



Shaw Environmental & Infrastructure, Inc.

RECEIVED MARCH 31, 2011

0097586

Geotechnical Laboratory
304 Directors Drive
Knoxville, TN 37923
(865) 690-3211

CERTIFICATE OF ANALYSIS

Mr. Michael Neely
CH2M Hill Plateau Remediation Company
P.O. Box 1600
Mail Stop – B6-06
Richland, WA 99352

March 31, 2011

This is the Certificate of Analysis for the following samples:

Shaw Project ID: Eberline Analytical
Shaw Project Number: 139736
Date Received by Lab: 03/03/2011
Number of Samples: One (1)
Sample Type: Soil

I. Introduction/Case Narrative

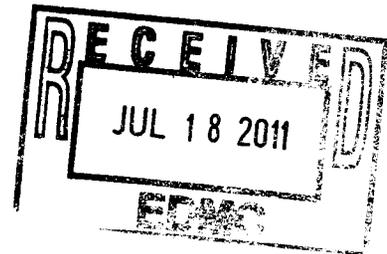
One (1) soil sample was received by the Shaw Geotechnical Laboratory on March 3, 2011. The sample was submitted for determination of bulk density and particle size as listed on the Chain of Custody/Sample Analysis Request. The sample number for the received sample was B2BBL7.

Please see Appendix A, Sample Number Cross Reference List; Appendix B, Analysis Results; and Appendix C, Chain-of-Custody/Sample Receipt Records

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or a designee, as verified by the following signature."

Reviewed and Approved:

R. Gregory Bennett
Geotechnical Laboratory Manager, Technology Applications Group



II. Analytical Results/Methodology

REFERENCES: United Nations, *Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria*, third ed. New York, 1999. United States Army Corps of Engineers (USACE), Engineer Manual 1110-2-1906, *Laboratory Soils Testing*, appendix II, 1970; United States Environmental Protection Agency, SW846, *Test Methods for Examining Solid Waste, Physical/Chemical Methods*, 3rd ed., Nov 1986 (EPA SW-846). Annual Book of ASTM Standards, Section 4, Construction, Volume 04.08, *Soil and Rock (I)*, and Volume 04.09, *Soil and Rock (II)*, 2008. Shaw Environmental and Infrastructure, Standard Operating Procedures.

Bulk Density**ASTM D 2937**
Particle Size (sieve only).....**ASTM D 422**

III. Quality Control

Quality control checks such as duplicates and spikes (QC samples), are not normally applicable to geotechnical testing. This is due largely to the inability of obtaining samples with known characteristics, the heterogeneous nature of the samples, and quality control procedures built-in to the analytical method.

QC measures to ensure accuracy and precision of test results include the following:

- 100% verification of all numerical results - raw data entries, transcriptions and calculations entered by lab technicians are checked, recalculated and verified. Most data calculations are performed by computer programs.
- Data validation through test reasonableness - summaries of all test results for individual reports are reviewed to determine the overall reasonableness of data and to determine the presence of any data that may be considered outliers.
- Quality control procedures are built into most standardized geotechnical procedures. For example, liquid limit and plastic limit analyses call for re-analyses and specify acceptance criteria.
- Routine instrument calibration - instruments, gauges and equipment used in testing are calibrated on a routine basis. All instrument calibration follows ASTM or manufacturer guidelines.
- Maintenance of all past calibration records - calibration records and certification documents of all instruments, gauges and equipment are updated routinely and maintained in the Quality Control Coordinators Quality/Operations files.

- Certified and trained personnel - all technicians are trained in the application of standard laboratory procedures for geotechnical analyses as well as the quality assurance measures implemented by Shaw.
- Quantitative analyses frequently used in geotechnical/physical testing programs do not use QC tools common to wet chemistry or radiochemistry laboratories. Measures not employed in the analysis of samples reported in this report include: laboratory control samples (LCS), blanks, matrix spikes (MS), duplicate analyses, dilutions, digestions, correction factors, surrogate sample analyses, detection limit determinations, control charts, and/or tentatively identified compounds (TICs).

