43.4			45.9	mg/kg		106	(80%-120%)		05/07/15 16:51
Iron	434			456	mg/kg		105	(80%-120%)		
Lead	43.4			45.1	mg/kg		104	(80%-120%)		
Magnesium	434			456	mg/kg		105	(80%-120%)		
Manganese	43.4			44.5	mg/kg		102	(80%-120%)		
Molybdenum	43.4			43.4	mg/kg		100	(80%-120%)		
Nickel	43.4			45.5	mg/kg		105	(80%-120%)		
Potassium	434			440	mg/kg		101	(80%-120%)		
Silicon	434			405	mg/kg		93.3	(80%-120%)		
Silver	43.4			44.2	mg/kg		102	(80%-120%)		
Sodium	434			448	mg/kg		103	(80%-120%)		

QC Summary

Workorder: 372321 **Client SDG:** X0107 **Project Description:** RC-246 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP										
Batch 1476482										
Strontium	43.4			43.2	mg/kg		99.6	(80%-120%)	HSC	05/07/15 16:51
Vanadium	43.4			45.8	mg/kg		105	(80%-120%)		05/08/15 20:43
Zinc	43.4			45.0	mg/kg		104	(80%-120%)		
QC1203312696 MB										
Aluminum			U	6.77	mg/kg					05/07/15 16:48
Antimony			U	0.329	mg/kg					05/08/15 20:40
Arsenic			U	0.498	mg/kg					05/07/15 16:48
Barium			U	0.0996	mg/kg					
Beryllium			U	0.0996	mg/kg					
Boron			U	0.996	mg/kg					
Cadmium			U	0.0996	mg/kg					
Calcium			U	7.97	mg/kg					
Chromium			U	0.149	mg/kg					
Cobalt			U	0.149	mg/kg					05/08/15 20:40
Copper			B	0.603	mg/kg					05/07/15 16:48
Iron			U	7.97	mg/kg					
Lead			U	0.329	mg/kg					
Magnesium			U	8.47	mg/kg					
Manganese			U	0.199	mg/kg					
Molybdenum			U	0.199	mg/kg					
Nickel			U	0.149	mg/kg					
Potassium			U	6.37	mg/kg					

QC Summary

Workorder: 372321 **Client SDG:** X0107 **Project Description:** RC-246 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1476482											
Silicon				U	1.49	mg/kg				HSC	05/07/15 16:48
Silver				U	0.0996	mg/kg					
Sodium				B	12.1	mg/kg					
Strontium				U	0.0996	mg/kg					
Vanadium				U	0.0996	mg/kg					05/08/15 20:40
Zinc				U	0.398	mg/kg					
QC1203312699 372321001 MS											
Aluminum	461		4190		5550	mg/kg		N/A	(75%-125%)		05/07/15 17:01
Antimony	46.1	D	14.9	D	62.4	mg/kg		103	(75%-125%)		05/08/15 20:57
Arsenic	46.1	B	2.12		47.3	mg/kg		98.2	(75%-125%)		05/07/15 17:01
Barium	46.1		72.7		115	mg/kg		92.7	(75%-125%)		
Beryllium	46.1		1.68		46.8	mg/kg		97.9	(75%-125%)		
Boron	46.1		9.51		54.2	mg/kg		97.1	(75%-125%)		
Cadmium	46.1	B	0.213		42.8	mg/kg		92.4	(75%-125%)		
Calcium	461		8540		10800	mg/kg		N/A	(75%-125%)		
Chromium	46.1		4.34		46.0	mg/kg		90.5	(75%-125%)		
Cobalt	46.1	D	10.3	D	60.5	mg/kg		109	(75%-125%)		05/08/15 20:57
Copper	46.1		16.7		64.4	mg/kg		104	(75%-125%)		05/07/15 17:01
Iron	461		25300		28600	mg/kg		N/A	(75%-125%)		
Lead	46.1		5.94		49.8	mg/kg		95.1	(75%-125%)		
Magnesium	461		4180		5090	mg/kg		N/A	(75%-125%)		
Manganese	46.1		345		382	mg/kg		N/A	(75%-125%)		

