

SAF-RC-241
100N Sample Collection Supporting
100-N-85 Characterization Borehole
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt

H4-21

KW 3/2/15
INITIAL/DATE

COMMENTS:

SDG X0091

SAF-RC-241

Rad only

Chem only

Rad & Chem

Complete

Partial

Sample Location: C9410, I-001, I-002 & I-003



February 24, 2015

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

Re: RC-241 UPR-100-N-17 Archive
Work Order: 366661
SDG: X0091

Dear Joan Kessner:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on February 06, 2015. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,

Heather Shaffer
Project Manager

Purchase Order: 1510
Chain of Custody: RC-241-005, RC-241-007, RC-241-009 and RC-241-011
Enclosures



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Case Narrative

**Receipt Narrative
for
Eberline
SDG: X0091
Work Order: 366661**

February 24, 2015

Laboratory Identification:

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

Summary:

Sample receipt: The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on February 06, 2015 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Sample Identification: The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
366661001	B30C17
366661002	B30C19
366661003	B30C21
366661004	B30C23

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, FID Flame Ionization Detector, GC Volatiles (GRO) and HPLC Polynuclear Aromatic Hydrocarbon.

Heather Shaffer

Heather Shaffer
Project Manager

Chain of Custody and Supporting Documentation

CH2M Hill Plateau Remediation Company

COLLECTOR: *E. Kauer*

SAMPLING LOCATION: C9410, I-001

ICE CHEST NO.: *605-2916*

SHIPPED TO: GEL Laboratories, LLC

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

COMPANY CONTACT: SUMNER, LC

TELEPHONE NO.: 376-3922

PROJECT COORDINATOR: KESSNER, JH

PRICE CODE: 8K

AIR QUALITY:

DATA TURNAROUND: 15 Days / 45 Days

PROJECT DESIGNATION: 100-N-85 Characterization Borehole - Soil

FIELD LOGBOOK NO.: *HNF-N-507-28-95*

ACTUAL SAMPLE DEPTH: *22.5 Ft*

COA: 303630

METHOD OF SHIPMENT: FEDERAL EXPRESS

SAF NO.: RC-241

ORIGINAL

BILL OF LADING/AIR BILL NO.: *7728 4569 1121*

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HOLDING TIME	TYPE OF CONTAINER	NO. OF CONTAINER(S)	VOLUME	SAMPLE ANALYSIS	SAMPLE DATE	SAMPLE TIME	MATRIX*
A=Air DL=Drum L=Liquid DS=Drum S=Soil SF=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	Cool <=6C	14/40 Days	ag	1	500mL	PAHS - 8310; TPH-Gasoline Range - WTPH-G;	2-5-15	0925	SOIL
		Cool <=6C	14 Days	Gs*	3	40mL	TPH-Diesel Range - WTPH-D+;			
		Cool <=6C	14/40 Days	ag	1	420mL	Extractable Petroleum Hydrocarbons (EPH);			

SPECIAL INSTRUCTIONS

** It is critical to ensure that the correct TAT and price code is marked on each COC.** The field NCOs are to identify on the COC and Field Sampling Report any samples with indications (visual, odor, or per meter) of high organic content.** Include sampling location (drilling ID) on the COC. TRVL-15-016

TRVL-15-016

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	<i>E. Kauer</i>	<i>LD Weil</i>	2-5-15 1215
RELINQUISHED BY/REMOVED FROM	<i>E. Kauer</i>	<i>CHPRC</i>	2-5-15 1215
RELINQUISHED BY/REMOVED FROM	<i>FDL</i>	<i>FEDEX</i>	
RELINQUISHED BY/REMOVED FROM	<i>FDL</i>	<i>CHPRC</i>	FEB 05 2015 1400
RELINQUISHED BY/REMOVED FROM	<i>FDL</i>	<i>CHPRC</i>	
RELINQUISHED BY/REMOVED FROM	<i>FDL</i>	<i>CHPRC</i>	
RELINQUISHED BY/REMOVED FROM	<i>FDL</i>	<i>CHPRC</i>	
RELINQUISHED BY/REMOVED FROM	<i>FDL</i>	<i>CHPRC</i>	
RELINQUISHED BY/REMOVED FROM	<i>FDL</i>	<i>CHPRC</i>	
RELINQUISHED BY/REMOVED FROM	<i>FDL</i>	<i>CHPRC</i>	

LABORATORY SECTION: RECEIVED BY

FINAL SAMPLE DISPOSITION: DISPOSAL METHOD

PRINTED ON 1/21/2015

A-6003-618 (REV 2)

52107

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-241-011	PAGE 1 OF 1
COLLECTOR E. Kewer	COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR KESSNER, JH	PRICE CODE 8K	DATA TURNAROUND 15 Days / 45 Days		
SAMPLING LOCATION C9410, I-003	PROJECT DESIGNATION 100-N-85 Characterization Borehole - Soil	ACTUAL SAMPLE DEPTH 33.4 ft	SAF NO. RC-241	AIR QUALITY	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL	
ICE CHEST NO. 065-296	FIELD LOGBOOK NO. HNF-N-507-28-95	OFFSITE PROPERTY NO. 5390	COA 303630	BILL OF LADING/AIR BILL NO. 7728 4509 1121			
SHIPPED TO GEL Laboratories, LLC							
MATRIX* A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION Cool <=6C	Cool <=6C	Cool <=6C	Cool <=6C	Cool <=6C	
		HOLDING TIME 14/40 Days	14 Days	14/40 Days	14 Days	14 Days	
		TYPE OF CONTAINER aG	aG	G	aG	aG	
		NO. OF CONTAINER(S) 1	3	1	1	1	
		VOLUME 500mL	40mL	120mL 120mL 120mL	120mL 120mL 120mL	120mL 120mL 120mL	
		SAMPLE ANALYSIS PAHS - 8310;	TPH-Gasoline Range - WTPH-G;	TPH-Diesel Range - WTPH-D+;	Extractable Petroleum Hydrocarbons (EPH);	Extractable Petroleum Hydrocarbons (EPH);	
SPECIAL HANDLING AND/OR STORAGE							
SAMPLE NO. B30C23	MATRIX* SOIL	SAMPLE DATE 2-5-15	SAMPLE TIME 1150				

3666661

SPECIAL INSTRUCTIONS

** It is critical to ensure that the correct TAT and price code is marked on each COC. ** The field NCOs are to identify on the COC and Field Sampling Report any samples with indications (visual, odor, or per meter) of high organic content. ** Include sampling location (drilling ID) on the COC. TRVL-15-016

TRVL-15-016

SIGN/ PRINT NAMES

RECEIVED BY/STORED IN	DATE/TIME
L.D. Wall	2-5-15 1215
RECEIVED BY/STORED IN	DATE/TIME
FEDEX	
RECEIVED BY/STORED IN	DATE/TIME
02/06/15 0845	
RECEIVED BY/STORED IN	DATE/TIME
RECEIVED BY/STORED IN	DATE/TIME
RECEIVED BY/STORED IN	DATE/TIME
RECEIVED BY/STORED IN	DATE/TIME

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME
E. Kewer	2-5-15 1215
RELINQUISHED BY/REMOVED FROM	DATE/TIME
L.D. Wall	FEB 05 2015 1400
RELINQUISHED BY/REMOVED FROM	DATE/TIME
FEDEX	
RELINQUISHED BY/REMOVED FROM	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME



SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPFC</u>		SDG/AR/COC/Work Order: <u>3000001</u>	
Received By: <u>cas</u>		Date Received: <u>02/09/15</u>	
Suspected Hazard Information		Yes	No
COC/Samples marked as radioactive?			<input checked="" type="checkbox"/>
Classified Radioactive II or III by RSO?			<input checked="" type="checkbox"/>
COC/Samples marked containing PCBs?			<input checked="" type="checkbox"/>
Package, COC, and/or Samples marked as beryllium or asbestos containing?			<input checked="" type="checkbox"/>
Shipped as a DOT Hazardous?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: <u>Ice bags</u> Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius <u>2.5°C</u>
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: <u>130532792</u> Secondary Temperature Device Serial # (If Applicable):
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
7 Are Encore containers present?	<input checked="" type="checkbox"/>			(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected:
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>			
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
14 Carrier and tracking number.	<input checked="" type="checkbox"/>			Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other <u>7728 4509 1121</u>

Comments (Use Continuation Form if needed):

Laboratory Certifications

List of current GEL Certifications as of 24 February 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
South Carolina Chemistry	10120001
South Carolina GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-15-10
Utah NELAP	SC000122014-16
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12

HPLC Polynuclear Aromatic Hydrocarbon Analysis

**HPLC Polynuclear Aromatic Hydrocarbon
Technical Case Narrative
Eberline (WCHN)
SDG #: X0091
Work Order #: 366661**

Method/Analysis Information

Procedure: Polynuclear Aromatic Hydrocarbons

Analytical Method: SW846 8310

Prep Method: SW846 3550B

Analytical Batch Number: 1458536

Prep Batch Number: 1458535

Sample Analysis

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

Sample ID	Client ID
366661001	B30C17
366661002	B30C19
366661003	B30C21
366661004	B30C23
1203266788	MB for batch 1458535
1203266789	Laboratory Control Sample (LCS)
1203266790	366661004(B30C23) Matrix Spike (MS)
1203266791	366661004(B30C23) 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 366661004 (B30C23) 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 1203266789 (LCS) and 1203266791 (B30C23MSD) 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.

Samples 366661001 (B30C17), 366661002 (B30C19), 366661003 (B30C21), and 366661004 (B30C23) were initially analyzed in batch# 1456957, however due to multiple non-conforming recoveries in the LCS, all samples were sent back for re-extraction. Since samples were still in hold and all QC requirements were met, all data will be reported from this analytical batch, 1458536.

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: X0091 GEL Work Order: 366661 Project: RC-241 UPR-100-N-17

The Qualifiers in this report are defined as follows:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

DL Indicates that sample is diluted.

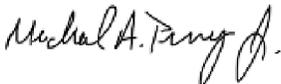
RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Michael Penny

Date: 24 FEB 2015

Title: Group Leader

Roadmap for WCHN X0091 HPLC_PAH

This roadmap was analyzed by cww on 02-24-2015, 08:12.

This roadmap was reviewed by map on 02-24-2015, 08:29.

This roadmap was packaged by map on 02-24-2015, 09:51.

Sample

exclude	manual	datafile	smpid	injdate	injtime	sublist	clientid	dilution	batchid	comment
■	N	/chem/hplcc.i/p021615.b/ph5b1606.d	366661001	16-FEB-2015	19:00	X0091.sub	B30C17	1	1456957	Duse, report from re-extraction batch# 1458536
□	N	/chem/hplcc.i/p022015.b/ph5b2040.d	366661001	21-FEB-2015	17:08	X0091.sub	B30C17	1	1458536	(RE) In-hold, report from here.
■	N	/chem/hplcc.i/p021615.b/ph5b1609.d	366661002	16-FEB-2015	21:06	X0091.sub	B30C19	1	1456957	Duse, report from re-extraction batch# 1458536
□	N	/chem/hplcc.i/p022015.b/ph5b2041.d	366661002	21-FEB-2015	17:50	X0091.sub	B30C19	1	1458536	(RE) In-hold, report from here.
■	N	/chem/hplcc.i/p021615.b/ph5b1610.d	366661003	16-FEB-2015	21:48	X0091.sub	B30C21	1	1456957	Duse, report from re-extraction batch# 1458536
□	N	/chem/hplcc.i/p022015.b/ph5b2042.d	366661003	21-FEB-2015	18:33	X0091.sub	B30C21	1	1458536	(RE) In-hold, report from here.
■	N	/chem/hplcc.i/p021615.b/ph5b1611.d	366661004	16-FEB-2015	22:30	X0091.sub	B30C23	1	1456957	Duse, report from re-extraction batch# 1458536
□	N	/chem/hplcc.i/p022015.b/ph5b2043.d	366661004	21-FEB-2015	19:15	X0091.sub	B30C23	1	1458536	(RE) In-hold, report from here.

QC Sample

exclude	manual	datafile	smpid	sampletype	injdate	injtime	sublist	clientid	dilution	batchid	comment
■	N	/chem/hplcc.i/p021615.b/ph5b1604.d	1203262584	mb	16-FEB-2015	17:35	X0091.sub	PAHBLK01	1	1456957	Duse, report from re-extraction batch# 1458536
■	N	/chem/hplcc.i/p021615.b/ph5b1605.d	1203262585	ks	16-FEB-2015	18:17	X0091.sub	PAHBLK01LCS	1	1456957	Duse, Low spike recoveries. All samples sent back for RE.
■	N	/chem/hplcc.i/p021615.b/ph5b1607.d	1203262586	ms	16-FEB-2015	19:42	X0091.sub	B30C17MS	1	1456957	Duse, Pass
■	N	/chem/hplcc.i/p021615.b/ph5b1608.d	1203262587	msd	16-FEB-2015	20:24	X0091.sub	B30C17MSD	1	1456957	Duse, Pass
□	N	/chem/hplcc.i/p022015.b/ph5b2038.d	1203266788	mb	21-FEB-2015	15:44	X0091.sub	PAHBLK01	1	1458536	(RE)
□	N	/chem/hplcc.i/p022015.b/ph5b2039.d	1203266789	ks	21-FEB-2015	16:26	X0091.sub	PAHBLK01LCS	1	1458536	(RE) Pass
□	N	/chem/hplcc.i/p022015.b/ph5b2044.d	1203266790	ms	21-FEB-2015	19:57	X0091.sub	B30C23MS	1	1458536	(RE) In-hold, report from here.
□	N	/chem/hplcc.i/p022015.b/ph5b2045.d	1203266791	msd	21-FEB-2015	20:39	X0091.sub	B30C23MSD	1	1458536	(RE) In-hold, report from here.

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 24, 2015

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-241 UPR-100-N-17 Archive

Client SDG: X0091

Client Sample ID: B30C17 Project: WCHN0RC241
 Sample ID: 366661001 Client ID: WCHN001
 Matrix: SOIL
 Collect Date: 05-FEB-15 09:25
 Receive Date: 06-FEB-15
 Collector: Client
 Moisture: 3.67%

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	5.19	5.19	17.3	ug/kg	1	CWW	02/21/15	1708	1458536	1
Acenaphthylene	U	5.19	5.19	17.3	ug/kg	1					
Anthracene	U	1.73	1.73	17.3	ug/kg	1					
Benzo(a)anthracene	U	0.553	0.553	1.73	ug/kg	1					
Benzo(a)pyrene	U	0.553	0.553	1.73	ug/kg	1					
Benzo(b)fluoranthene	U	0.553	0.553	1.73	ug/kg	1					
Benzo(ghi)perylene	U	0.553	0.553	1.73	ug/kg	1					
Benzo(k)fluoranthene	U	0.277	0.277	0.865	ug/kg	1					
Chrysene	U	0.553	0.553	1.73	ug/kg	1					
Dibenzo(a,h)anthracene	U	0.553	0.553	1.73	ug/kg	1					
Fluoranthene	U	0.553	0.553	1.73	ug/kg	1					
Fluorene	U	5.19	5.19	17.3	ug/kg	1					
Indeno(1,2,3-cd)pyrene	U	0.553	0.553	1.73	ug/kg	1					
Naphthalene	U	5.19	5.19	17.3	ug/kg	1					
Phenanthrene	U	5.19	5.19	17.3	ug/kg	1					
Pyrene	U	0.553	0.553	1.73	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	02/12/15	1110	1456955
SW846 3550B	3550B PAH BY HPLC Prep in soil	SJW1	02/18/15	1023	1458535

