



March 10, 2017

CH2M HILL Plateau Remediation Company
 2420 Stevens Center Place
 P.O. Box 1600
 Richland, WA 99354
 Attn.: Tracey A. Burch

Subject: Geotechnical Laboratory Testing Services, Data Deliverable for SDG # W702029, Rev. 0

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 #) W702029.

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 # W702029, has been assigned a PBS Geotechnical Lab Sample number per the below table.

CHPRC Sample #	SDG #	Geotechnical Lab Sample #	Date Processed
B36M15	W702029	H-0145	02/28/2017

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.

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.

03/10/2017

Richard Westberg
 Laboratory Director, Columbia Basin Analytical Laboratories

Date

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

Attachment 1

PBS Geotechnical Laboratory Testing Results, SDG # W702029,
Dated March 10, 2017



February 28, 2017

Mr. Larry Lockrem
RJ Lee Group, Inc.
2710 North 20th Avenue
Pasco, Washington 99301

Via email: llockrem@rjleegroup.com

Regarding: Geotechnical Laboratory Testing Results
CH2M HILL Plateau Remediation
Sample Delivery Group No. W702029
PBS Project No. 63797.000

Dear Mr. Lockrem:

PBS Engineering and Environmental Inc. (PBS) is pleased to present the results of our recent geotechnical laboratory testing in accordance with the request provided with Sample Delivery Group (SDG) number W702029.

PBS performed the following tests in general accordance with the relevant ASTM Standards:

- Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass (ASTM D2216)
- Density of Soil in Place by the Drive-Cylinder Method (ASTM D2937)

In addition to the above-mentioned tests, a report of soil porosity was requested. Porosity results are included on the attached Report of Laboratory Testing – Density by Drive Cylinder and Moisture Contents.

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,



02/28/2017

Adam M. Swenson, PE
Project Geotechnical Engineer

Attachment(s): Report of Laboratory Testing – Density by Drive Cylinder and Moisture Contents
Chain of Custody



REPORT OF LABORATORY TESTING

Report to: CH2M-Hill - Plateau Remediation 2420 Stevens Center Place PO Box 1600 Richland, WA 99354	Date: 2/28/2017
	Sample Delivery Group No.: W702029
	Sample Authorization No.: F16-028

Project: CHPRC Laboratory	Project No.: 63797.000
Report of: Density by Drive Cylinder (ASTM D2937) Moisture Content (ASTM D2216)	Lab Technician: J. Russell

Items Received:

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

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.

Moisture Content (ASTM D2216).

Natural moisture content determinations were made on the samples of the fine-grained soils (that is, silts, clays, and silty sands). The natural moisture content is defined as the ratio of the weight of water to dry weight of soil, expressed as a percentage.

Porosity of Soil.

The estimated porosity of the representative soil sample was calculated using an assumed soil specific gravity value of 2.65 and assumed density of water value of 62.4 lb/ft³.

LABORATORY TEST RESULTS

Density by Drive Cylinder (ASTM D2937)

Moisture Content (ASTM D2216)

Customer Sample Number	Laboratory Sample Number	Wet Density (lbs/ft ³)	Water Content (%)	Dry Density (lbs/ft ³)	Porosity (%)
B36M15	H-0145	98.2	4.6	93.9	43.2

3/10/2017

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-028-070	PAGE 1 OF 1
COLLECTOR Jeff Tuckesen CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9567, 1-007	PROJECT DESIGNATION 200-WA-1 Opportunistic sampling - soil	FIELD LOGBOOK NO. HNF-N-645	ACTUAL SAMPLE DEPTH 266.22' - 266.72'	SAF NO. F16-028	METHOD OF SHIPMENT GOVERNMENT VEHICLE ORIGINAL
ICE CHEST NO. N/A	OFFSITE PROPERTY NO. N/A	BILL OF LADING/AIR BILL NO. N/A			
SHIPPED TO RU LEE - GEOTECHNICAL	PRESERVATION None		W 702029		
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	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/JATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.		13.6°C		
SPECIAL HANDLING AND/OR STORAGE NA	HOLDING TIME None	TYPE OF CONTAINER Split Spoon Liner	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
SAMPLE NO. B36M15	MATRIX* SOIL	SAMPLE DATE FEB 02 2017	SAMPLE TIME 1204	NO. OF CONTAINER(S) 1	
				VOLUME 1000g	

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/ Jeff Tuckesen CHPRC	REMOVED FROM FEB 02 2017 1515	RECEIVED BY/ SSU-1	STORED IN FEB 02 2017 1515	TRVL-16-060; PLEASE REPORT POROSITY AS WELL AS DENSITY (1) D2937_ DENSITY: COMMON {Bulk density - dry, Bulk density - wet};	
RELINQUISHED BY/ SSU-1	REMOVED FROM FEB 06 2017 0845	RECEIVED BY/ Janellie Zunker CHPRC	STORED IN FEB 06 2017 0845		
RELINQUISHED BY/ Janellie Zunker CHPRC	REMOVED FROM FEB 06 2017 1640	RECEIVED BY/ Anna Dechle CHPRC	STORED IN FEB 06 2017 1640		
RELINQUISHED BY/ [Blank]	REMOVED FROM	RECEIVED BY/ [Blank]	STORED IN		
RELINQUISHED BY/ [Blank]	REMOVED FROM	RECEIVED BY/ [Blank]	STORED IN		
RELINQUISHED BY/ [Blank]	REMOVED FROM	RECEIVED BY/ [Blank]	STORED IN		
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		