QC Summary

Workorder: 372321 **Client SDG:** X0107 **Project Description:** RC-246 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1476482											
Molybdenum	46.1	B	0.470		43.7	mg/kg		93.8	(75%-125%)	HSC	05/07/15 17:01
Nickel	46.1		7.09		50.4	mg/kg		94.1	(75%-125%)		
Potassium	461		563		982	mg/kg		90.8	(75%-125%)		
Silicon	461	N	395	N	567	mg/kg		37.5*	(75%-125%)		
Silver	46.1		0.494		44.9	mg/kg		96.4	(75%-125%)		
Sodium	461	C	152		679	mg/kg		114	(75%-125%)		
Strontium	46.1		29.3		68.1	mg/kg		84.2	(75%-125%)		
Vanadium	46.1	DN	83.6	DN	144	mg/kg		132*	(75%-125%)		05/08/15 20:57
Zinc	46.1	D	54.1	D	107	mg/kg		116	(75%-125%)		
QC1203315298 372321001 PS											
Silicon	5000	N	4210		11900	ug/L		154*	(80%-120%)		05/08/15 20:46
Vanadium	500	DN	179	D	688	ug/L		102	(80%-120%)		05/08/15 21:00
QC1203312700 372321001 SDILT											
Aluminum			44800	D	9070	ug/L	1.32		(0%-10%)		05/07/15 17:05
Antimony		D	31.8	D	4.68	ug/L	26.4		(0%-10%)		05/08/15 21:03
Arsenic		B	22.6	D	5.03	ug/L	11.1		(0%-10%)		05/07/15 17:05
Barium			776	D	160	ug/L	2.84		(0%-10%)		
Beryllium			17.9	D	3.93	ug/L	9.64		(0%-10%)		
Boron			101	D	27.4	ug/L	35.2		(0%-10%)		
Cadmium		B	2.27	DU	0.468	ug/L	N/A		(0%-10%)		
Calcium			91200	D	18400	ug/L	1.15		(0%-10%)		
Chromium			46.3	D	9.11	ug/L	1.65		(0%-10%)		
Cobalt		D	22.1	D	5.22	ug/L	18.4		(0%-10%)		05/08/15 21:03

QC Summary

Workorder: 372321 **Client SDG:** X0107 **Project Description:** RC-246 Soil

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1476482											
Copper			178	D	33.2	ug/L	6.61		(0%-10%)	HSC	05/07/15 17:05
Iron			270000	D	57100	ug/L	5.78		(0%-10%)		
Lead			63.4	D	11.4	ug/L	9.76		(0%-10%)		
Magnesium			44700	D	9120	ug/L	2.05		(0%-10%)		
Manganese			3690	D	782	ug/L	5.98		(0%-10%)		
Molybdenum		B	5.02	DU	0.937	ug/L	N/A		(0%-10%)		
Nickel			75.7	D	15.8	ug/L	4.23		(0%-10%)		
Potassium			6020	D	1180	ug/L	1.92		(0%-10%)		
Silicon		N	4210	D	862	ug/L	2.32		(0%-10%)		
Silver			5.27	D	1.12	ug/L	6.43		(0%-10%)		
Sodium		C	1620	D	319	ug/L	1.76		(0%-10%)		
Strontium			313	D	63.6	ug/L	1.58		(0%-10%)		
Vanadium		DN	179	D	36.4	ug/L	1.98		(0%-10%)		05/08/15 21:03
Zinc		D	115	D	20.5	ug/L	11.1		(0%-10%)		
Metals Analysis-Mercury											
Batch 1478328											
QC1203317573 372321001 DUP											
Mercury		U	0.00395	U	0.00394	mg/kg	N/A			AXS5	05/15/15 12:19
QC1203317572 LCS											
Mercury	0.116				0.114	mg/kg		98.2	(80%-120%)		05/15/15 12:16
QC1203317571 MB											
Mercury				U	0.0039	mg/kg					05/15/15 12:14
QC1203317574 372321001 MS											
Mercury	0.117	U	0.00395		0.120	mg/kg		102	(80%-120%)		05/15/15 12:21
QC1203317575 372321001 SDILT											

QC Summary

Workorder: **372321** **Client SDG:** X0107 **Project Description:** RC-246 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-Mercury											
Batch 1478328											
Mercury	U	-0.008	DU	0.0197	ug/L	N/A		(0%-10%)		05/15/15	12:23

Notes:

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B 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).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- 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

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

Acid Digestion of Sediments, Sludges, and Soils

Batch ID: **1476481**
Analyst: Jack Mabry
Method: SW846 3050B
Lab SOP: GL-MA-E-009 REV# 25
Instrument: BAL-893

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1203312697	Metals Spike Mix II	UI2219327-06	.25	mL
LCS	1203312697	Metals Spike Mix I	UI2219330-01	.25	mL
MS	1203312699	Metals Spike Mix II	UI2219327-06	.25	mL
MS	1203312699	Metals Spike Mix I	UI2219330-01	.25	mL

