July 13, 2012 Our Ref.: 11-1415-0013.2000

Mr. Troy Meyer, P.E., P.Eng
120 West Park Drive
Suite 204
Grand Junction, CO 81505

Attention: Mr. Troy Meyer

RE: LABORATORY TEST RESULTS FOR TETRA TECH, PROJECT – YUKON

Dear Mr. Meyer:

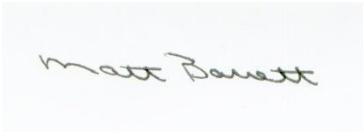
Golder Associates Inc. (Golder) has prepared this report to present the results of geotechnical laboratory testing conducted on samples submitted from the Golder Office in Burnaby, British Columbia, Canada. The samples were tested at Golder's Soils Laboratory in Lakewood, Colorado. This report presents the results of liner load testing on Agru Americas 60mil microspike liner sample, GCL, and "BGC-GD-01 (38mm)". All pending laboratory tests results will be forwarded when completed. Hard copies of test results will be mailed to you under separate cover.

Thank you for the opportunity to provide these laboratory testing services and we look forward to assisting you on any future projects.

Should you have any questions or comments, please do not hesitate to call.

Sincerely,

GOLDER ASSOCIATES INC.



Matt Barrett
Lab Manager

MB/MB

Attachments

Golder Associates Inc.
9197 West 6th Ave, Building C Suite 100
Lakewood, CO 80215 USA
Tel: (303) 980-0540 Fax: (303) 985-2080 www.golder.com

ATTACHMENTS

12 inch Liner Load Test

JOB NUMBER:	11-1415-0013-2000	UNDERLINER:	Silt
JOB NAME:	Tetra Tech/Aggregate/Yukon	OVERLINER	BGC-GD-01/02 (38mm)
DATE TESTED:	06/25/12		

Clay Liner

Initial Moisture Content

Tare:	Y-1
Wet Weight & Tare, g:	503.94
Dry Weight & Tare, g:	480.44
Tare Weight, g:	320.41
Moisture, %:	**14.7**

Final Moisture Content

Tare:	M28
Wet Weight & Tare, g:	587.19
Dry Weight & Tare, g:	529.42
Tare Weight, g:	92.75
Moisture, %:	**13.2**

Overliner

Initial Moisture Content

Tare:	U-10
Wet Weight & Tare, g:	667.68
Dry Weight & Tare, g:	665.97
Tare Weight, g:	115.58
Moisture, %:	**0.3**

Final Moisture Content

Tare:	B99
Wet Weight & Tare, g:	803.40
Dry Weight & Tare, g:	800.12
Tare Weight, g:	100.94
Moisture, %:	**0.5**

Initial Height Determination (Inches)

	Clay Liner	Overliner
1.	4.400	0.812
2.	4.400	0.818
3.	4.320	0.812
4.	4.680	0.814
5.	4.320	0.806
6.	4.600	0.801
Average	4.453	0.811
Cell Height	--	16.250
Sample Height[1]	4.453	10.927

Density	**Underliner**		**Overliner**	
Wet Weight:	14,689.60	g	27296.90	g
Dry Weight:	12,808.68	g	27212.35	g
Diameter:	12.000	in	12.000	in
Area:	113.10	in^2	113.10	in^2
Initial Height:	4.453	in	10.927	in
Final Height[2]:	4.278	in	8.889	in
Initial Volume:	0.291	ft^3	0.72	ft^3
Final Volume:	0.280	ft^3	0.58	ft^3
Initial Wet Density:	111.2	pcf	84.2	pcf
Final Wet Density:	115.7	pcf	103.5	pcf
Initial Dry Density:	97.0	pcf	83.9	pcf
Final Dry Density:	100.9	pcf	103.2	pcf

General Test Notes:

Consolidate @ 640 psi for 48 hours.

Post-Test: No visual puncturing of geomembrane. No penetrations observed during the vaccuum test. Approximately 31 notable dimples on surface of geomembrane and GCL.

Liner Thickness (in)

1.	0.058	
2.	0.060	
3.	0.061	
4.	0.056	
5.	0.058	
6.	0.060	
Average	0.059	(in)
	58.83	(mls)

Remold Instructions

Approximately 12" thickness for overliner material. Compaction to 95% of standard Proctor maximum dry density. +/- 2% of standard Proctor optimum moisture.

GEOMEMBRANE LINER LOAD TEST SUMMARY

JOB NAME: **Tetra Tech/Aggregate/Yukon**

JOB NUMBER: **11-1415-0013-2000**

DATE: **6/25/2012**

Underliner (Bedding) Source: Silt

Underliner Classification: -- Atterberg Limits: --

Maximum Dry Density (pcf): 107.8 Optimum Moisture: 15.2

Overliner Material Source: BGC-GD-01/02 (38mm)

Overliner Classification: 0 Atterberg Limits: --

Dry Density (pcf): 83.9

Geosynthetic Manufacturer/Supplier: Argu America LLDPE Microspike (60-mil)

Liner Type	Ave. Liner Thickness (mls)	Duration of Test (hrs.)	Underliner Compaction %	Moisture %	Load Applied (psi)	Change in total sample height (in)	Test Results	
							Visual	Vacuum
LLDPE Microspike 60	58.8	48	90	14.7	640	2.048	PASS	PASS

General Test Notes:

Test was conducted using a 12" diameter cell. The 60 mil texture/texture microspike liner was placed on top of moistened GCL which was placed on top of 4.4 inches of underliner soil, then covered with approximately 10.9 inches of overliner material. Approximately 18 rocks were hand placed with points downward on the liner prior to placement of remaining overliner material. A hydraulic jack was used to apply a load of 640 psi to the sample over a period of 19 hours. The load was maintained for 69 hours. A dial gage was used to monitor deformation of the sample. At the conclusion of the test, the liner was inspected and tested for punctures both visually and by application of a vacuum. The vacuum pressure was approximately 465 mmHG

Liner observations: No punctures were present but numerous dimples (approximately 38) and scratches. There was no apparent damage to the underlying GCL, only depressions which mimicked the overlying geomembrane dimples.

Underliner was remolded to 90% of maximum dry density at approximately optimum moisture. Overliner was loosely placed and slightly tamped.

Date: 6/25/12

Tech: JAM

Review: MB


60 mil
LLPDE T/T
11-1415-0013/2000
Eagle Gold/Yukon
6/25/12


12
10
8


60 mil
LLPDE T/T
11415-0013/2000
Eagle Gold/Yukon
6/25/12


11-1415-0013/2000 6/25/12
Eagle Gold / Yukon
4" Silt @ 107.8 pcf
10mil LLPDE T/T
Complete Setup

June 4, 2012 Our Ref.: 11-1415-0013.2000

Mr. Troy Meyer, P.E., P.Eng
120 West Park Drive
Suite 204
Grand Junction, CO 81505

Attention: Mr. Troy Meyer

RE: LABORATORY TEST RESULTS FOR TETRA TECH, PROJECT – YUKON

Dear Mr. Meyer:

Golder Associates Inc. (Golder) has prepared this report to present the results of geotechnical laboratory testing conducted on samples submitted from the Golder Office in Burnaby, British Columbia, Canada. The samples were tested at Golder's Soils Laboratory in Lakewood, Colorado. This report presents the results of grain size distribution (pre and post) and consolidation and hydraulic conductivity testing on samples "BGC-GD-01 (50mm)" and "BGC-GD-01 (38mm)". All pending laboratory tests results will be forwarded when completed. Hard copies of test results will be mailed to you under separate cover.

Thank you for the opportunity to provide these laboratory testing services and we look forward to assisting you on any future projects.

Should you have any questions or comments, please do not hesitate to call.

Sincerely,

GOLDER ASSOCIATES INC.

Matt Barrett

Matt Barrett
Lab Manager

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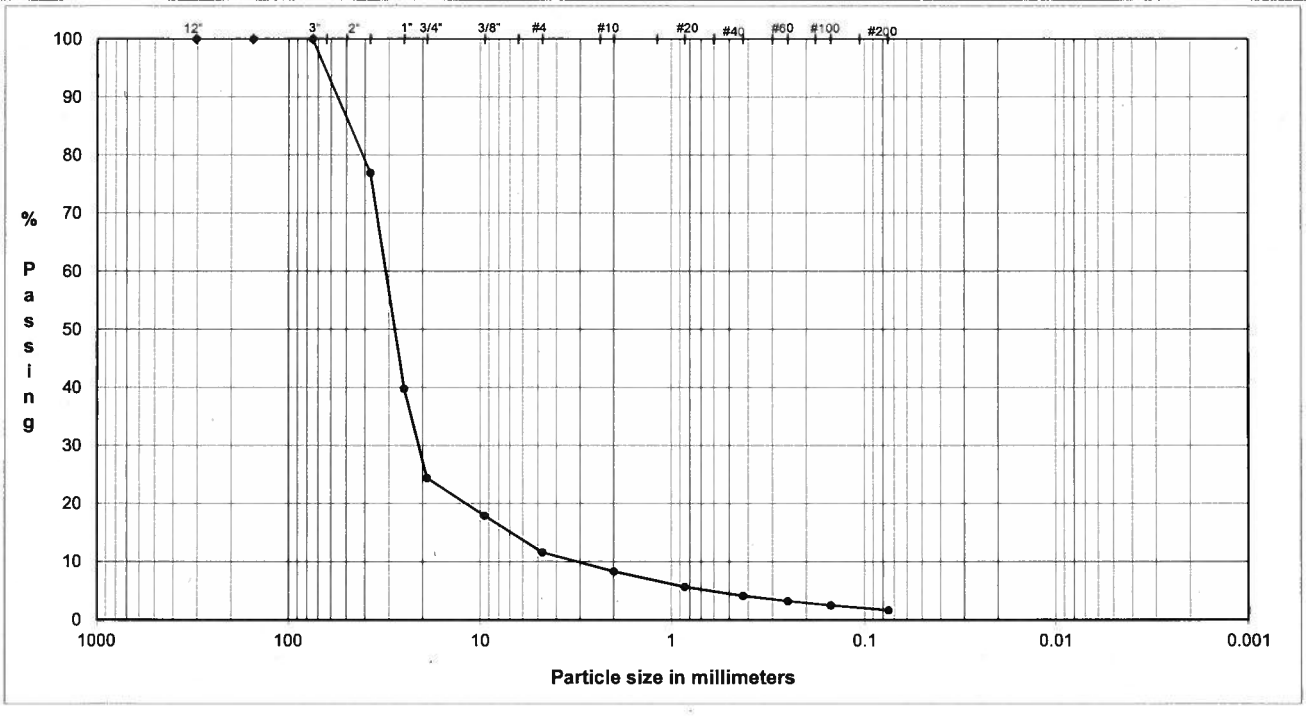
ATTACHMENTS

