



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

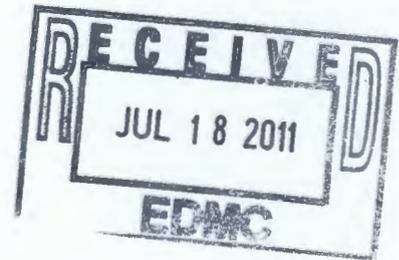
One (1) soil sample was received by the Shaw Geotechnical Laboratory on March 3, 2011. The sample was submitted for determination of bulk density and particle size as listed on the Chain of Custody/Sample Analysis Request. The sample number for the received sample was B2BBL7.

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
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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 Eberine

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

COLLECTOR <i>Aguilar, Becan</i>		COMPANY CONTACT RADLOFF, AW	TELEPHONE NO. 376-4554	PROJECT COORDINATOR RADLOFF, AW	PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C8028 (399-1-63); I-008		PROJECT DESIGNATION 300 Area Remedial Investigation/Feasibility Analysis - 300-FF-5 Soils		SAF NO. F10-196	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>GW5-122</i>		FIELD LOGBOOK NO. <i>HNF-N-491-13 Pg 20</i>	ACTUAL SAMPLE DEPTH <i>40.8 - 43.3</i>	COA 300206ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO Shaw Group		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR 7944850 04911		

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 may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	None
		HOLDING TIME	None
		TYPE OF CONTAINER	Liner
		NO. OF CONTAINER(S)	1
		VOLUME	1000g
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

3.0 lbs

SEK 5563

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B2BBL7	SOIL	3-1-11	1236 ✓

CHAIN OF POSSESSION	DATE/TIME	SIGN/ PRINT NAMES	DATE/TIME
RELINQUISHED BY/REMOVED FROM <i>cm Aguilar Becan</i>	3-1-11 1340	RECEIVED BY/STORED IN <i>A. Turner AT</i>	3-1-11 1340
RELINQUISHED BY/REMOVED FROM <i>A. Turner AT</i>	3-1-11 1430	RECEIVED BY/STORED IN <i>M0413 SS4 R1</i>	3-1-11 1430
RELINQUISHED BY/REMOVED FROM <i>M0413 SS4 R1</i>	3-2-11 0800	RECEIVED BY/STORED IN <i>A. Turner AT</i>	3-2-11 0800
RELINQUISHED BY/REMOVED FROM <i>A. Turner AT</i>	3-2-11 1400	RECEIVED BY/STORED IN 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

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	RECEIVED BY <i>Steph 3 Canal</i>	TITLE SCIENTIST	DATE/TIME 3-3-11 / 16:00
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME