

Applied Geotechnical Engineering Consultants, Inc.

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March 27, 2001

OFFICE OF THE SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

Stone & Webster, Inc.  
100 Technology Center Drive  
Stoughton, MA 02072

Attention: Paul Trudeau  
ESSOW 05996.02 - G010, REV. 0  
Subject: Geotechnical Laboratory Services  
Private Fuel Storage Facility  
Skull Valley, Utah  
Stone & Webster Project No. J.O. 05996.02  
AGEC Project No. 1000912

Gentlemen:

Applied Geotechnical Engineering Consultants, Inc. was requested to perform laboratory testing on 48 samples taken from the proposed Private Fuel Storage Facility (PFSF) site in Skull Valley, Utah. Sampling was performed by an AGECE technician. Sampling was directed by an Engineer from Stone & Webster, Inc.

#### SCOPE OF WORK

The following tests were performed on each sample in general accordance with the test method listed.

Test	Test Method
Moisture Content	ASTM D2216
Dry Preparation of Samples	ASTM D421
Particle Size Analysis	ASTM D422
Atterberg Limits	ASTM D4318

The samples consisted of jar and bucket samples from each location. Moisture content tests were performed on the jar samples. The classification tests were performed on bucket samples. The laboratory testing is summarized on Table I. Particle size distribution curves are presented graphically on Figures 1 through 24.

#### PARTICLE SIZE ANALYSIS

Particle fractions from the sieve analyses are reported in Table I according to ASTM D422 as follows:

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Gravel	Passing 3-in. and retained on No. 4 sieve
Sand	Passing No. 4 and retained on No. 200 sieve (.074 mm)
Silt & Clay	0.074 to 0.001 mm

ASTM D422 defines clay as smaller than 0.005 mm. Percent clay of each sample can be interpolated from the particle size distribution curves.

The particle size analysis samples were passed through a No. 10 sieve according to ASTM D421. A majority of the samples had the tendency to disaggregate into small clay clods, which were further ground using a mortar and pestle. The particle size analysis samples were dispersed for a period of 1 minute using apparatus A as described in the test method. Hydrometer calculations were performed assuming a specific gravity of 2.65.


#### ATTERBERG LIMITS

The liquid limit was determined using the one-point method.

If we can be of further service, please call.

Sincerely,

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.



Stephanie Merkley  
Manager, Laboratory Services

Reviewed by Scott Anderson, P.E.

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Table I. Summary of Laboratory Testing

Sample Identification			Moisture Content (%)	Particle Size Analysis				Atterberg Limits			Soil Classification
Test Pit	Sample No.	Depth (feet)		Gravel (%)	Sand (%)	Silt & Clay (%)	Tested by	Liquid Limit (%)	Plasticity Index (%)	Tested by	
TP-1	S-1	0-2	30	0	12	88	B	46	16	SH	Silt (ML)
TP-1	S-2	2-4	39	0	3	97	B L	64	24	SH	Elastic Silt (MH)
TP-1	S-3	4-6	31	0	7	93	B L	43	23	SH	Lean Clay (CL)
TP-2	S-1	0-2	23	0	17	83	B	58	30	SH	Fat Clay with Sand (CH)
TP-2	S-2	2-4	42	0	2	98	B L	55	25	SH	Elastic Silt (MH)
TP-2	S-3	4-6	31	0	5	95	B L	41	19	SH	Lean Clay (CL)
TP-3	S-1	0-2	25	0	18	82	S	Nonplastic		SH	Silt with Sand (ML)
TP-3	S-2	2-4	32	0	1	99	B L	58	24	SH	Elastic Silt (MH)
TP-3	S-3	4-6	29	0	4	96	B L	41	21	SH	Lean Clay (CL)
TP-4	S-1	0-2	24	0	28	72	B	48	20	SH	Silt with Sand (ML)
TP-4	S-2	2-4	28	0	1	99	B L	55	29	SH	Fat Clay (CH)
TP-4	S-3	4-6	30	0	4	96	B L	38	18	SH	Lean Clay (CL)
TP-5	S-1	0-2	26	0	20	80	S	43	11	SH	Silt with Sand (ML)

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Table I. Summary of Laboratory Testing, Cont.