March-12 | 11-1415-0013.2000

PRE-PERM PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **Tetra Tech/Aggregate/Yukon**
SAMPLE ID: **BGC-GD-01 (50mm)** Depth (ft) --
TYPE: **Pail (Composite)**

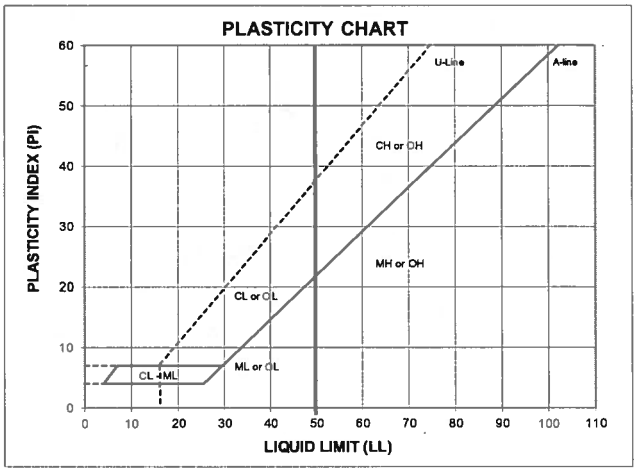


	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

PRE-PERM

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Particle Size Percentage
12.0"	304.8	**100.0**		
6.0"	154.2	**100.0**		
3.0"	75.0	**100.0**	Cobbles	**0.00**
1.5"	37.5	**76.9**		
1.0"	25.0	**39.8**		
0.75"	19.0	**24.4**	Coarse Gravel	**75.60**
0.375"	9.5	**17.9**		
#4	4.8	**11.6**	Fine Gravel	**12.79**
#10	2.0	**8.3**	Coarse Sand	**3.31**
#20	0.9	**5.6**		
#40	0.4	**4.1**	Medium Sand	**4.18**
#60	0.3	**3.2**		
#100	0.2	**2.5**		
#200	0.1	**1.6**	Fine Sand	**2.49**
			Fines	**1.62**



ATTERBERG LIMITS

M_c	LL	PL	PI	SG
--	--	--	--	--

DESCRIPTION: Dry, light yellowish brown sandy GRAVEL, poorly graded, angular, brittle aggregate

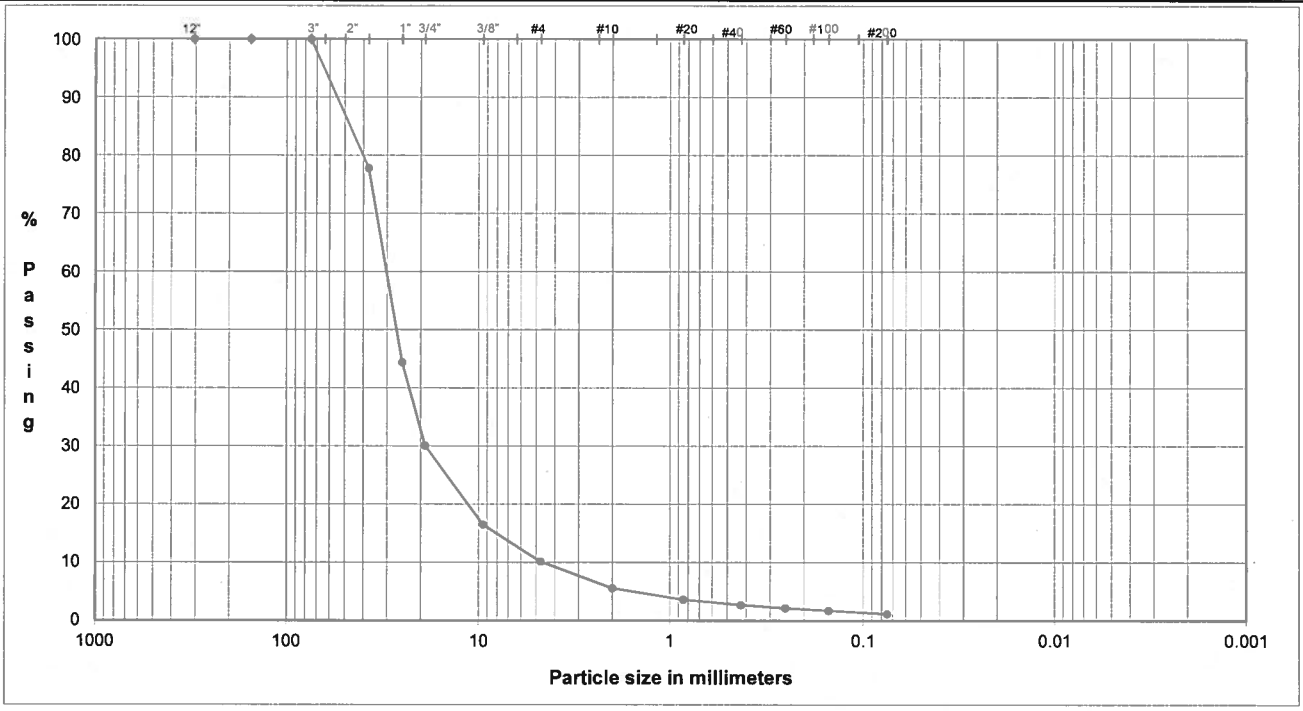
USCS: GP

TECH JAM
DATE 3/7/12
REVIEW PRH

March-12 11-1415-0013.2000

POST-PERM PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS
ASTM D421, D422, D4318

PROJECT NAME: **Tetra Tech/Aggregate/Yukon**
SAMPLE ID: **BGC-GD-01 (50mm)** Depth (ft) --
TYPE: **Pail (Composite)**

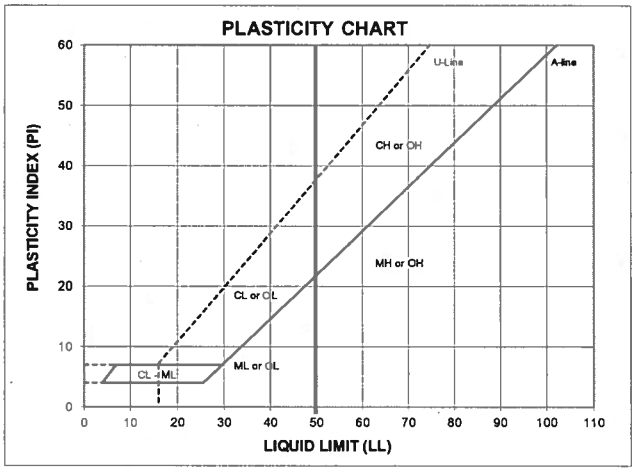


	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

POST-PERM

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Particle Size Percentage
12.0"	304.8	100.0		
6.0"	154.2	100.0		
3.0"	75.0	100.0	Cobbles	0.00
1.5"	37.5	77.8		
1.0"	25.0	44.4		
0.75"	19.0	30.1	Coarse Gravel	69.93
0.375"	9.5	16.5		
#4	4.8	10.1	Fine Gravel	19.95
#10	2.0	5.5	Coarse Sand	4.57
#20	0.9	3.6		
#40	0.4	2.7	Medium Sand	2.89
#60	0.3	2.1		
#100	0.2	1.7		
#200	0.1	1.1	Fine Sand	1.52
			Fines	1.14



ATTERBERG LIMITS

M_c	LL	PL	PI	SG
--	--	--	--	--

DESCRIPTION: Dry, light yellowish brown sandy GRAVEL, poorly graded, angular, brittle aggregate

USCS: GP

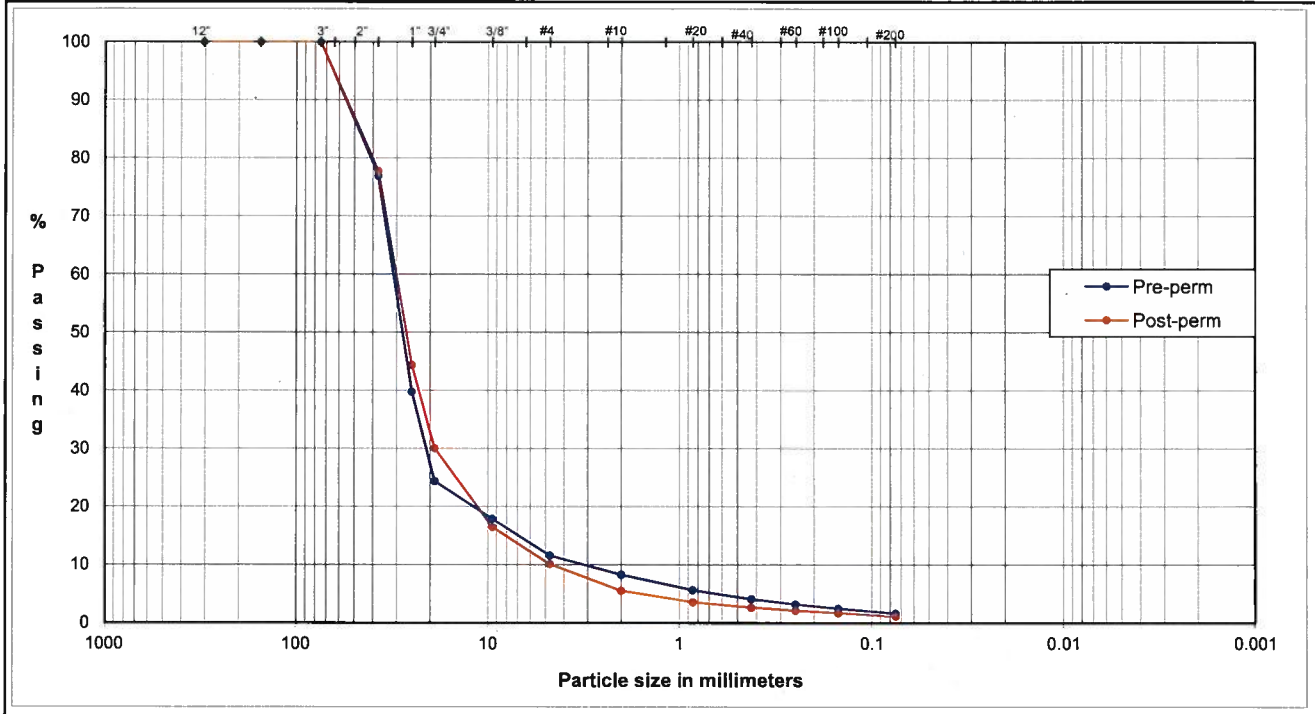
TECH JAM
DATE 3/12/2012
REVIEW PRH

March-12 | 11-1415-0013.2000

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **Tetra Tech/Aggregate/Yukon**
SAMPLE ID: **BGC-GD-01 (50mm)** Depth (ft) --
TYPE: **Pail (Composite)**



	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

PRE-PERM

U.S. Standard Sieves Sizes and Numbers

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12.0"	304.8	**100.0**		
6.0"	154.2	**100.0**		
3.0"	75.0	**100.0**	Cobbles	**0.00**
1.5"	37.5	**76.9**		
1.0"	25.0	**39.8**		
0.75"	19.0	**24.4**	Coarse Gravel	**75.60**
0.375"	9.5	**17.9**		
#4	4.8	**11.6**	Fine Gravel	**12.79**
#10	2.0	**8.3**	Coarse Sand	**3.31**
#20	0.9	**5.6**		
#40	0.4	**4.1**	Medium Sand	**4.18**
#60	0.3	**3.2**		
#100	0.2	**2.5**		
#200	0.1	**1.6**	Fine Sand	**2.49**
			Fines	**1.62**

POST-PERM

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Particle Size Percentage
12.0"	304.8	**100.0**		
6.0"	154.2	**100.0**		
3.0"	75.0	**100.0**	Cobbles	**0.00**
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#20	0.9	**3.6**		
#40	0.4	**2.7**	Medium Sand	**2.89**
#60	0.3	**2.1**		
#100	0.2	**1.7**		
#200	0.1	**1.1**	Fine Sand	**1.52**
			Fines	**1.14**

ATTERBERG LIMITS

M_c	LL	PL	PI	SG
--	--	--	--	--

DESCRIPTION: Dry, light yellowish brown sandy GRAVEL, poorly graded, angular, brittle aggregate

USCS: GP

TECH	JAM
DATE	3/7/12
REVIEW	PRH

TETRA TECH/AGGREGATE/YUKON
11-1415-0013.2000
TABLE 1
RIGID-WALL COMPRESSION
CONSTANT-HEAD PERMEABILITY
10-INCH DIAMETER CELL

Project Title:	Tetra Tech/Aggregate/Yukor	**Boring:**	--
Project Number:	11-1415-0013.2000	**Sample:**	BGC-GD-01 (50mm)
Dates Tested:	3/8/2012 **To:** 3/10/2012	**Depth (ft):**	--

Sample Setup

Initial Sample Height, in	11.067
Mold Diameter, in	10.00
Sample Area, in^2	78.54
Wet Sample Weight, g	21,384.3
Wet Sample Weight, lb	47.15
Dry Sample Weight, g	21,286.0
Dry Sample Weight, lb	46.94

Initial Sample:
Moisture Determinatior

Tare	FEE
Wet Weight and Tare, g	431.30
Dry Weight and Tare, g	429.87
Tare Weight, g	120.37
Moisture Content, %	0.5

Initial Sample Density and Void Rati

Specific Gravity[1]	2.70
Initial Sample Volume, ft^3	0.503
Initial Wet Density, lb/ft^3	93.7
Initial Dry Density, lb/ft^3	93.3
Initial Void Ratic	0.81

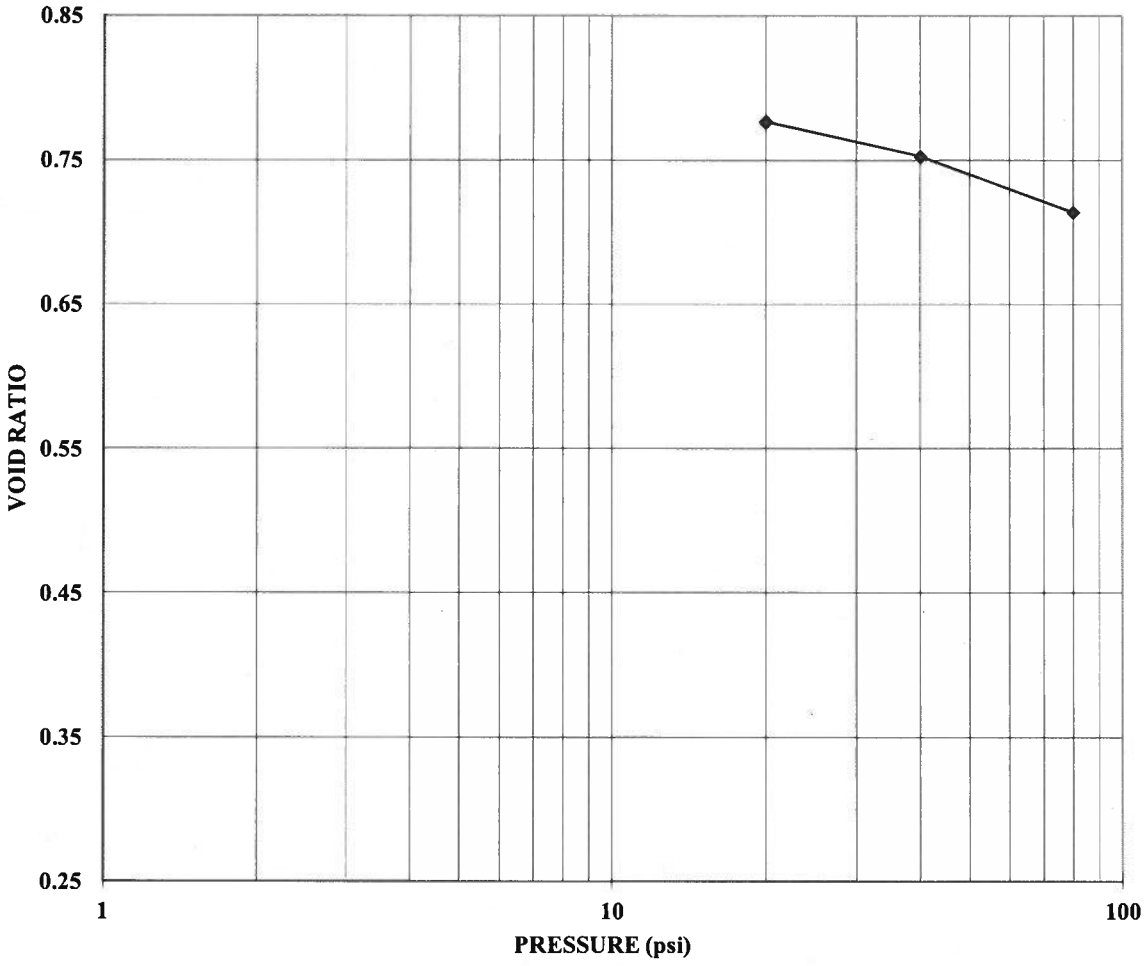
Final Sample Density and Void Rati

Final Sample Height, in	10.505
Final Sample Volume, ft^3	0.477
Final Dry Density, lb/ft^3	98.3
Final Void Ratio	0.71

Load (psi)	Height (in)	Dry Density (pcf)	Void Ratio	Flow Rate (ml/sec)	Gradient	Permeability (cm/sec)	Porosity
20	10.888	94.8	0.78	116.84	0.02	1.1E+01	0.44
40	10.741	96.1	0.75	101.04	0.02	9.7E+00	0.43
80	10.505	98.3	0.71	169.74	0.03	9.2E+00	0.42

NOTES: [1]Specific Gravity = Assumed Valu

ONE-DIMENSIONAL CONSOLIDATION



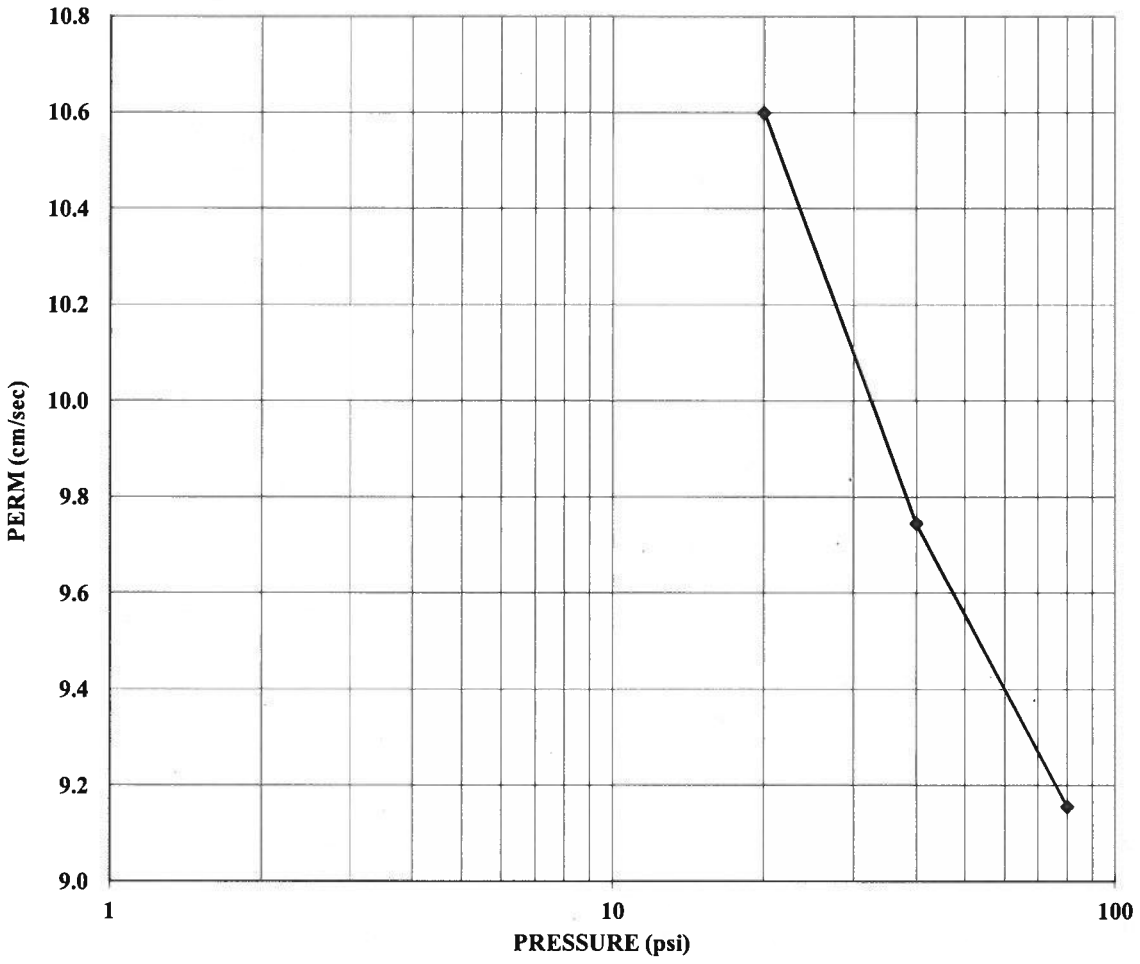
SAMPLE #:	**BGC-GD-01 (50mm)**
DESCRIPTION:	**Dry, light yellowish brown sandy GRAVEL, poorly graded, angular, brittle aggregate (GP)**

DATE	3/10/2012
TECH	JAM
REVIEW	PRH

Tetra Tech/Aggregate/Yukon
11-1415-0013.2000

GOLDER ASSOCIATES INC.
LAKEWOOD, COLORADO

ONE-DIMENSIONAL CONSOLIDATION



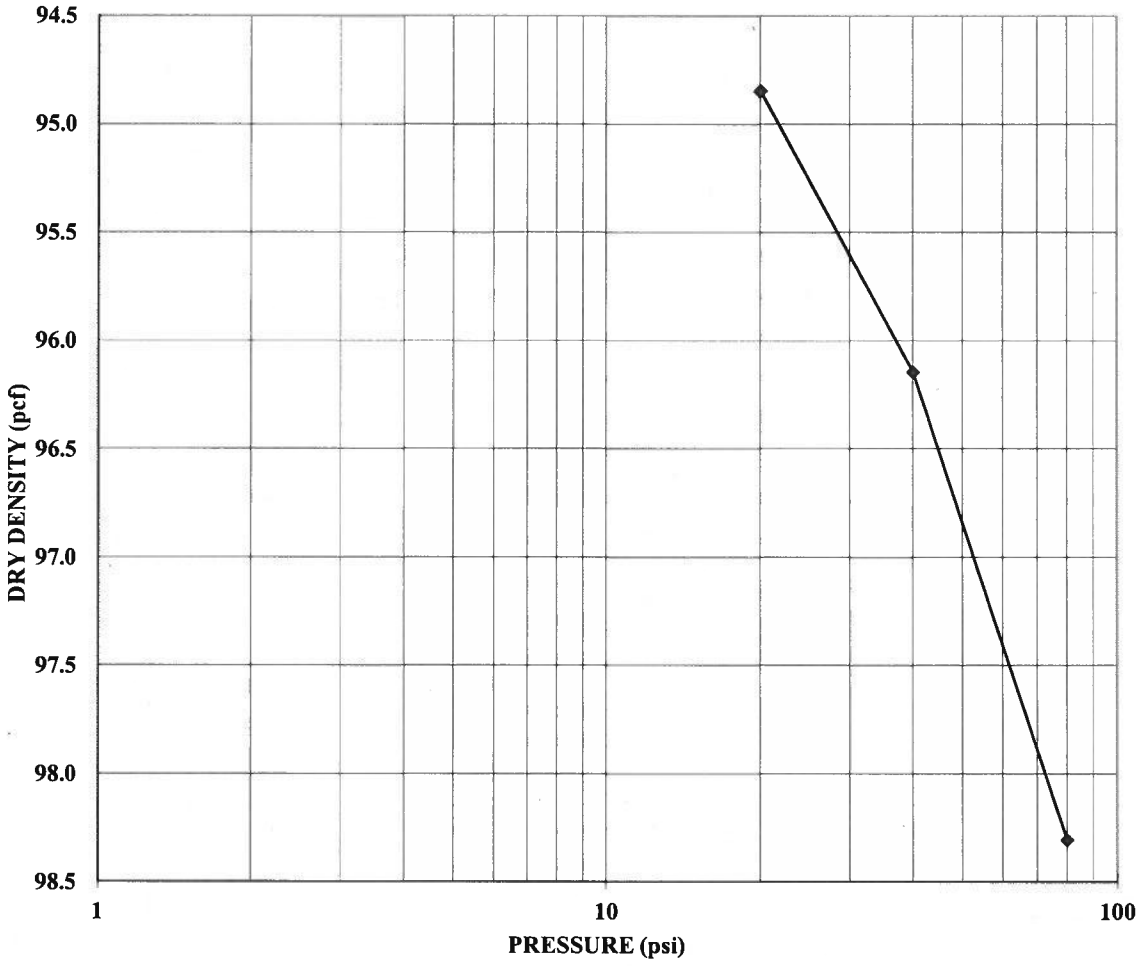
SAMPLE #:	**BGC-GD-01 (50mm)**
DESCRIPTION:	**Dry, light yellowish brown sandy GRAVEL, poorly graded, angular, brittle aggregate (GP)**

DATE	3/10/2012
TECH	JAM
REVIEW	PRH

Tetra Tech/Aggregate/Yukon
11-1415-0013.2000

GOLDER ASSOCIATES INC.
LAKEWOOD, COLORADO

ONE-DIMENSIONAL CONSOLIDATION



SAMPLE #:	**BGC-GD-01 (50mm)**
DESCRIPTION:	**Dry, light yellowish brown sandy GRAVEL, poorly graded, angular, brittle aggregate (GP)**

DATE	3/10/2012
TECH	JAM
REVIEW	PRH

Tetra Tech/Aggregate/Yukon
11-1415-0013.2000

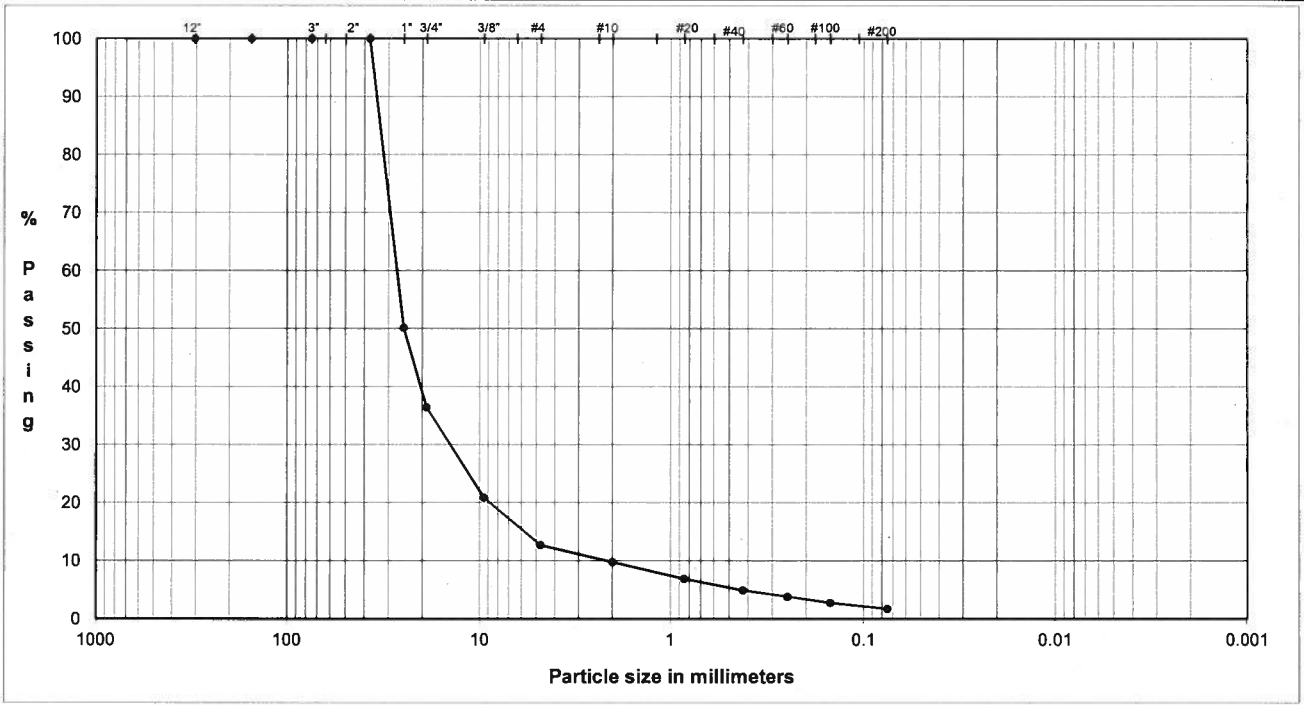
GOLDER ASSOCIATES INC.
LAKEWOOD, COLORADO

May-12 | 11-1415-0013/2000

PRE-PERM PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **Tetra Tech/Aggregate/Yukon**
SAMPLE ID: **BGC-GD-01 (38mm)** Depth (ft) --
TYPE: **Pails**

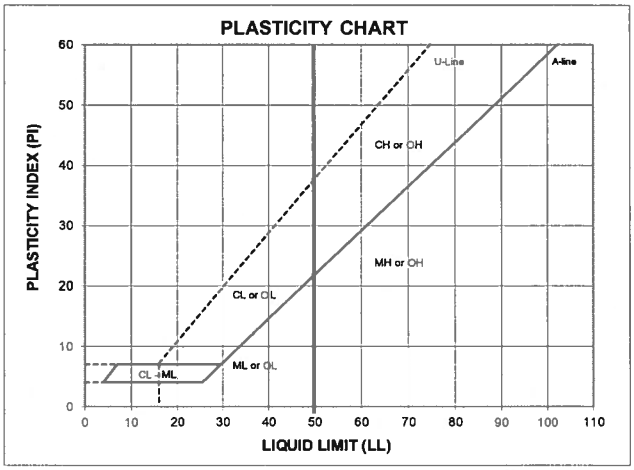


	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

PRE-PERM

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	**100.0**		
6.0"	154.2	**100.0**		
3.0"	75.0	**100.0**	Cobbles	**0.00**
1.5"	37.5	**100.0**		
1.0"	25.0	**50.1**		
0.75"	19.0	**36.4**	Coarse Gravel	**63.60**
0.375"	9.5	**20.9**		
#4	4.8	**12.7**	Fine Gravel	**23.72**
#10	2.0	**9.8**	Coarse Sand	**2.92**
#20	0.9	**6.9**		
#40	0.4	**4.9**	Medium Sand	**4.85**
#60	0.3	**3.8**		
#100	0.2	**2.8**		
#200	0.1	**1.7**	Fine Sand	**3.20**
			Fines	**1.71**



ATTERBERG LIMITS

M_c	LL	PL	PI	SG
--	--	--	--	--

DESCRIPTION: Dry, light yellowish brown sandy GRAVEL, poorly graded, angular, brittle aggregate