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"	7200 ug/kg	8650	83.3	(46%-101%)

Notes:

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Certificate of Analysis

Report Date: February 24, 2015

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-241 UPR-100-N-17 Archive

Client SDG: X0091

Client Sample ID: B30C19 Project: WCHN0RC241
 Sample ID: 366661002 Client ID: WCHN001
 Matrix: SOIL
 Collect Date: 05-FEB-15 09:25
 Receive Date: 06-FEB-15
 Collector: Client
 Moisture: 3.95%

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	5.19	5.19	17.3	ug/kg	1	CWW	02/21/15	1750	1458536	1
Acenaphthylene	U	5.19	5.19	17.3	ug/kg	1					
Anthracene	U	1.73	1.73	17.3	ug/kg	1					
Benzo(a)anthracene	U	0.553	0.553	1.73	ug/kg	1					
Benzo(a)pyrene	U	0.553	0.553	1.73	ug/kg	1					
Benzo(b)fluoranthene	U	0.553	0.553	1.73	ug/kg	1					
Benzo(ghi)perylene	U	0.553	0.553	1.73	ug/kg	1					
Benzo(k)fluoranthene	U	0.277	0.277	0.864	ug/kg	1					
Chrysene	U	0.553	0.553	1.73	ug/kg	1					
Dibenzo(a,h)anthracene	U	0.553	0.553	1.73	ug/kg	1					
Fluoranthene	U	0.553	0.553	1.73	ug/kg	1					
Fluorene	U	5.19	5.19	17.3	ug/kg	1					
Indeno(1,2,3-cd)pyrene	U	0.553	0.553	1.73	ug/kg	1					
Naphthalene	U	5.19	5.19	17.3	ug/kg	1					
Phenanthrene	U	5.19	5.19	17.3	ug/kg	1					
Pyrene	U	0.553	0.553	1.73	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	02/12/15	1110	1456955
SW846 3550B	3550B PAH BY HPLC Prep in soil	SJW1	02/18/15	1023	1458535

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"	7200 ug/kg	8640	83.3	(46%-101%)

Notes:

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Certificate of Analysis

Report Date: February 24, 2015

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-241 UPR-100-N-17 Archive

Client SDG: X0091

Client Sample ID: B30C21	Project: WCHN0RC241
Sample ID: 366661003	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 05-FEB-15 10:10	
Receive Date: 06-FEB-15	
Collector: Client	
Moisture: 3.7%	

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	5.19	5.19	17.3	ug/kg	1	CWW	02/21/15	1833	1458536	1
Acenaphthylene	U	5.19	5.19	17.3	ug/kg	1					
Anthracene	U	1.73	1.73	17.3	ug/kg	1					
Benzo(a)anthracene	U	0.554	0.554	1.73	ug/kg	1					
Benzo(a)pyrene	U	0.554	0.554	1.73	ug/kg	1					
Benzo(b)fluoranthene	U	0.554	0.554	1.73	ug/kg	1					
Benzo(ghi)perylene	U	0.554	0.554	1.73	ug/kg	1					
Benzo(k)fluoranthene	U	0.277	0.277	0.865	ug/kg	1					
Chrysene	U	0.554	0.554	1.73	ug/kg	1					
Dibenzo(a,h)anthracene	U	0.554	0.554	1.73	ug/kg	1					
Fluoranthene	U	0.554	0.554	1.73	ug/kg	1					
Fluorene	U	5.19	5.19	17.3	ug/kg	1					
Indeno(1,2,3-cd)pyrene	U	0.554	0.554	1.73	ug/kg	1					
Naphthalene	U	5.19	5.19	17.3	ug/kg	1					
Phenanthrene	U	5.19	5.19	17.3	ug/kg	1					
Pyrene	U	0.554	0.554	1.73	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	02/12/15	1110	1456955
SW846 3550B	3550B PAH BY HPLC Prep in soil	SJW1	02/18/15	1023	1458535

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"	7170 ug/kg	8650	82.9	(46%-101%)

Notes:

QC Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: February 24, 2015

Page 1 of 4

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

Workorder: 366661

Client SDG: X0091

Project Description: RC-241 UPR-100-N-17 Archive

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
HPLC-PAH											
Batch	1458536										
QC1203266789	LCS										
Acenaphthene	1670			1620	ug/kg		97.5	(66%-98%)	CWW	02/21/15	16:26
Acenaphthylene	1670			1570	ug/kg		94	(65%-95%)			
Anthracene	1670			1580	ug/kg		95.1	(71%-107%)			
Benzo(a)anthracene	167			157	ug/kg		94.1	(72%-103%)			
Benzo(a)pyrene	167			146	ug/kg		87.7	(68%-98%)			
Benzo(b)fluoranthene	167			155	ug/kg		93.2	(72%-99%)			
Benzo(ghi)perylene	167			157	ug/kg		94.3	(69%-98%)			
Benzo(k)fluoranthene	83.3			83.2	ug/kg		99.8	(62%-103%)			
Chrysene	167			155	ug/kg		92.9	(80%-113%)			
Dibenzo(a,h)anthracene	167			159	ug/kg		95.1	(83%-115%)			
Fluoranthene	167			155	ug/kg		93	(68%-98%)			
Fluorene	1670			1620	ug/kg		97.4	(68%-99%)			
Indeno(1,2,3-cd)pyrene	167			161	ug/kg		96.5	(76%-105%)			
Naphthalene	1670			1500	ug/kg		90	(62%-93%)			
Phenanthrene	1670			1580	ug/kg		94.6	(70%-98%)			
Pyrene	167			151	ug/kg		90.5	(73%-104%)			
**Decafluorobiphenyl	8330			6950	ug/kg		83.4	(46%-101%)			
QC1203266788	MB										
Acenaphthene			U	5.00	ug/kg					02/21/15	15:44
Acenaphthylene			U	5.00	ug/kg						

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QC Summary

Workorder: 366661

Client SDG: X0091

Project Description: RC-241 UPR-100-N-17 Archive

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
HPLC-PAH											
Batch	1458536										
Anthracene			U	1.67	ug/kg						
Benzo(a)anthracene			U	0.533	ug/kg				CWW	02/21/15	15:44
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	0.267	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			6800	ug/kg		81.6	(46%-101%)			
QC1203266790 366661004 MS											
Acenaphthene	1720	U	5.18	1450	ug/kg		84.3	(57%-97%)		02/21/15	19:57
Acenaphthylene	1720	U	5.18	1400	ug/kg		81.4	(55%-94%)			
Anthracene	1720	U	1.73	1370	ug/kg		79.6	(65%-103%)			
Benzo(a)anthracene	172	U	0.553	132	ug/kg		76.4	(53%-110%)			
Benzo(a)pyrene	172	U	0.553	124	ug/kg		71.9	(53%-105%)			
Benzo(b)fluoranthene	172	U	0.553	130	ug/kg		75.4	(52%-110%)			
Benzo(ghi)perylene	172	U	0.553	132	ug/kg		76.5	(44%-107%)			

