RJ LEE GROUP
DELIVERING SCIENTIFIC RESOLUTION

June 03, 2016

CH2M HILL Plateau Remediation Company
2420 Stevens Center Place
P.O. Box 1600
Richland, WA 99352
Attn.: Tracey A. Burch

Subject: Geotechniocal Laboratory Testing Services, Data Deliverable for SDG #W603088, Rev. 1

Enclosed is the final report on geotechnical analyses performed by RJ Lee Group in conjunction with PBS Engineering and Environmental, Inc. (PBS) for Sample Delivery Group number (SDG #) W603088.

General Set Comments
RJ Lee Group received from CH2M-Hill Plateau Remediation Company (CHPRC) 1 sample to be tested for geotechnical analysis at the Columbia Basin Analytical Laboratories. There are no SIRs associated with this SDG.

The CHPRC sample, in SDG # W603088, has been assigned a PBS Geotechnical Lab Sample number per the below table.

CHPRC Sample #	SDG #	Geotechnical Lab Sample #
B354J6	W603088	H-0053

This project deliverable, provided in Attachment 1, contains the reports of the requested analytical results and a copy of the associated chain of custody for the sample listed above.

This revision is based on the inconsistency in reporting as described in the attached P&D report: the moisture content was determined by ASTM D2216.

The analytical results provided in this deliverable relate only to the items tested. The sample was received in acceptable condition unless otherwise noted in the attached report(s).

I certify that this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the Laboratory Director or a designee as verified by the following signature.

06/03/2016

Heinz Huber — Date
Sr. Project Manager, Columbia Basin Analytical Laboratories

If you have any questions, please feel free to contact us at 509-545-4989 or email at hhuber@rjleegroup.com.

Problem and Discrepancy Report

RJLee

SDG W603088

05/31/16

The data package has the following issues:

The COC request moisture content by ASTM D2216. Neither the RJLee case narrative nor PBS narrative make mention of the method use for determination of the moisture content however a result is reported. It is unclear if D2216 or D2937 was run to determine moisture content. This needs to be clarified in this report.

Resolution: *Revise narrative to include method reference for the moisture content determination.*

Lab Response:

The issue is corrected in the RJ Lee case narrative and resubmited.

Attachment 1

PBS Geotechnical Laboratory Testing Results, SDG # W603088,
dated May 24, 2016

PBS Engineering + Environmental

May 12, 2016

RJ Lee Group, Inc.
Attn: Mr. Larry Lockrem
Columbia Basin Analytical Laboratories
2710 North 20th Avenue
Pasco, Washington 93301

Re: Geotechnical Laboratory Testing Results
Sample Delivery Group No. W603088
PBS Project No. 63737.000

Dear Mr. Lockrem:

In accordance with your request, PBS Engineering and Environmental Inc. (PBS) is providing you with the results of our recent geotechnical laboratory testing. Our services were provided in accordance with the request provided with Sample Delivery Group (SDG) number W603088.

We performed the following test:

- Density of Soil in Place by the Drive-Cylinder Method (ASTM D2937)

The test was performed in general accordance with the above-mentioned ASTM Standard.

We trust this letter meets your current needs. If you have any questions, or wish to further discuss our observations, conclusions, and recommendations, please contact us at 509.942.1600.

Sincerely,
PBS Engineering and Environmental, Inc.

5/12/2016

Adam M. Swenson, P.E.
Geotechnical Engineer

AS/rg

Attachments: Report of Laboratory Testing – Density by Drive Cylinder
Chain of Custody

400 Bradley Boulevard, Suite 300, Richland, WA 99352
509.942.1600 Main
866.727.0140 Fax
www.pbsenv.com

Bend | Boise | Coos Bay | Eugene | Portland | Seattle | Tri-Cities | Vancouver | Walla Walla

REPORT OF LABORATORY TESTING

Report to:	CH2M-Hill - Plateau Remediation 2420 Stevens Center Place P.O. Box 1600 Richland, WA 99352	**Date:** **Sample Delivery Group No.:** **Sample Authorization No.:**	5/11/2016 W603088 F15-028
Project:	CHPRC Laboratory	**Project No.:**	63797.000
Report of:	Density by Drive Cylinder (ASTM D2937)	**Lab Technician:**	A. Jaimes

Items Received:
One sample was provided to us containing soil material obtained by you, the client.
PBS performed the following test:

Density by Drive Cylinder (ASTM D2937).
The dry densities (dry unit weight) of representative soils were determined in the laboratory using the relatively undisturbed soil samples. The dimensions of the specimen were carefully measured, the volume calculated, and the specimen weighed. A representative sample was obtained from the specimen, weighed, and placed in the oven to dry. After oven drying, the representative sample was reweighed and the water content calculated. The dry density was then computed. The results of tests, including moisture, wet density, and dry density are included in the table below.

LABORATORY TEST RESULTS

Density by Drive Cylinder (ASTM D2937)

Customer Sample Number	Laboratory Sample Number	Wet Density (lbs/ft^3)	Water Content (%)	Dry Density (lbs/ft^3)
B354J6	H-0053	116.8	3.8	112.6

SHEET 1 OF 1 REVIEWED BY: A. Swenson, P.E.

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F16-028-008

COLLECTOR
Curt Hoffman
CHPRC

SAMPLING LOCATION
C9414, 200-WA-1 #1

ICE CHEST NO.

SHIPPED TO
RJ EE - GEOTECHNICAL

COMPANY CONTACT
TODAK, D

TELEPHONE NO.
376-6427

PROJECT DESIGNATION
200-WA-1 Opportunistic sampling - soil

FIELD LOGBOOK NO.
HNF-N-645-3/55

ACTUAL SAMPLE DEPTH
148.2'-148.7'

OFFSITE PROPERTY NO.

PROJECT COORDINATOR
TODAK, D

SAF NO.
F16-028

COA 210. 3/24/16
~~300192~~ 304043

BILL OF LADING/AIR BILL NO.

PRICE CODE 8H

AIR QUALITY ☐

DATA TURNAROUND
30 Days / 30 Days

METHOD OF SHIPMENT
GOVERNMENT VEHICLE

ORIGINAL

6 of 6

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
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 be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	None
HOLDING TIME	None
TYPE OF CONTAINER	Split Spoon Liner
NO. OF CONTAINER(S)	1
VOLUME	1000g
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

W603088

COPY

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B354J6	SOIL	03/24/16	1140	✓

June 06 2016

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Curt Hoffman CHPRC	MAR 24 2016 1440	SSU#1	3-24-16 1440
SSU-1		Roy Shepard CHPRC	3/28/16 1246
Roy Shepard CHPRC	3/28/16 1246	C. LOPEZ RJ EE GROUP	3/28/16 1246

SPECIAL INSTRUCTIONS
Liner B to be submitted intact for geotechnical analysis with end caps taped to prevent loss or infiltration of moisture
(1) D2216_MOISTURE CONTENT: COMMON {Percent moisture (dry sample), Percent moisture (wet sample)}; D2937_ DENSITY: COMMON {Bulk density - dry, Bulk density - wet};

Rev 1

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

PRINTED ON 3/23/2016

FSR ID = FSR28193

TRVL NUM = TRVL-16-059

A-6003-618 (REV 2)