USCS: GP

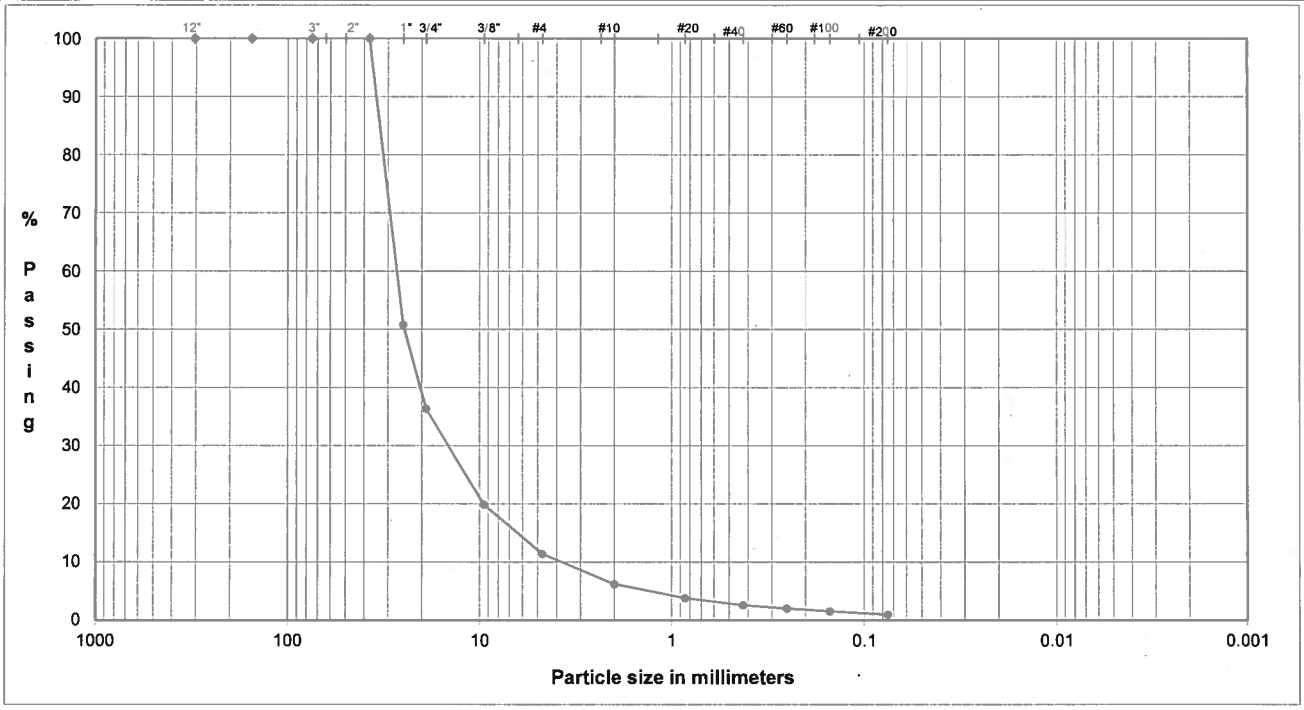
TECH JAM
DATE 5/18/12
REVIEW PRH

May-12 | 11-1415-0013/2000

POST-PERM PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **Tetra Tech/Aggregate/Yukon**
SAMPLE ID: **BGC-GD-01 (38mm)** Depth (ft) --
TYPE: **Pails**



	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

POST-PERM

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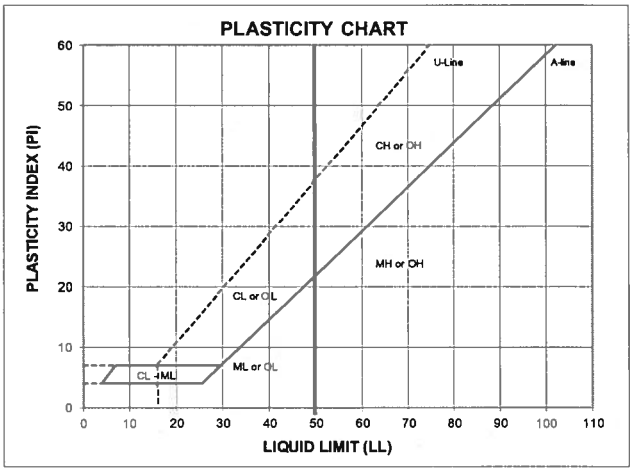
3.0"	75.0	**100.0**	Cobbles	**0.00**
1.5"	37.5	**100.0**		
1.0"	25.0	**50.8**		
0.75"	19.0	**36.4**	Coarse Gravel	**63.64**
0.375"	9.5	**19.9**		
#4	4.8	**11.4**	Fine Gravel	**24.97**
#10	2.0	**6.2**	Coarse Sand	**5.19**
#20	0.9	**3.8**		
#40	0.4	**2.6**	Medium Sand	**3.60**
#60	0.3	**2.0**		
#100	0.2	**1.5**		
#200	0.1	**1.0**	Fine Sand	**1.61**
			Fines	**0.99**



ATTERBERG LIMITS

M_c	LL	PL	PI	SG
--	--	--	--	--

DESCRIPTION: Dry, light yellowish brown sandy GRAVEL, poorly graded, angular, brittle aggregate

USCS: GP

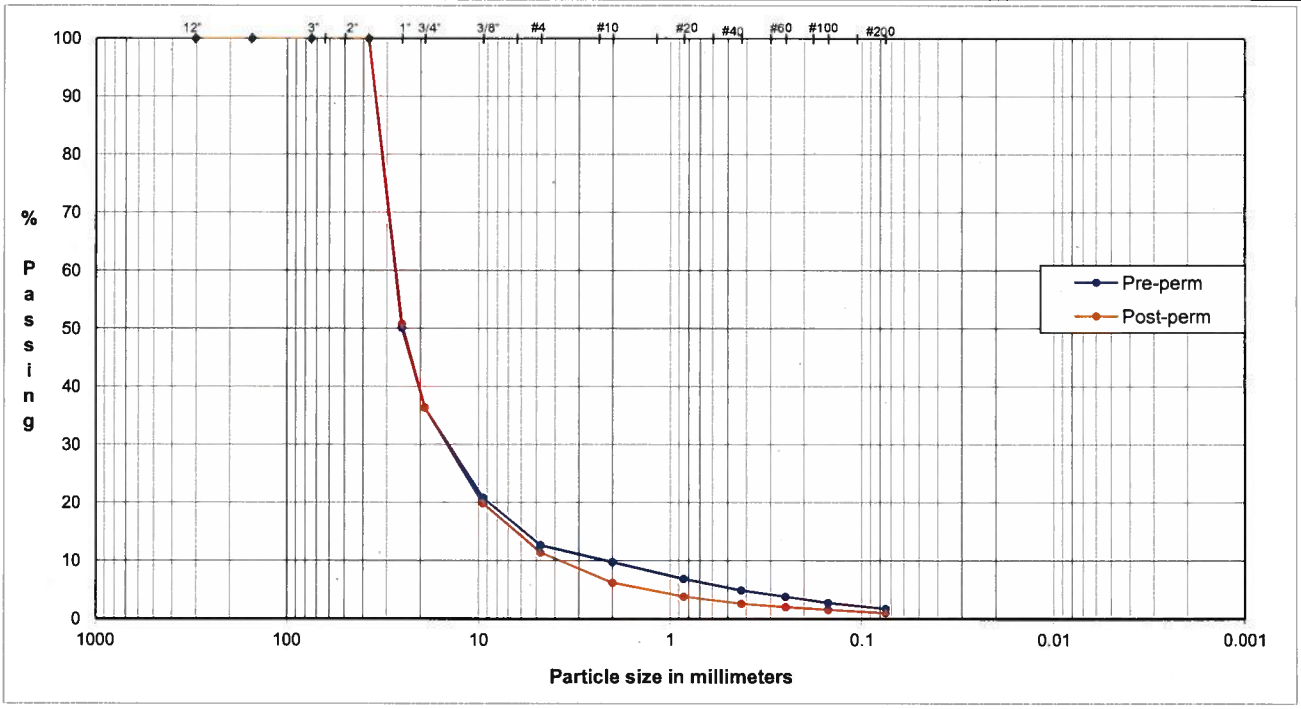
TECH	JAM
DATE	5/22/2012
REVIEW	PRH

May-12 11-1415-0013/2000

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **Tetra Tech/Aggregate/Yukon**
SAMPLE ID: **BGC-GD-01 (38mm)** Depth (ft) --
TYPE: **Pails**



	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

PRE-PERM

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Particle Size Percentage
12.0"	304.8	**100.0**		
6.0"	154.2	**100.0**		
3.0"	75.0	**100.0**	Cobbles	**0.00**
1.5"	37.5	**100.0**		
1.0"	25.0	**50.1**		
0.75"	19.0	**36.4**	Coarse Gravel	**63.60**
0.375"	9.5	**20.9**		
#4	4.8	**12.7**	Fine Gravel	**23.72**
#10	2.0	**9.8**	Coarse Sand	**2.92**
#20	0.9	**6.9**		
#40	0.4	**4.9**	Medium Sand	**4.85**
#60	0.3	**3.8**		
#100	0.2	**2.8**		
#200	0.1	**1.7**	Fine Sand	**3.20**
			Fines	**1.71**

POST-PERM

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Particle Size Percentage
12.0"	304.8	**100.0**		
6.0"	154.2	**100.0**		
3.0"	75.0	**100.0**	Cobbles	**0.00**
1.5"	37.5	**100.0**		
1.0"	25.0	**50.8**		
0.75"	19.0	**36.4**	Coarse Gravel	**63.64**
0.375"	9.5	**19.9**		
#4	4.8	**11.4**	Fine Gravel	**24.97**
#10	2.0	**6.2**	Coarse Sand	**5.19**
#20	0.9	**3.8**		
#40	0.4	**2.6**	Medium Sand	**3.60**
#60	0.3	**2.0**		
#100	0.2	**1.5**		
#200	0.1	**1.0**	Fine Sand	**1.61**
			Fines	**0.99**

ATTERBERG LIMITS

M,	LL	PL	PI	SG
--	--	--	--	--

DESCRIPTION: Dry, light yellowish brown sandy GRAVEL, poorly graded, angular, brittle aggregate

USCS: GP

TECH JAM
DATE 5/18/12
REVIEW PRH

TETRA TECH/AGGREGATE/YUKON
11-1415-0013.2000
TABLE 1
RIGID-WALL COMPRESSION
CONSTANT-HEAD PERMEABILITY
10-INCH DIAMETER CELL

Project Title:	Tetra Tech/Aggregate/Yukor	**Boring:**	--
Project Number:	11-1415-0013/2000	**Sample:**	BGC-GD-01 (38mm)
Dates Tested:	5/18/2012 **To:** 5/21/2012	**Depth (ft):**	--