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QC Summary

Workorder: 366661

Client SDG: X0091

Project Description: RC-241 UPR-100-N-17 Archive

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
HPLC-PAH											
Batch	1458536										
Benzo(k)fluoranthene	86.1	U	0.276	70.1	ug/kg		81.5	(48%-116%)	CWW	02/21/15	19:57
Chrysene	172	U	0.553	130	ug/kg		75.7	(61%-118%)			
Dibenzo(a,h)anthracene	172	U	0.553	133	ug/kg		77.3	(63%-119%)			
Fluoranthene	172	U	0.553	130	ug/kg		75.8	(56%-100%)			
Fluorene	1720	U	5.18	1440	ug/kg		83.8	(59%-97%)			
Indeno(1,2,3-cd)pyrene	172	U	0.553	135	ug/kg		78.5	(53%-115%)			
Naphthalene	1720	U	5.18	1330	ug/kg		77.4	(54%-88%)			
Phenanthrene	1720	U	5.18	1390	ug/kg		80.8	(60%-99%)			
Pyrene	172	U	0.553	127	ug/kg		73.6	(54%-112%)			
**Decafluorobiphenyl	8610		7310	6610	ug/kg		76.9	(46%-101%)			
QC1203266791 366661004 MSD											
Acenaphthene	1720	U	5.18	1430	ug/kg	1.43	83.1	(0%-30%)		02/21/15	20:39
Acenaphthylene	1720	U	5.18	1380	ug/kg	1.75	80	(0%-30%)			
Anthracene	1720	U	1.73	1410	ug/kg	2.94	82	(0%-30%)			
Benzo(a)anthracene	172	U	0.553	139	ug/kg	5.46	80.7	(0%-30%)			
Benzo(a)pyrene	172	U	0.553	130	ug/kg	5.18	75.7	(0%-30%)			
Benzo(b)fluoranthene	172	U	0.553	137	ug/kg	5.27	79.5	(0%-30%)			
Benzo(ghi)perylene	172	U	0.553	139	ug/kg	5.23	80.6	(0%-30%)			
Benzo(k)fluoranthene	86.1	U	0.276	73.6	ug/kg	4.88	85.5	(0%-30%)			
Chrysene	172	U	0.553	136	ug/kg	4.08	78.8	(0%-30%)			
Dibenzo(a,h)anthracene	172	U	0.553	140	ug/kg	5.18	81.4	(0%-30%)			
Fluoranthene	172	U	0.553	135	ug/kg	3.72	78.6	(0%-30%)			

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QC Summary

Workorder: 366661

Client SDG: X0091

Project Description: RC-241 UPR-100-N-17 Archive

Page 4 of 4

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
HPLC-PAH											
Batch	1458536										
Fluorene	1720	U	5.18	1440	ug/kg	0.0153	83.8	(0%-30%)	CWW	02/21/15	20:39
Indeno(1,2,3-cd)pyrene	172	U	0.553	142	ug/kg	4.80	82.4	(0%-30%)			
Naphthalene	1720	U	5.18	1300	ug/kg	2.52	75.5	(0%-30%)			
Phenanthrene	1720	U	5.18	1420	ug/kg	2.10	82.6	(0%-30%)			
Pyrene	172	U	0.553	133	ug/kg	4.63	77.1	(0%-30%)			
*Decafluorobiphenyl	8610		7310	6540	ug/kg		76	(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 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 Data

Prep Logbook

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

Batch ID: 1458535 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)
1203266788 MB	18-FEB-2015 10:23:00	30.01	1	0.03332
1203266789 LCS	18-FEB-2015 10:23:00	30.01	1	0.03332
366661001 - 2	18-FEB-2015 10:23:00	30.02	1	0.03331
366661002 - 2	18-FEB-2015 10:23:00	30.11	1	0.03321
366661003 - 2	18-FEB-2015 10:23:00	30	1	0.03333
366661004 - 2	18-FEB-2015 10:23:00	30	1	0.03333
1203266790 - 2 MS (366661004)	18-FEB-2015 10:23:00	30.12	1	0.0332
1203266791 - 2 MSD (366661004)	18-FEB-2015 10:23:00	30.12	1	0.0332

Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1203266789	8310 PAH SPIKE	UE150205-10	1	mL	Verified By: MD
MS	1203266790	8310 PAH SPIKE	UE150205-10	1	mL	Final Solvent: ACN
MSD	1203266791	8310 PAH SPIKE	UE150205-10	1	mL	
SURR	All	Decafluorobiphenyl 250 mg/L	UE150121-35	1	mL	
REGNT	All	Methylene Chloride	2217490-D	300	mL	
REGNT	All	Acetonitrile UV 4L	2219831	5	mL	
SOURC	All	SODIUM SULFATE	2193342	30	g	

Flame Ionization Detector Analysis

Case Narrative

**FID Flame Ionization Detector
Technical Case Narrative
Eberline (WCHN)
SDG #: X0091
Work Order #: 366661**

Method/Analysis Information

Procedure:	Washington Method for the Determination of Extractable Petroleum Hydrocarbons
Analytical Method:	WA EPH
Prep Method:	WA EPH
Analytical Batch Number:	1458859
Prep Batch Number:	1458858

Sample Analysis

The following samples were analyzed using the analytical protocol as established in WA EPH:

Sample ID	Client ID
366661001	B30C17
366661002	B30C19
366661003	B30C21
366661004	B30C23
1203267745	MB for batch 1458858
1203267746	Laboratory Control Sample (LCS)
1203267747	366661004(B30C23) Matrix Spike (MS)
1203267748	366661004(B30C23) 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-075 REV# 0.

Raw data reports are processed and reviewed by the analyst using ChemStation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP) section 23.0.

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.

Quality Control (QC) Information

Method Blank (MB) Statement

Aliphatic Hydrocarbons (C8-C10) were detected in the MB at a concentration above the MDL, but below the PQL. This same range was also detected in several samples, all at concentrations below the PQL.

Surrogate Recoveries

Samples 366661001 (B30C17) and 366661004 (B30C23) failed surrogate recovery limits. The original extractions passed surrogate recovery limits and confirmed the absence of any target analyte hits above the RDL. The samples were re-extracted due to LCS failure. As the sample results confirmed, data were reported from the re-extractions. Sample 366661002 (B30C19) failed to meet acceptance criteria for surrogate recovery and was re-extracted. The re-extracted sample failed surrogate recovery in the same manner; therefore, the failure is attributed to matrix interference.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 366661004 (B30C23) was selected for the matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

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

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the MS and MSD 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.

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

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1384395.

Manual Integrations

Certain standards and QC 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 GC-FID analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
FID5.I	Agilent Gas Chromatograph	Agilent 6890N GC/FID	J&W DB-5MS	30m x 0.25mm, 0.25um(J&W)
FID5.I	Agilent Gas Chromatograph	Agilent 6890N GC/FID	J&W DB-WAX	30m x 0.53 mm x 1um
FID5.I	Agilent Gas Chromatograph	Agilent 6890N GC/FID	J&W DB-624	30m x 0.53mm, 3.0um(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. 21-FEB-15	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: GC/FID	Test / Method: WA EPH	Matrix Type: Solid	Client Code: WCHN
Batch ID: 1458859	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 366661(X0091)			
Application Issues: Failed Recovery for MS/MSD, or PS/PSD Failed Yield for Surrogates			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. Failed Recovery for MS/MSD, or PS/PSD: QC 1203267747MS,1203267748MSD</p> <p>2. Failed Yield for Surrogates: 366661 001,002,003,004</p>		<p>1. The MS recoveries for this SDG were not within the acceptance limits. The failures confirm in the matrix spike duplicate and are attributed to matrix interference. 1203267747 (B30C23MS) and 1203267748 (B30C23MSD).</p> <p>2. Sample 366661002 (B30C19) failed to meet acceptance criteria for surrogate recovery and was re-extracted. The re-extracted sample failed surrogate recovery in the same manner; therefore, the failure is attributed to matrix interference.</p> <p>Samples failed surrogate recovery limits. The original extractions met surrogate recovery limits, but confirm the absence of any target analyte hits above the RDL. Data are reported from the re-extractions. 366661001 (B30C17) and 366661004 (B30C23).</p>	