Sample ID	Run Date	Matrix	Initial Weight (g)	Final Volume (mL)	Prep Factor (mL/g)
1203312696 MB	06-MAY-2015 08:00:00	Soil	0.502	50	99.60159
1203312697 LCS	06-MAY-2015 08:00:00	Soil	0.576	50	86.80556
372321001	06-MAY-2015 08:00:00	Soil	0.539	50	92.76438
1203312698 DUP (372321001)	06-MAY-2015 08:00:00	Soil	0.527	50	94.87666
1203312699 MS (372321001)	06-MAY-2015 08:00:00	Soil	0.548	50	91.24088
1203312700 SDILT (372321001)	06-MAY-2015 08:00:00	Soil	0.539	50	92.76438

Reagent/Solvent Lot ID	Description	Amount
2229061	Concentrated Nitric Acid	1.25 mL
2239606	HYDROCHLORIC ACID	10 mL

Comments:

Block Temperature: 93 C

Thermometer ID: 118631

Hot Block ID: 2

Prep Logbook

Acid Digestion of Sediments, Sludges, and Soils

Batch ID: **1476457**
Analyst: Jack Mabry
Method: SW846 3050B
Lab SOP: GL-MA-E-009 REV# 25
Instrument: BAL-893

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1203312642	ICP-MS spiking soluiton A	UI150219-A	.25	mL
LCS	1203312642	ICP-MS spiking solution B	UI150219-B	.25	mL
MS	1203312644	ICP-MS spiking soluiton A	UI150219-A	.25	mL
MS	1203312644	ICP-MS spiking solution B	UI150219-B	.25	mL

Sample ID	Run Date	Matrix	Initial Weight (g)	Final Volume (mL)	Prep Factor (mL/g)
1203312641 MB	06-MAY-2015 08:00:00	Soil	0.543	50	92.08103
1203312642 LCS	06-MAY-2015 08:00:00	Soil	0.538	50	92.9368
372321001	06-MAY-2015 08:00:00	Soil	0.537	50	93.10987
1203312643 DUP (372321001)	06-MAY-2015 08:00:00	Soil	0.528	50	94.69697
1203312644 MS (372321001)	06-MAY-2015 08:00:00	Soil	0.509	50	98.23183
1203312645 SDILT (372321001)	06-MAY-2015 08:00:00	Soil	0.537	50	93.10987

Reagent/Solvent Lot ID	Description	Amount
2229061	Concentrated Nitric Acid	5 mL
2240154	Hydrogen Peroxide 30%, from Bioassay	5 mL

Comments:

Block Temperature: 93 C

Thermometer ID: 118631

Hot Block ID: 2

Prep Logbook

Mercury Analysis Using the Perkin Elmer Automated Mercury Analyzer

Batch ID: **1478327**
Analyst: Alan Stanley
Method: SW846 7471B Prep
Lab SOP: GL-MA-E-010 REV# 29
Instrument: BAL 423

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1203317572	MHGSOILMSSPIKE	WHG150514-14	.3	mL
MS	1203317574	MHGSOILMSSPIKE	WHG150514-14	.3	mL

Sample ID	Run Date	Matrix	Initial Weight (g)	Final Volume (mL)	Prep Factor (mL/g)
1203317571 MB	14-MAY-2015 14:30:34	Soil	0.516	30	58.13953
1203317572 LCS	14-MAY-2015 14:30:34	Soil	0.516	30	58.13953
372321001	14-MAY-2015 14:30:34	Soil	0.514	30	58.36576
1203317573 DUP (372321001)	14-MAY-2015 14:30:34	Soil	0.515	30	58.25243
1203317574 MS (372321001)	14-MAY-2015 14:30:34	Soil	0.518	30	57.91506
1203317575 SDILT (372321001)	14-MAY-2015 14:30:34	Soil	0.514	30	58.36576

Reagent/Solvent Lot ID	Description	Amount
2219442-C	Hg reducing agent	3 mL
2224214-C	5% KMnO4 solution	7.5 mL
2259069-C	50% Aqua Regia	3 mL
WHG150514-07	Mercury Working Standard 1st Source CAL S 0.2/CRA	30 uL
WHG150514-08	Mercury Working Standard 1st Source CAL S 0.5	75 uL
WHG150514-09	Mercury Working 1st Source CAL S 2.0	300 uL
WHG150514-10	Mercury Working 1st Source CAL S 5.0/CCV	750 uL
WHG150514-11	Mercury Working 1st Source CAL S 10.0	1.5 mL
WHG150514-12	Mercury Working 2nd Source S 5.0/ICV	750 uL

Comments:

Digestion Start Date: 14-MAY-2015 14:30
Digestion End Date: 14-MAY-2015 15:00
Block Temperature: 94 C
Thermometer ID: 118629
Hot Block ID: 7