Sample Setup

Initial Sample Height, ir	12.045
Mold Diameter, in	10.00
Sample Area, in^2	78.54
Wet Sample Weight, g	22,542.6
Wet Sample Weight, lb	49.71
Dry Sample Weight, g	22,438.9
Dry Sample Weight, lb	49.48

Initial Sample:
Moisture Determination

Tare	ROB-1
Wet Weight and Tare, g	431.30
Dry Weight and Tare, g	429.87
Tare Weight, g	120.37
Moisture Content, %	0.5

Initial Sample Density and Void Ratio

Specific Gravity[1]	2.70
Initial Sample Volume, f^3	0.547
Initial Wet Density, lb/ft^3	90.8
Initial Dry Density, lb/ft^3	90.4
Initial Void Ratio	0.86

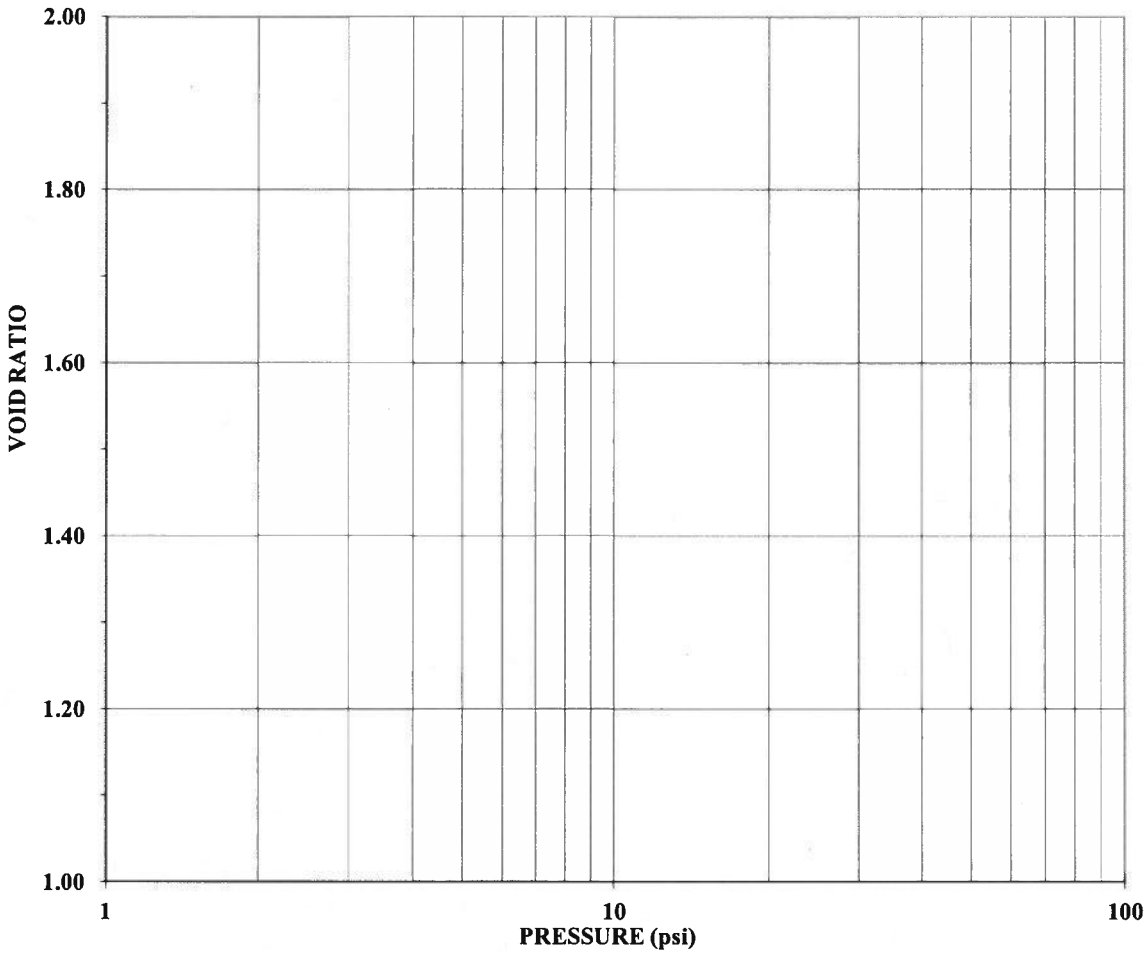
Final Sample Density and Void Ratio

Final Sample Height, ir	11.185
Final Sample Volume, f^3	0.508
Final Dry Density, lb/ft^3	97.3
Final Void Ratio	0.73

Load (psi)	Height (in)	Dry Density (pcf)	Void Ratio	Flow Rate (ml/sec)	Gradient	Permeability (cm/sec)	Porosity
20	11.663	93.3	0.81	202.53	0.02	1.8E+01	0.45
40	11.624	93.7	0.80	218.80	0.05	8.5E+00	0.44
80	11.185	97.3	0.73	123.92	0.07	3.4E+00	0.42

NOTES: [1]Specific Gravity = Assumed Valu

ONE-DIMENSIONAL CONSOLIDATION



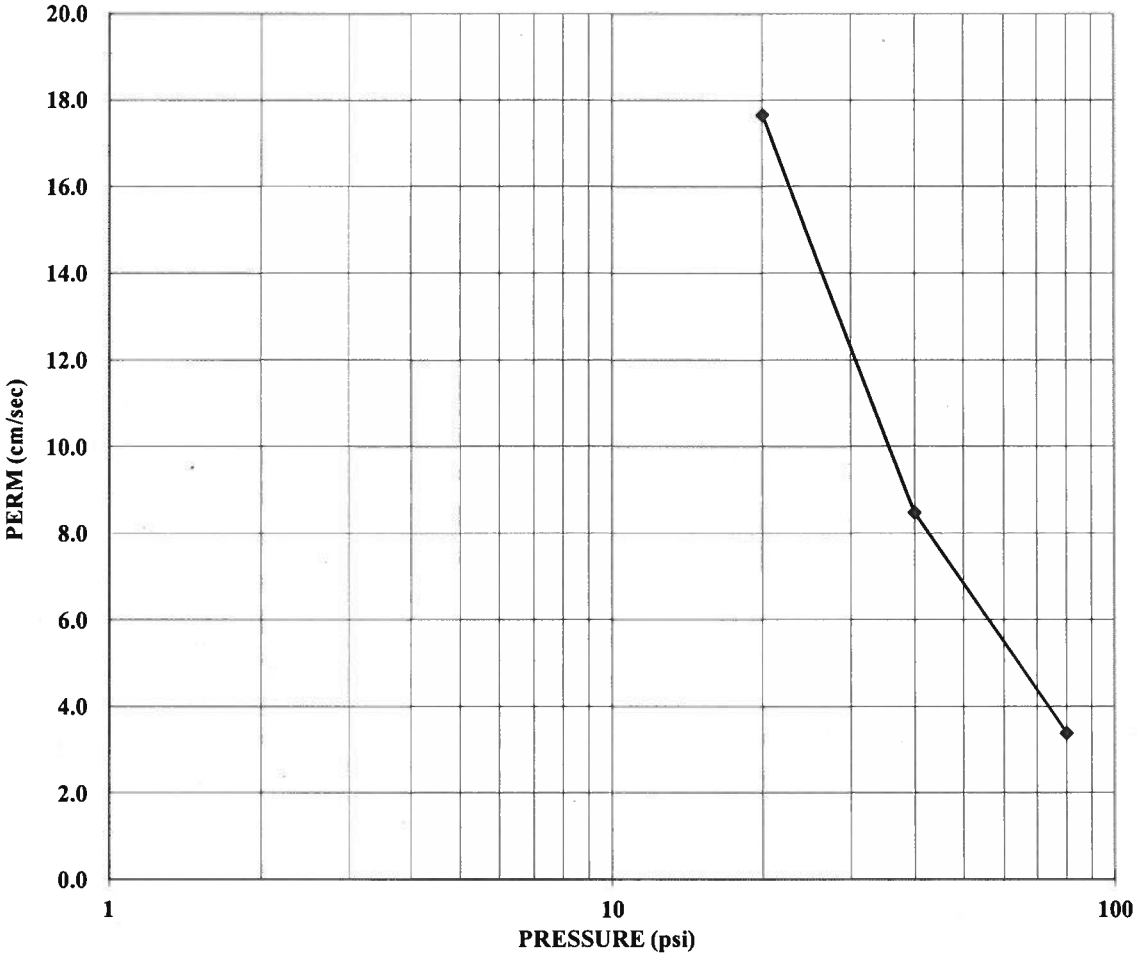
SAMPLE #:	**BGC-GD-01 (38mm)**
DESCRIPTION:	**Dry, light yellowish brown sandy GRAVEL, poorly graded, angular, brittle aggregate (GP)**