Originator's Name:

Josh Brooks 21-FEB-15

Data Validator/Group Leader:

Cameron Bearden 24-FEB-15

GEL LABORATORIES LLC

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

Qualifier Definition Report for

WCHN001 Eberline

Client SDG: X0091 GEL Work Order: 366661 Project: RC-241 UPR-100-N-17

The Qualifiers in this report are defined as follows:

- B The analyte was detected in both the associated QC blank and in the sample.
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- 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: Cameron Bearden

Date: 26 FEB 2015

Title: Group Leader

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: February 24, 2015

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-241 UPR-100-N-17 Archive

Client SDG: X0091

Client Sample ID: B30C17 Project: WCHN0RC241
 Sample ID: 366661001 Client ID: WCHN001
 Matrix: SOIL
 Collect Date: 05-FEB-15 09:25
 Receive Date: 06-FEB-15
 Collector: Client
 Moisture: 3.67%

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
GC-FID											
Washington EPH Solid "Dry Weight Corrected"											
Aliphatic Hydrocarbons >C10-C12	TU	690	690	1380	ug/Kg	1	JMB3	02/20/15	2135	1458859	1
Aliphatic Hydrocarbons >C12-C16	U	690	690	1380	ug/Kg	1					
Aliphatic Hydrocarbons >C16-C21	TU	690	690	1380	ug/Kg	1					
Aliphatic Hydrocarbons >C21-C34	U	690	690	1380	ug/Kg	1					
Aliphatic Hydrocarbons C8-C10	BJT	1070	690	1380	ug/Kg	1					
Aromatic Hydrocarbons >C10-C12	U	690	690	1380	ug/Kg	1	JMB3	02/20/15	1606	1458859	2
Aromatic Hydrocarbons >C12-C16	TU	690	690	1380	ug/Kg	1					
Aromatic Hydrocarbons >C16-C21	TU	690	690	1380	ug/Kg	1					
Aromatic Hydrocarbons >C21-C34	TU	690	690	1380	ug/Kg	1					
Aromatic Hydrocarbons C8-C10	U	690	690	1380	ug/Kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
WA EPH	Washington EPH Prep Solids	SJW1	02/17/15	1258	1457534
WA EPH	Washington EPH Prep Solids	SJW1	02/19/15	1145	1458858

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	WA EPH	
2	WA EPH	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chlorooctadecane	Washington EPH Solid "Dry Weight Corrected"	871 ug/Kg	1380	63.1	(60%-140%)
o-Terphenyl	Washington EPH Solid "Dry Weight Corrected"	758 ug/Kg	1380	54.9*	(60%-140%)

Notes:

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Certificate of Analysis

Report Date: February 24, 2015

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-241 UPR-100-N-17 Archive

Client SDG: X0091

Client Sample ID: B30C19 Project: WCHN0RC241
 Sample ID: 366661002 Client ID: WCHN001
 Matrix: SOIL
 Collect Date: 05-FEB-15 09:25
 Receive Date: 06-FEB-15
 Collector: Client
 Moisture: 3.95%

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
GC-FID											
Washington EPH Solid "Dry Weight Corrected"											
Aliphatic Hydrocarbons >C10-C12	TU	692	692	1380	ug/Kg	1	JMB3	02/20/15	2205	1458859	1
Aliphatic Hydrocarbons >C12-C16	U	692	692	1380	ug/Kg	1					
Aliphatic Hydrocarbons >C16-C21	TU	692	692	1380	ug/Kg	1					
Aliphatic Hydrocarbons >C21-C34	U	692	692	1380	ug/Kg	1					
Aliphatic Hydrocarbons C8-C10	BJT	1220	692	1380	ug/Kg	1					
Aromatic Hydrocarbons >C10-C12	U	692	692	1380	ug/Kg	1	JMB3	02/20/15	1636	1458859	2
Aromatic Hydrocarbons >C12-C16	TU	692	692	1380	ug/Kg	1					
Aromatic Hydrocarbons >C16-C21	TU	692	692	1380	ug/Kg	1					
Aromatic Hydrocarbons >C21-C34	TU	692	692	1380	ug/Kg	1					
Aromatic Hydrocarbons C8-C10	U	692	692	1380	ug/Kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
WA EPH	Washington EPH Prep Solids	SJW1	02/17/15	1258	1457534
WA EPH	Washington EPH Prep Solids	SJW1	02/19/15	1145	1458858

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	WA EPH	
2	WA EPH	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chlorooctadecane	Washington EPH Solid "Dry Weight Corrected"	1020 ug/Kg	1380	73.5	(60%-140%)
o-Terphenyl	Washington EPH Solid "Dry Weight Corrected"	758 ug/Kg	1380	54.8*	(60%-140%)

Notes:

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Certificate of Analysis

Report Date: February 24, 2015

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-241 UPR-100-N-17 Archive

Client SDG: X0091

Client Sample ID: B30C21 Project: WCHN0RC241
 Sample ID: 366661003 Client ID: WCHN001
 Matrix: SOIL
 Collect Date: 05-FEB-15 10:10
 Receive Date: 06-FEB-15
 Collector: Client
 Moisture: 3.7%

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
GC-FID											
Washington EPH Solid "Dry Weight Corrected"											
Aliphatic Hydrocarbons >C10-C12	TU	691	691	1380	ug/Kg	1	JMB3	02/20/15	2235	1458859	1
Aliphatic Hydrocarbons >C12-C16	U	691	691	1380	ug/Kg	1					
Aliphatic Hydrocarbons >C16-C21	TU	691	691	1380	ug/Kg	1					
Aliphatic Hydrocarbons >C21-C34	U	691	691	1380	ug/Kg	1					
Aliphatic Hydrocarbons C8-C10	BJT	1220	691	1380	ug/Kg	1					
Aromatic Hydrocarbons >C10-C12	U	691	691	1380	ug/Kg	1	JMB3	02/20/15	1705	1458859	2
Aromatic Hydrocarbons >C12-C16	TU	691	691	1380	ug/Kg	1					
Aromatic Hydrocarbons >C16-C21	TU	691	691	1380	ug/Kg	1					
Aromatic Hydrocarbons >C21-C34	TU	691	691	1380	ug/Kg	1					
Aromatic Hydrocarbons C8-C10	U	691	691	1380	ug/Kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
WA EPH	Washington EPH Prep Solids	SJW1	02/17/15	1258	1457534
WA EPH	Washington EPH Prep Solids	SJW1	02/19/15	1145	1458858

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	WA EPH	
2	WA EPH	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chlorooctadecane	Washington EPH Solid "Dry Weight Corrected"	959 ug/Kg	1380	69.4	(60%-140%)
o-Terphenyl	Washington EPH Solid "Dry Weight Corrected"	941 ug/Kg	1380	68.1	(60%-140%)

Notes:

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: February 24, 2015

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-241 UPR-100-N-17 Archive

Client SDG: X0091

Client Sample ID: B30C23 Project: WCHN0RC241
 Sample ID: 366661004 Client ID: WCHN001
 Matrix: SOIL
 Collect Date: 05-FEB-15 11:50
 Receive Date: 06-FEB-15
 Collector: Client
 Moisture: 3.55%