IV. Data Qualification

None

Appendix A
Sample Cross-Reference List

Page 4 of 7
Report No.: EBER0311074
Mr. Michael Neely
Client: CH2M Hill Plateau Remediation Company
Shaw Project Name: Eberline Analytical
Shaw Project No.: 139736

Shaw
Geotechnical Laboratory
Knoxville, TN
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SAMPLE NUMBER CROSS-REFERENCE LIST

Lab Sample ID	Client Sample ID	MATRIX
SEK 5563	B2BBL7	SOIL

Appendix B
Data Results

PARTICLE-SIZE DISTRIBUTION
ASTM D 422

Project Name Eberline

Field Sample No. B2BBL7

Project No. 139736.13800000

Lab Sample No. SEK 5563

Moisture Content = 23.2%

SIEVE ANALYSIS

C O A R S E	Sieve No.	Diameter mm	Percent Finer
	3"	75.000	100.0%
	1.5"	37.500	100.0%
	0.75"	19.000	100.0%
	0.375"	9.500	98.9%
	#4	4.750	97.4%
	#10	2.000	90.2%

F I N E	Sieve No.	Diameter mm	Percent Finer
	#20	0.850	57.2%
	#40	0.425	28.6%
	#60	0.250	18.5%
	#100	0.149	11.0%
	#140	0.106	7.9%
	#200	0.075	5.7%

2.6% Gravel

91.7% Sand

5.7% Silt/Clay

Appendix C
Chain of Custody Records

CH2M Hill Plateau Remediation Company

COLLECTOR: *Aquilar, Becan*

SAMPLING LOCATION: C8028 (399-1-63); I-008

ICE CHEST NO.: *GW5-122*

SHIPPED TO: Shaw Group

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

COMPANY CONTACT: RADLOFF, AW

TELEPHONE NO.: 376-4554

PROJECT COORDINATOR: RADLOFF, AW

PRICE CODE: 8H

AIR QUALITY:

DATA TURNAROUND: 30 Days / 30 Days

PROJECT DESIGNATION: 300 Area Remedial Investigation/Feasibility Analysis - 300-FF-5 Soils

FIELD LOGBOOK NO.: *ITNF-N-491-13 Pg 20*

ACTUAL SAMPLE DEPTH: *40.8 - 43.3*

SAF NO.: F10-196

COA: 300206ES10

METHOD OF SHIPMENT: FEDERAL EXPRESS

OFFSITE PROPERTY NO.: SEE PTR

BILL OF LADING/AIR BILL NO.: **794485084911**

3.0 lbs

SEK 5583

PRESERVATION	None
HOLDING TIME	None
TYPE OF CONTAINER	Liner
NO. OF CONTAINER(S)	1
VOLUME	1000g
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SAMPLE DATE	3-1-11
SAMPLE TIME	1236

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CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
<i>Emmanuel</i>	3-1-11 1340	<i>A. Turner ATC</i>	<i>A. Turner ATC</i>	3-1-11 1340
<i>A. Turner ATC</i>	3-1-11 1430	<i>M0413554 RI</i>	<i>A. Turner ATC</i>	3-1-11 1430
<i>M0413554 RI</i>	3-3-11 0800	<i>A. Turner ATC</i>	<i>A. Turner ATC</i>	3-3-11 0800
<i>A. Turner ATC</i>	3-3-11 1400	FEDEX		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	

SPECIAL INSTRUCTIONS

** The 300 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.

(1) Bulk Density - D2937; Particle Size (Dry Sieve) - D422;

ORIGINAL

LABORATORY SECTION: *Stephen J. Card*

RECEIVED BY: *Stephen J. Card*

DISPOSAL METHOD: *SCIENTIST*

TITLE: *SCIENTIST*

DATE/TIME: 3-3-11 / 16:00

DISPOSED BY: *SCIENTIST*

A-6003-618 (REV 2)