DATE	5/21/2012
TECH	JAM
REVIEW	PRH

Tetra Tech/Aggregate/Yukon
11-1415-0013/2000

GOLDER ASSOCIATES INC.
LAKEWOOD, COLORADO

ONE-DIMENSIONAL CONSOLIDATION



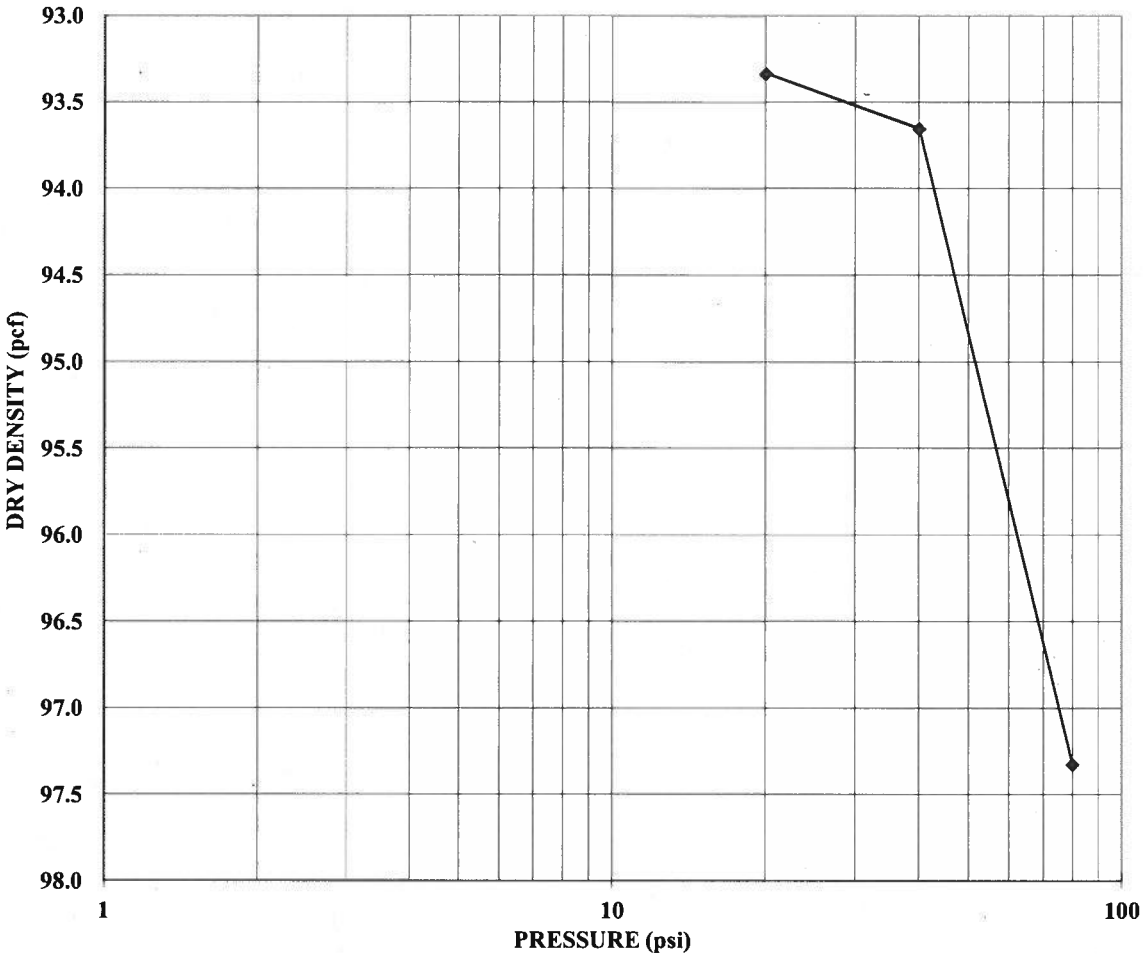
SAMPLE #:	**BGC-GD-01 (38mm)**
DESCRIPTION:	**Dry, light yellowish brown sandy GRAVEL, poorly graded, angular, brittle aggregate (GP)**

Tetra Tech/Aggregate/Yukon
11-1415-0013/2000

DATE	5/21/2012
TECH	JAM
REVIEW	PRH

GOLDER ASSOCIATES INC.
LAKEWOOD, COLORADO

ONE-DIMENSIONAL CONSOLIDATION



SAMPLE #:	**BGC-GD-01 (38mm)**
DESCRIPTION:	**Dry, light yellowish brown sandy GRAVEL, poorly graded, angular, brittle aggregate (GP)**

DATE	5/21/2012
TECH	JAM
REVIEW	PRH

Tetra Tech/Aggregate/Yukon
11-1415-0013/2000

GOLDER ASSOCIATES INC.
LAKEWOOD, COLORADO

Golder Associates

June 16, 2012 Our Ref.: 11-1415-0013.2000

Mr. Troy Meyer, P.E., P.Eng
120 West Park Drive
Suite 204
Grand Junction, CO 81505

Attention: Mr. Troy Meyer

RE: LABORATORY TEST RESULTS FOR TETRA TECH, PROJECT – YUKON

Dear Mr. Meyer:

Golder Associates Inc. (Golder) has prepared this report to present the results of geotechnical laboratory testing conducted on samples submitted from the Golder Office in Burnaby, British Columbia, Canada. The samples were tested at Golder's Soils Laboratory in Lakewood, Colorado. This report presents the results of liner load testing on sample "BGC-GD-01 (50mm)". All pending laboratory tests results wi ll be forwarded when completed. Hard copies of test results will be mailed to you under separate cover.

Thank you for the opportunity to provide these laboratory testing services and we look forward to assisting you on any future projects.

Should you have any questions or comments, please do not hesitate to call.

Sincerely,

GOLDER ASSOCIATES INC.

Matt Barrett

Matt Barrett
Lab Manager

MB/MB

Attachments

Golder Associates Inc.
9197 West 6th Ave, Building C Suite 100
Lakewood, CO 80215 USA
Tel: (303) 980-0540 Fax: (303) 985-2080 www.golder.com

ATTACHMENTS

12 inch Liner Load Test

JOB NUMBER: 11-1415-0013/2000
JOB NAME: Tetra Tech/Aggregate/Yukon
DATE TESTED: 05/11/12

UNDERLINER: Section 2 Silt
OVERLINER BGC-GD-01 (50mm)

Clay Liner

Initial Moisture Content

Tare:	JW-18
Wet Weight & Tare, g:	583.7
Dry Weight & Tare, g:	524.38
Tare Weight, g:	128.53
Moisture, %:	**15.0**

Final Moisture Content

Tare:	Bowl 3
Wet Weight & Tare, g:	924.74
Dry Weight & Tare, g:	824.41
Tare Weight, g:	138.66
Moisture, %:	**14.6**

Overliner

Initial Moisture Content

Tare:	OG-1
Wet Weight & Tare, g:	670.82
Dry Weight & Tare, g:	669.24
Tare Weight, g:	129.35
Moisture, %:	**0.3**

Final Moisture Content

Tare:	J11
Wet Weight & Tare, g:	689.95
Dry Weight & Tare, g:	687.98
Tare Weight, g:	82.28
Moisture, %:	**0.3**

Initial Height Determination (Inches)

	Clay Liner	Overliner
1.	4.000	3.337
2.	4.000	3.338
3.	4.000	3.339
4.	4.000	3.339
5.	4.000	3.337
6.	4.000	3.338
Average	4.000	3.338
Cell Height	--	16.250
Sample Height	4.000	8.851

Density	**Clay liner**		**Overliner**	
Wet Weight:	13,791.7	g	21441.10	g
Dry Weight:	11,994.3	g	21378.54	g
Diameter:	12.000	in	12.000	in
Area:	113.10	in^2	113.10	in^2
Initial Height:	4.000	in	8.851	in
Final Height:	4.000	in	7.178	in
Initial Volume:	0.262	ft^3	0.58	ft^3
Final Volume:	0.262	ft^3	0.47	ft^3
Initial Wet Density:	116.2	pcf	81.7	pcf
Final Wet Density:	116.2	pcf	100.7	pcf
Initial Dry Density:	101.1	pcf	81.4	pcf
Final Dry Density:	101.1	pcf	100.4	pcf

General Test Notes:

Consolidate @ 640 psi for 48 hours.

Post-Test: No visual puncturing of geomembrane. No penetrations observed during the vaccuum test. Approximately 20 notable dimples on surface of geomembrane.

Liner Thickness (in)

1.	0.060	
2.	0.061	
3.	0.063	
4.	0.061	
5.	0.063	
6.	0.061	
Average	0.062	(in)
	61.50	(mls)

Remold Instructions

Minimun 12" thickness for -2" material. 95% compaction of optimum density. +/- 2% of optimum moisture.

GEOMEMBRANE LINER LOAD TEST SUMMARY

JOB NAME: Tetra Tech/Aggregate/Yukon

JOB NUMBER: 11-1415-0013/2000

DATE: 5/11/2012

Underliner (Bedding) Source: Section 2 Silt

Underliner Classification: --

Atterberg Limits: --

Maximum Dry Density (pcf): 1726 corrected

Optimum Moisture: 15.2

Overliner Material Source: BGC-GD-01 (50mm)

Overliner Classification: GP

Atterberg Limits: --

Dry Density (pcf): 81.4

Geosynthetic Manufacturer/Supplier: Agru America LLDPE Microspike (60-mil)

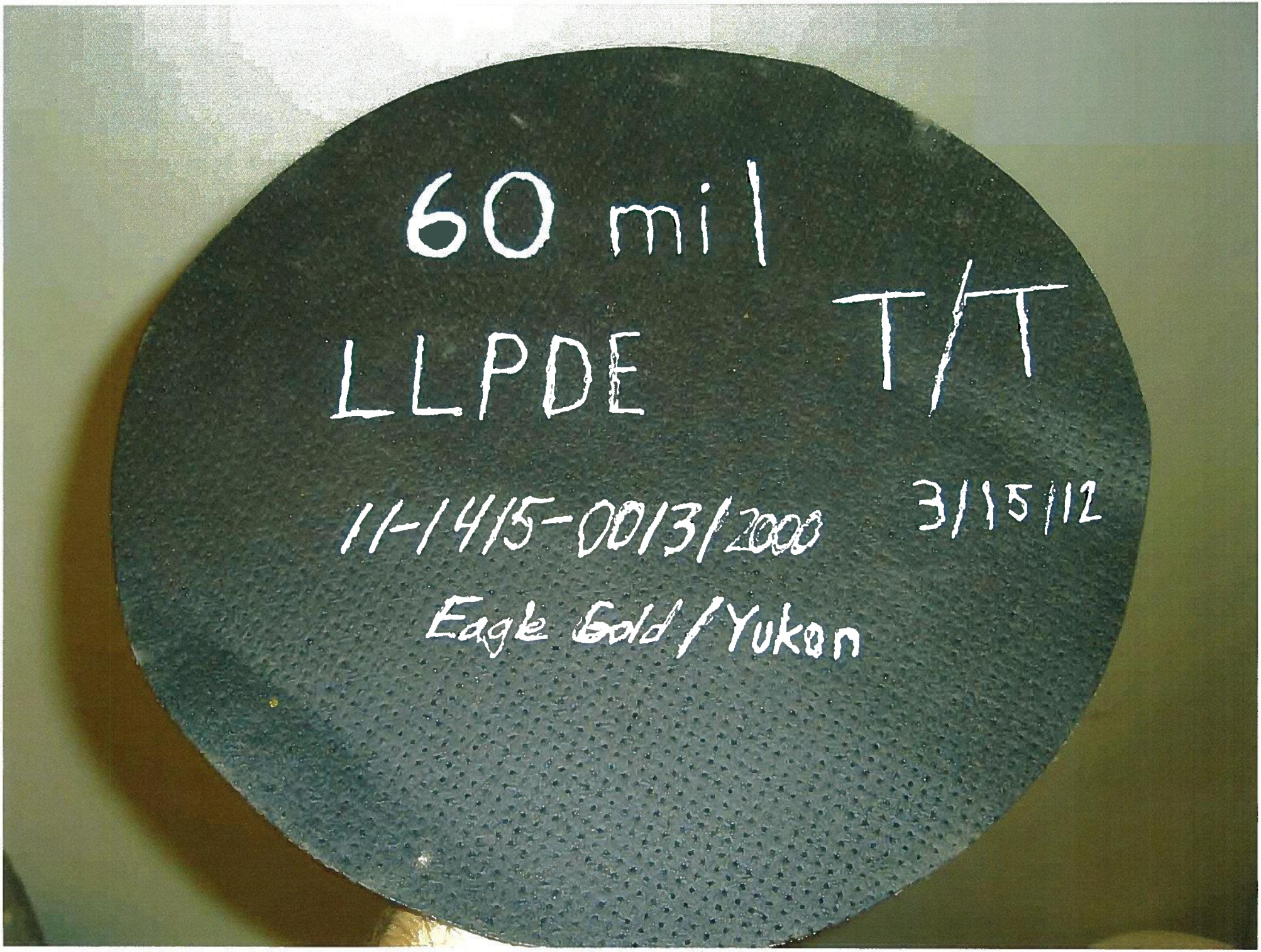
Liner Type	Ave. Liner Thickness (mls)	Duration of Test (hrs.)	Underliner Compaction %	Moisture %	Load Applied (psi)	Change in total sample height (in)	Test Results	
							Visual	Vacuum
LLDPE Microspike 60	61.50	48	93.9	15.2	640	1.673	Pass	Pass