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
GC-FID											
Washington EPH Solid "Dry Weight Corrected"											
Aliphatic Hydrocarbons >C10-C12	TU	691	691	1380	ug/Kg	1	JMB3	02/20/15	2305	1458859	1
Aliphatic Hydrocarbons >C12-C16	U	691	691	1380	ug/Kg	1					
Aliphatic Hydrocarbons >C16-C21	TU	691	691	1380	ug/Kg	1					
Aliphatic Hydrocarbons >C21-C34	U	691	691	1380	ug/Kg	1					
Aliphatic Hydrocarbons C8-C10	BJT	962	691	1380	ug/Kg	1					
Aromatic Hydrocarbons >C10-C12	U	691	691	1380	ug/Kg	1	JMB3	02/20/15	1735	1458859	2
Aromatic Hydrocarbons >C12-C16	TU	691	691	1380	ug/Kg	1					
Aromatic Hydrocarbons >C16-C21	TU	691	691	1380	ug/Kg	1					
Aromatic Hydrocarbons >C21-C34	TU	691	691	1380	ug/Kg	1					
Aromatic Hydrocarbons C8-C10	U	691	691	1380	ug/Kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
WA EPH	Washington EPH Prep Solids	SJW1	02/17/15	1258	1457534
WA EPH	Washington EPH Prep Solids	SJW1	02/19/15	1145	1458858

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	WA EPH	
2	WA EPH	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1-Chlorooctadecane	Washington EPH Solid "Dry Weight Corrected"	739 ug/Kg	1380	53.5*	(60%-140%)
o-Terphenyl	Washington EPH Solid "Dry Weight Corrected"	725 ug/Kg	1380	52.5*	(60%-140%)

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: February 24, 2015

Page 1 of 3

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

Workorder: 366661

Client SDG: X0091

Project Description: RC-241 UPR-100-N-17 Archive

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
GC-FID											
Batch	1458859										
QC1203267746 LCS											
Aliphatic Hydrocarbons >C10-C12	6660			5590	ug/Kg		83.9	(70%-130%)	JMB3	02/20/15	21:05
Aliphatic Hydrocarbons >C12-C16	6660			6290	ug/Kg		94.4	(70%-130%)			
Aliphatic Hydrocarbons >C16-C21	6660			6210	ug/Kg		93.1	(70%-130%)			
Aliphatic Hydrocarbons C8-C10	6660		B	6310	ug/Kg		94.7	(70%-130%)			
Aromatic Hydrocarbons >C10-C12	6660			4880	ug/Kg		73.2	(70%-130%)		02/20/15	15:36
Aromatic Hydrocarbons >C12-C16	6660			4920	ug/Kg		73.9	(70%-130%)			
Aromatic Hydrocarbons >C16-C21	13300			9950	ug/Kg		74.6	(70%-130%)			
Aromatic Hydrocarbons >C21-C34	13300			9870	ug/Kg		74	(70%-130%)			
**1-Chlorooctadecane	1330			1150	ug/Kg		86.1	(60%-140%)		02/20/15	21:05
**o-Terphenyl	1330			1030	ug/Kg		77.5	(60%-140%)		02/20/15	15:36
QC1203267745 MB											
Aliphatic Hydrocarbons >C10-C12			U	666	ug/Kg					02/20/15	20:35
Aliphatic Hydrocarbons >C12-C16			U	666	ug/Kg						
Aliphatic Hydrocarbons >C16-C21			U	666	ug/Kg						
Aliphatic Hydrocarbons >C21-C34			U	666	ug/Kg						
Aliphatic Hydrocarbons C8-C10			J	1120	ug/Kg						
Aromatic Hydrocarbons >C10-C12			U	666	ug/Kg					02/20/15	15:06
Aromatic Hydrocarbons >C12-C16			U	666	ug/Kg						
Aromatic Hydrocarbons >C16-C21			U	666	ug/Kg						
Aromatic Hydrocarbons >C21-C34			U	666	ug/Kg						

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QC Summary

Workorder: 366661

Client SDG: X0091

Project Description: RC-241 UPR-100-N-17 Archive

Page 2 of 3

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
GC-FID											
Batch	1458859										
Aromatic Hydrocarbons C8-C10			U	666	ug/Kg						
**1-Chlorooctadecane	1330			1010	ug/Kg		76	(60%-140%)	JMB3	02/20/15	20:35
**o-Terphenyl	1330			882	ug/Kg		66.3	(60%-140%)		02/20/15	15:06
QC1203267747 366661004 MS											
Aliphatic Hydrocarbons >C10-C12	6910	TU	691	T	4590	ug/Kg	66.5 *	(70%-130%)		02/20/15	23:35
Aliphatic Hydrocarbons >C12-C16	6910	U	691		5110	ug/Kg	73.9	(70%-130%)			
Aliphatic Hydrocarbons >C16-C21	6910	TU	691		5050	ug/Kg	73.1	(70%-130%)			
Aliphatic Hydrocarbons C8-C10	6910	BJT	962	BT	5010	ug/Kg	58.6 *	(70%-130%)			
Aromatic Hydrocarbons >C10-C12	6910	U	691		5060	ug/Kg	73.3	(70%-130%)		02/20/15	18:05
Aromatic Hydrocarbons >C12-C16	6910	TU	691		5140	ug/Kg	74.4	(70%-130%)			
Aromatic Hydrocarbons >C16-C21	13800	TU	691		10300	ug/Kg	74.6	(70%-130%)			
Aromatic Hydrocarbons >C21-C34	13800	TU	691		9960	ug/Kg	72.1	(70%-130%)			
**1-Chlorooctadecane	1380		739		901	ug/Kg	65.2	(60%-140%)		02/20/15	23:35
**o-Terphenyl	1380		725		1070	ug/Kg	77.4	(60%-140%)		02/20/15	18:05
QC1203267748 366661004 MSD											
Aliphatic Hydrocarbons >C10-C12	6910	TU	691	T	4570	ug/Kg	0.404	66.2 *	(0%-20%)	02/21/15	00:05
Aliphatic Hydrocarbons >C12-C16	6910	U	691		5040	ug/Kg	1.33	72.9	(0%-20%)		
Aliphatic Hydrocarbons >C16-C21	6910	TU	691	T	4800	ug/Kg	5.17	69.4 *	(0%-20%)		
Aliphatic Hydrocarbons C8-C10	6910	BJT	962	BT	4980	ug/Kg	0.631	58.1 *	(0%-20%)		
Aromatic Hydrocarbons >C10-C12	6910	U	691		4840	ug/Kg	4.45	70	(0%-20%)	02/20/15	18:35
Aromatic Hydrocarbons >C12-C16	6910	TU	691	T	4770	ug/Kg	7.45	69 *	(0%-20%)		
Aromatic Hydrocarbons >C16-C21	13800	TU	691	T	9100	ug/Kg	12.3	65.9 *	(0%-20%)		
Aromatic Hydrocarbons >C21-C34	13800	TU	691	T	8750	ug/Kg	12.9	63.3 *	(0%-20%)		
**1-Chlorooctadecane	1380		739		851	ug/Kg	61.5	(60%-140%)		02/21/15	00:05

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QC Summary

Workorder: 366661

Client SDG: X0091

Project Description: RC-241 UPR-100-N-17 Archive

Page 3 of 3

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
GC-FID											
Batch	1458859										
*o-Terphenyl	1380	725		937	ug/Kg	67.8	(60%-140%)	JMB3		02/20/15	18:35