Sample Identification			Moisture Content (%)	Particle Size Analysis				Atterberg Limits			Soil Classification
Test Pit	Sample No.	Depth (feet)		Gravel (%)	Sand (%)	Silt & Clay (%)	Tested by	Liquid Limit (%)	Plasticity Index (%)	Tested by	
TP-5	S-2	2-4	41	0	10	90	JS DV	56	23	SH	Elastic Silt (MH)
TP-5	S-3	4-6	27	0	6	94	JS DV	38	17	JS	Lean Clay (CL)
TP-6	S-1	0-2	19	0	12	88	JS	Nonplastic		SH	Silt (ML)
TP-6	S-2	2-4	30	0	4	96	JS DV	50	23	SH	Fat Clay (CH)
TP-6	S-3	4-6	31	0	5	95	JS DV	39	19	JS	Lean Clay (CL)
TP-7	S-1	0-2	28	0	42	58	JS	Nonplastic		SH	Sandy Silt (ML)
TP-7	S-2	2-4	26	0	4	96	JS DV	41	16	SH	Lean Clay (CL)
TP-7	S-3	4-6	34	0	4	96	JS DV	48	26	SH	Lean Clay (CL)
TP-8	S-1	0-2	30	0	18	82	JS	40	7	SH	Silt with Sand (ML)
TP-8	S-2	2-4	48	0	6	94	JS DV	64	19	JS	Elastic Silt (MH)
TP-8	S-3	4-6	30	0	2	98	JS DV	41	19	JS	Lean Clay (CL)
TP-9	S-1	0-2	29	0	46	54	Z DV	62	25	SH	Elastic Silt (MH)
TP-9	S-2	2-4	29	0	2	98	JS DV	44	22	SH	Lean Clay (CL)

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Table I. Summary of Laboratory Testing, Cont.

Sample Identification			Moisture Content (%)	Particle Size Analysis				Atterberg Limits			Soil Classification
Test Pit	Sample No.	Depth (feet)		Gravel (%)	Sand (%)	Silt & Clay (%)	Tested by	Liquid Limit (%)	Plasticity Index (%)	Tested by	
TP-9	S-3	4-6	55	0	7	93	B DN	72	36	SH	Elastic Silt (MH)
TP-10	S-1	0-2	21	0	28	72	L DN	40	7	SH	Silt (ML)
TP-10	S-2	2-4	23	0	3	97	B DN	42	19	SH	Lean Clay (CL)
TP-10	S-3	4-6	44	0	8	92	B DN	62	35	SH	Fat Clay (CH)
TP-11	S-1	0-2	42	0	25	75	L DN	77	37	SH	Elastic Silt with Sand (MH)
TP-11	S-2	2-4	28	0	1	99	B DN	43	23	SH	Lean Clay (CL)
TP-11	S-3	4-6	48	0	11	89	B DN	76	41	SH	Elastic Silt (MH)
TP-12	S-1	0-2	26	0	24	76	L DN	47	20	SH	Lean Clay with Sand (CL)
TP-12	S-2	2-4	26	0	3	97	B DN	40	22	SH	Lean Clay (CL)
TP-12	S-3	4-6	53	0	8	92	B DN	68	35	SH	Elastic Silt (MH)
TP-13	S-1	0-2	41	0	31	69	L DN	80	39	SH	Sandy Elastic Silt (ML)
TP-13	S-2	2-4	27	0	4	96	B DN	41	20	SH	Lean Clay (CL)
TP-13	S-3	4-6	34	0	3	97	B DN	44	23	SH	Lean Clay (CL)

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Table I. Summary of Laboratory Testing, Cont.

Sample Identification			Moisture Content (%)	Particle Size Analysis				Atterberg Limits			Soil Classification
Test Pit	Sample No.	Depth (feet)		Gravel (%)	Sand (%)	Silt & Clay (%)	Tested by	Liquid Limit (%)	Plasticity Index (%)	Tested by	
TP-14	S-1	0-2	41	0	12	88	E DN	70	40	SA	Fat Clay (CH)
TP-14	S-2	2-4	24	0	3	97	B DN	39	18	SH	Lean Clay (CL)
TP-14	S-3	4-6	39	0	4	96	B DN	50	26	SH	Fat Clay (CH)
TP-15	S-1	0-2	24	0	17	83	E DN	44	21	SA	Lean Clay with Sand (CL)
TP-15	S-2	2-4	41	0	3	97	B DN	57	30	SH	Fat Clay (CH)
TP-15	S-3	4-6	32	0	7	93	B DN	40	17	SH	Lean Clay (CL)
TP-16	S-1	0-2	33	0	13	87	E DN	50	27	SH	Fat Clay (CH)
TP-16	S-2	2-4	51	0	6	94	B DN	71	12	SH	Elastic Silt (MH)
TP-16	S-3	4-6	29	0	5	95	B DN	39	17	SH	Lean Clay (CL)

1. Moisture content testing performed by B

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NUCLEAR REGULATORY COMMISSION

Bucket No. \_\_\_\_\_ Official Exh. No. 213

In re matter of PFS

Identified ✓

Received ✓

Rejected ✓

Withdrawn \_\_\_\_\_

Date 6/17/02 Witness \_\_\_\_\_

Clk pol