General Test Notes: Test was conducted using a 12" diameter cell. The 60 mil microspike texture/texture HDPE liner was placed on top of 4.0 inches of underliner soil, then covered with approximately 8.8 inches of overliner material. Approximately 12 rocks were hand placed with points downward on the liner prior to placement of remaining overliner material. A hydraulic jack was used to apply a load of 640 psi to the sample over a period of 20 hours. The load was maintained for 48 hours. A dial gage was used to monitor deformation of the sample. At the conclusion of the test, the liner was inspected and tested for punctures both visually and by application of a vacuum. The vacuum pressure was approximately 465 mmHG

Liner observations: No visual puncturing of geomembrane. No penetrations observed during the vaccuum test. Approximately 20 notable dimples on surface of geomembrane.

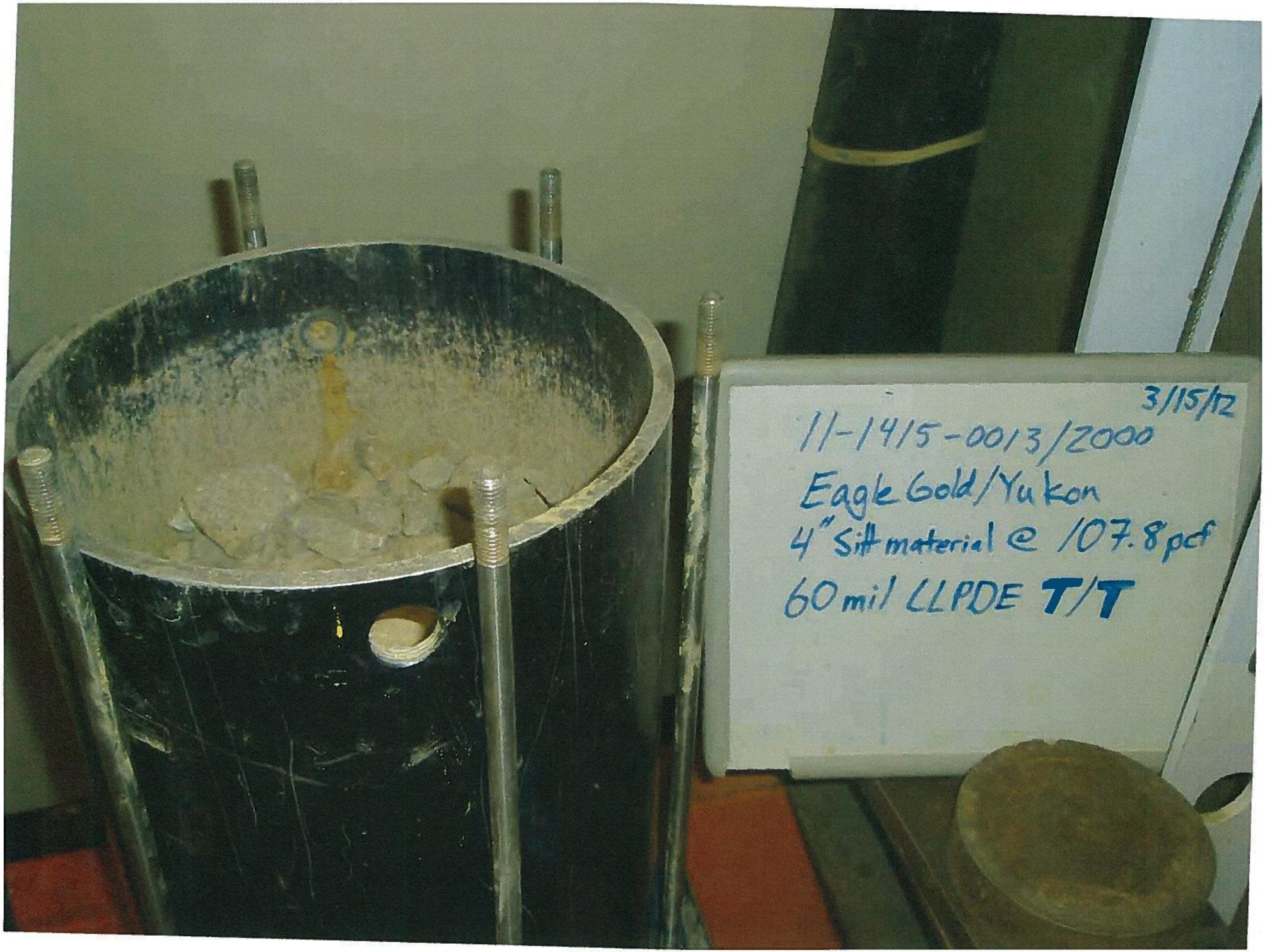
Underliner was remolded to 93.9% of maximum dry density at approximately optimum moisture. Overliner was loosely placed and slightly tamped.

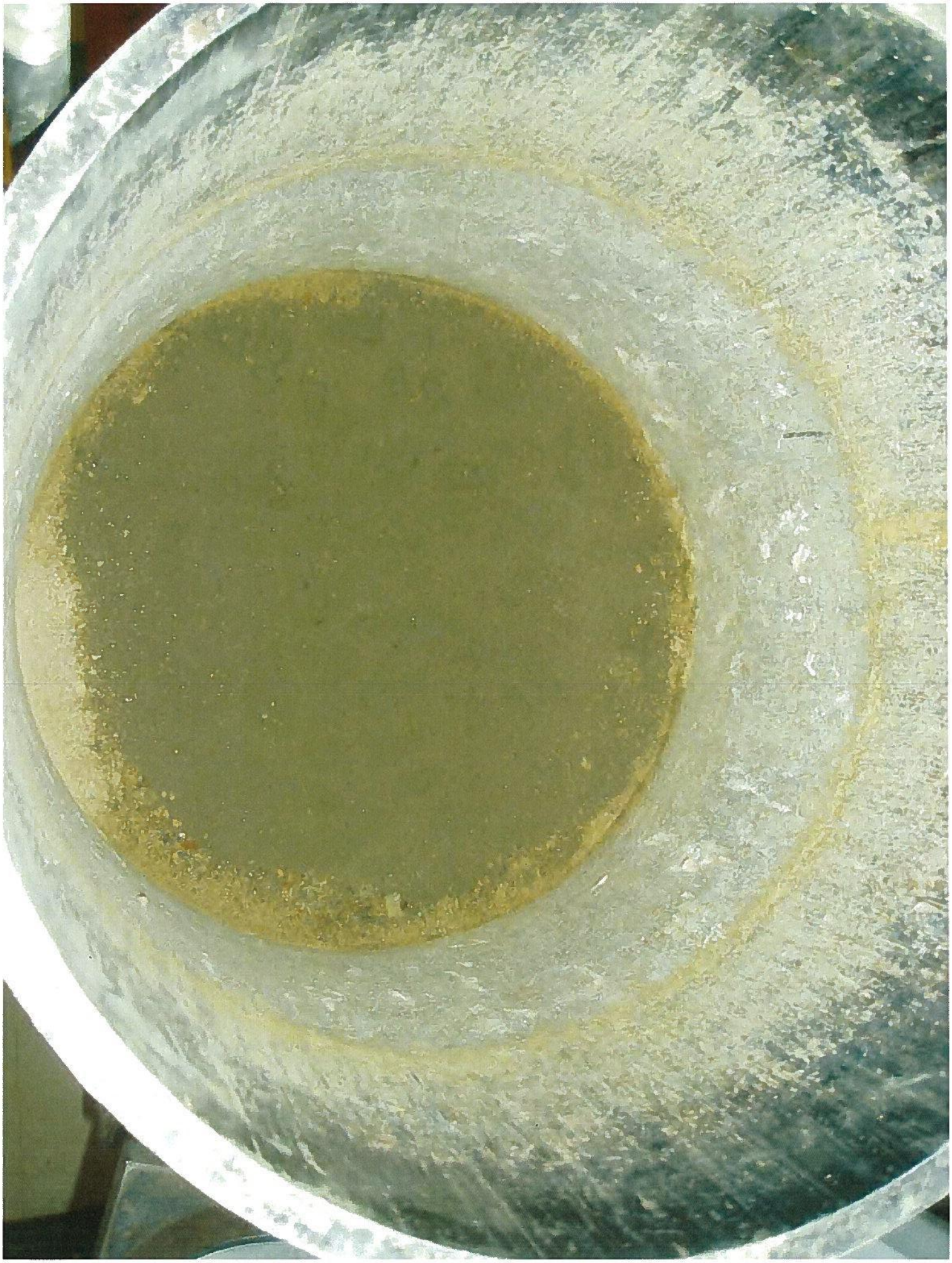
Date:	5/11/12
Tech:	JAM
Review:	MB


60 mil
LLPDE
T/T
11-1415-00131/2000
3/15/12
Eagle Gold / Yukon


60 mil
LLPDE
T/T
11-1415-0013/200
3/15/12
Eagle Gold Yukon


60 mil
LLPDE
T/T
11-1415-00131/2000
3/15/12
Eagle Gold / Yukon


3/15/12
11-1415-0013/2000
Eagle Gold/Yukon
4" Silt material @ 107.8 pcf
60 mil LLPDE T/T



3/18/12
11-14/3-0013/12000
Eagle Gold/Yukon
4" Soft material @ 107.8 psi
60 mil LLDPE T/T
Complete Set-up
POST-TEST