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

Washington Method for the Determination of Extractable Petroleum Hydrocarbons

Batch ID: 1458858 **Verified by:** _____
Analyst: Sirena White
Method: WA EPH

Lab SOP: GL-OA-E-075 REV# 0
Instrument: Semi-Volatiles Manual

Sample ID	Run Date	Aliquot (g)	Prepped Aliquot (mL)	Prepped Factor (mL/g)
1203267745 MB	19-FEB-2015 11:45:00	30.05	2	0.06656
1203267746 LCS	19-FEB-2015 11:45:00	30.01	2	0.06664
366661001 - 2	19-FEB-2015 11:45:00	30.09	2	0.06647
366661002 - 2	19-FEB-2015 11:45:00	30.1	2	0.06645
366661003 - 2	19-FEB-2015 11:45:00	30.05	2	0.06656
366661004 - 2	19-FEB-2015 11:45:00	30.02	2	0.06662
1203267747 - 2 MS (366661004)	19-FEB-2015 11:45:00	30.02	2	0.06662
1203267748 - 2 MSD (366661004)	19-FEB-2015 11:45:00	30.01	2	0.06664

Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1203267746	WA LCS Spiking Solution, 200mg/L	UE140929-01	1	mL	Final Solvent: Hexane Verified by: MD
MS	1203267747	WA LCS Spiking Solution, 200mg/L	UE140929-01	1	mL	
MSD	1203267748	WA LCS Spiking Solution, 200mg/L	UE140929-01	1	mL	
SURR	All	EPH Extraction Surrogates #1	UE150219-02	1	mL	
REGNT	All	B&J Hexane for Trace GC, filtered through silica	150216EPH	50	mL	
REGNT	All	Hexane	150218-B10	50	mL	
REGNT	All	40:60 Pentane:Dichloromethane for WA EPH fractionation	150218WA	14	mL	
REGNT	All	Acetone	2192351-B1	150	mL	
REGNT	All	Methylene Chloride	2211177-D	200	mL	
REGNT	All	Pentane 4L bottle	CI2163102	12	mL	
REGNT	All	5g/25mL Isolute SPE Column for EPH Fractionation	EPH141104A	5	g	
SOURC	All	SODIUM SULFATE	2193342	30	g	

FID Diesel Range Organics Analysis

Case Narrative

**Diesel Range Organics
Technical Case Narrative
Eberline (WCHN)
SDG #: X0091
Work Order #: 366661**

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: 1457254

Prep Batch Number: 1457253

Sample Analysis

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

Sample ID	Client ID
366661001	B30C17
366661002	B30C19
366661003	B30C21
366661004	B30C23
1203263493	MB for batch 1457253
1203263494	Laboratory Control Sample (LCS)
1203263495	366661001(B30C17) Matrix Spike (MS)
1203263496	366661001(B30C17) 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 366661001 (B30C17) was selected for the MS and MSD analyses.

Matrix Spike (MS/MSD) Recovery Statement

The MS/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

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

Miscellaneous Information

Electronic Package Comment

This package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative.

Data Exception (DER) Documentation

Data exception report (DER) is generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A DER was not required for this SDG in this batch.

Manual Integrations

Certain standards and samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this fraction.

Additional Comments

The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The additional comments were not required.

System Configuration

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

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.

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Qualifier Definition Report for

WCHN001 Eberline

Client SDG: X0091 GEL Work Order: 366661 Project: RC-241 UPR-100-N-17

The Qualifiers in this report are defined as follows:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

DL Indicates that sample is diluted.

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

RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Jimin Cao

Date: 19 FEB 2015

Title: Data Validator

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: February 16, 2015

Company : WC-Hanford, Inc.
Address : 2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354
Contact: Joan Kessner
Project: RC-241 UPR-100-N-17 Archive

Client SDG: X0091

Client Sample ID: B30C17
Sample ID: 366661001
Matrix: SOIL
Collect Date: 05-FEB-15 09:25
Receive Date: 06-FEB-15
Collector: Client
Moisture: 3.67%

Project: WCHN0RC241
Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Diesel Range Organics											
SW 3541/NWTPH-Dx in Soil + Motor oil "Dry Weight Corrected"											
Diesel Range Organics (C10-C20)	U	2250	2250	6920	ug/kg	1	BYT1	02/13/15	1253	1457254	1
Motor Oil (C20-C36)	U	2250	2250	6920	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	VXS1	02/12/15	1930	1457253

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 + Motor oil "Dry Weight Corrected"	540 ug/kg	692	78.1	(50%-150%)

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 16, 2015

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-241 UPR-100-N-17 Archive

Client SDG: X0091

Client Sample ID: B30C19 Project: WCHN0RC241
 Sample ID: 366661002 Client ID: WCHN001
 Matrix: SOIL
 Collect Date: 05-FEB-15 09:25
 Receive Date: 06-FEB-15
 Collector: Client
 Moisture: 3.95%

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Diesel Range Organics											
SW 3541/NWTPH-Dx in Soil + Motor oil "Dry Weight Corrected"											
Diesel Range Organics (C10-C20)	U	2250	2250	6930	ug/kg	1	BYT1	02/13/15	1450	1457254	1
Motor Oil (C20-C36)	U	2250	2250	6930	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	VXS1	02/12/15	1930	1457253

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 + Motor oil "Dry Weight Corrected"	478 ug/kg	693	68.9	(50%-150%)

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: February 16, 2015

Page 1 of 2

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

Contact: Joan Kessner

Workorder: 366661

Client SDG: X0091

Project Description: RC-241 UPR-100-N-17 Archive

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Diesel Range Organics											
Batch	1457254										
QC1203263494	LCS										
Diesel Range Organics (C10-C20)	66600			53500	ug/kg		80.3	(70%-130%)	BYT1	02/13/15	12:14
Motor Oil (C20-C36)	66600			55200	ug/kg		83	(70%-130%)			
**o-Terphenyl	666			550	ug/kg		82.6	(50%-150%)			
QC1203263493	MB										
Diesel Range Organics (C10-C20)			U	2170	ug/kg					02/13/15	10:57
Motor Oil (C20-C36)			U	2170	ug/kg						
**o-Terphenyl	666			461	ug/kg		69.1	(50%-150%)			
QC1203263495	366661001 MS										
Diesel Range Organics (C10-C20)	69100	U	2250	56600	ug/kg		82	(70%-130%)		02/13/15	13:32
Motor Oil (C20-C36)	69100	U	2250	58800	ug/kg		85	(70%-130%)			
**o-Terphenyl	691		540	587	ug/kg		85	(50%-150%)			
QC1203263496	366661001 MSD										
Diesel Range Organics (C10-C20)	69100	U	2250	56300	ug/kg	0.626	81.4	(0%-20%)		02/13/15	14:11
Motor Oil (C20-C36)	69100	U	2250	59600	ug/kg	1.35	86.1	(0%-20%)			
**o-Terphenyl	691		540	582	ug/kg		84.2	(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: 366661

Client SDG: X0091

Project Description: RC-241 UPR-100-N-17 Archive

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: 1457253 Verified by: _____
 Analyst: Vince Sandifer
 Method: SW846 3541

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

Sample ID	Run Date	Aliquot (g)	Prepped Aliquot (mL)	Prepped Factor (mL/g)
1203263493 MB	12-FEB-2015 19:30:00	30.02	1	0.03331
1203263494 LCS	12-FEB-2015 19:30:00	30.04	1	0.03329
366661001	12-FEB-2015 19:30:00	30.01	1	0.03332
1203263495 MS (366661001)	12-FEB-2015 19:30:00	30.05	1	0.03328
1203263496 MSD (366661001)	12-FEB-2015 19:30:00	30.03	1	0.0333
366661002	12-FEB-2015 19:30:00	30.03	1	0.0333
366661003	12-FEB-2015 19:30:00	30.05	1	0.03328
366661004	12-FEB-2015 19:30:00	30.02	1	0.03331

Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1203263494	AZDRO SPIKE LCS STD,4000ug/ml	WFI150128-62	1	mL	final solvent CH2Cl2
MS	1203263495	AZDRO SPIKE LCS STD,4000ug/ml	WFI150128-62	1	mL	verified by AW
MSD	1203263496	AZDRO SPIKE LCS STD,4000ug/ml	WFI150128-62	1	mL	
SURR	All	20 ppm surrogate	WE141120-04	1	mL	
REGNT	All	Methylene Chloride	2211177-D	120	mL	
SOURC	All	SODIUM SULFATE	2193342	30	g	

GC Volatiles (GRO) Analysis

Case Narrative

**GC Volatiles (GRO)
Technical Case Narrative
Eberline (WCHN)
SDG #: X0091
Work Order #: 366661**

Method/Analysis Information

Procedure: Volatile Total Petroleum Hydrocarbons by Flame Ionization Detector

Analytical Method: NWTPH-Gx in Soil

Prep Method: NWTPH-Gx in Soil

Analytical Batch Number: 1458446

Prep Batch Number: 1458445

Sample Analysis

The following client and quality control samples were analyzed to complete this sample delivery group/work order using the methods referenced in the Analysis Information section:

Sample ID	Client ID
366661001	B30C17
366661002	B30C19
366661003	B30C21
366661004	B30C23
1203266534	MB for batch 1458445
1203266536	Laboratory Control Sample (LCS)
1203266537	366661001(B30C17) Post Spike (PS)
1203266538	366661001(B30C17) Post Spike Duplicate (PSD)
1203266535	High Blank (HB)

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

NOTE: For volatile organic analyses the matrix spike designations may be indicated as "PS" or "PSD". The "PS" designation (post spike) indicates that the matrix was fortified prior to analysis but after applying any prep factors, such as a dilution. The laboratory considers the MS/MSD and PS/PSD designations interchangeable.

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-004 REV# 25.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG). See the calibration history report for a list of data files that were used to generate the initial calibration curve in the Standard Data Section of this data package.

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(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

Surrogate recoveries, in all samples and quality control samples, were within the acceptance limits.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 366661001 (B30C17) was selected for analysis as the matrix spike.

Spike Recovery Statement

The GRO recovery was within the acceptance limits.

Relative Percent Difference (RPD) Statement

The RPD between the matrix spike pair 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.

Sample Dilutions

Samples 1203266535 (HB), 1203266537 (B30C17PS), 1203266538 (B30C17PSD), 366661001 (B30C17), 366661002 (B30C19), 366661003 (B30C21) and 366661004 (B30C23) were analyzed using a methanol extraction procedure at 1:50 dilutions. The samples were analyzed at the lowest dilution possible when using a methanol extraction procedure.

Sample Re-extraction/Re-analysis

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

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

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

Data files associated with the initial calibration, continuing calibration check(s), and samples may have been manually integrated to correct misidentification of peaks by the integration software.

Additional Comments

Additional comments were not required for this SDG.

System Configuration

The GRO Organics analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description	P & T Trap
VOC4A.I	Agilent 6890N GC/FID w/ OI 4560/Archon Autosampler	HP6890N GC/FID	DB-624	0.53mm x 3.0u x 15m	OI #10

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 Eberline

Client SDG: X0091 GEL Work Order: 366661 Project: RC-241 UPR-100-N-17

The Qualifiers in this report are defined as follows:

D Results are reported from a diluted aliquot of sample.

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.

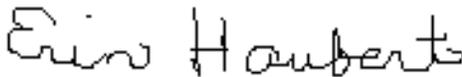
RA Indicates that sample is re-analyzed without re-extraction.

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: Erin Haubert

Date: 22 FEB 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: February 20, 2015

Company : WC-Hanford, Inc.
Address : 2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354
Contact: Joan Kessner
Project: RC-241 UPR-100-N-17 Archive

Client SDG: X0091

Client Sample ID: B30C19
Sample ID: 366661002
Matrix: SOIL
Collect Date: 05-FEB-15 09:25
Receive Date: 06-FEB-15
Collector: Client
Moisture: 3.95%

Project: WCHN0RC241
Client ID: WCHN001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatiles GRO Organics											
NWTPH-Gx GRO in Soil "Dry Weight Corrected"											
Gasoline Range Organics (C6 - C10)	DU	1740	1740	5210	UG/KG	50	ACJ	02/17/15	1812	1458446	1

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
NWTPH-Gx in Soil	NWTPH-Gx Prep in Soil	ACJ	02/17/15	1532	1458445

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	NWTPH-Gx in Soil		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Bromofluorobenzene	NWTPH-Gx GRO in Soil "Dry Weight Corrected"	5150 UG/KG	50.0	98.9	(50%-150%)

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: February 20, 2015

Page 1 of 2

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

Workorder: 366661

Client SDG: X0091

Project Description: RC-241 UPR-100-N-17 Archive

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatiles GRO Organics											
Batch	1458446										
QC1203266535			HB								
Gasoline Range Organics (C6 - C10)			DU	1670	UG/KG				ACJ	02/17/15	17:17
**Bromofluorobenzene				4690	UG/KG		93.8	(50%-150%)			
QC1203266536			LCS								
Gasoline Range Organics (C6 - C10)	500			484	UG/KG		96.9	(70%-130%)	02/17/15 09:54		
**Bromofluorobenzene				52.5	UG/KG		105	(50%-150%)			
QC1203266534			MB								
Gasoline Range Organics (C6 - C10)			U	16.7	UG/KG				02/17/15 10:50		
**Bromofluorobenzene				48.8	UG/KG		97.5	(50%-150%)			
QC1203266537	366661001	PS									
Gasoline Range Organics (C6 - C10)	500	DU	0.00 D	478	ug/L		95.7	(70%-130%)	02/17/15 19:36		
**Bromofluorobenzene	50.0		50.4	49.1	ug/L		98.3	(50%-150%)			
QC1203266538	366661001	PSD									
Gasoline Range Organics (C6 - C10)	500	DU	0.00 D	422	ug/L	12.6	84.3	(0%-20%)	02/17/15 20:04		
**Bromofluorobenzene	50.0		50.4	44.2	ug/L		88.4	(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
- 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.

GEL LABORATORIES LLC

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QC Summary

Workorder: 366661

Client SDG: X0091

Project Description: RC-241 UPR-100-N-17 Archive

Page 2 of 2

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

Volatile Total Petroleum Hydrocarbons by Flame Ionization Detector

Batch ID: 1458445
Analyst: Amy Jamison
Method: NWTPH-Gx in Soil
Lab SOP: GL-OA-E-004 REV# 25
Instrument: Sartorius Balance B-001

Type Sample Id Description Serial Number Spike Amount Spike Units

Sample ID	Run Date	Matrix	Initial Weight (g)	Final Volume (mL)	Prep Factor (mL/g)	pH Check
1203266536 LCS	17-FEB-2015 08:00:00	Soil	5	5	1	
1203266534 MB	17-FEB-2015 08:30:00	Soil	5	5	1	
1203266535 HB	17-FEB-2015 15:30:00	Soil	5	10	2	
366661001	17-FEB-2015 15:31:00	Soil	5	10	2	
1203266537 PS (366661001)	17-FEB-2015 15:31:00	Soil	5	10	2	
1203266538 PSD (366661001)	17-FEB-2015 15:31:00	Soil	5	10	2	
366661002	17-FEB-2015 15:32:00	Soil	5	10	2	
366661003	17-FEB-2015 15:33:00	Soil	5	10	2	
366661004	17-FEB-2015 15:34:00	Soil	5	10	2	

Reagent/Solvent Lot ID Description Amount Comments: