



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

CROW BUTTE RESOURCES, INC.

(Marsland Expansion Area)

Docket No. 40-8943-MLA-2

ASLBP No. 13-926-01-MLA-BD01

Hearing Exhibit

Exhibit Number:

Exhibit Title:



8100 Secura Way • Santa Fe Springs, CA 90670
Telephone (562) 347-2500 • Fax (562) 907-3610

October 10, 2013

Wade Beins
Crow Butte Resources, Inc.
PO Box 169
Crawford, NE 69339

Re: PTS File No: 43570
Physical Properties Data
Marsland Core

Dear Mr. Beins:

Please find enclosed report for Physical Properties analyses conducted upon samples received from your Marsland Core project. All analyses were performed by applicable ASTM, EPA, or API methodologies. An electronic version of the report has previously been sent to your attention via the internet. The samples are currently in storage and will be retained for thirty days past completion of testing at no charge. Please note that the samples will be disposed of at that time. You may contact me regarding storage, disposal, or return of the samples.

PTS Laboratories appreciates the opportunity to be of service. If you have any questions or require additional information, please contact Rachel Spitz at (562) 347-2504.

Sincerely,
PTS Laboratories, Inc.



Michael Mark Brady, P.G.
District Manager

Encl.

PTS Laboratories

Project Name: Marsland Core
Project Number: N/A

PTS File No: 43570
Client: Crow Butte Resources, Inc.

TEST PROGRAM - 20130829

CORE ID	Depth ft.	Core Recovery ft.	Grain Size Analysis	*X-Ray Diffraction Proprietary			Notes
Date Received: 20130829							
M-533C Run 1, Sample 1	63.9-64.9	N/A	X	X			
M-533C Run 1, Sample 2	68.8-69.8	N/A	X	X			
M-533C Run 3, Sample 1	299.0-300.0	N/A	X	X			
M-533C Run 3, Sample 2	306.0-307.0	N/A	X	X			
M-533C Run 5, Sample 1	1052.5-1053.0	N/A	X	X			
M-1635C Run 1, Sample 1	70.0-70.5	N/A	X	X			
M-1635C Run 1, Sample 2	79.5-80.0	N/A	X	X			
M-1635C Run 2, Sample 1	197.0-197.5	N/A	X	X			
M-1635C Run 2, Sample 2	206.5-207.0	N/A	X	X			
M-1635C Run 3, Sample 1	530.0-530.5	N/A	X	X			
M-1635C Run 6, Sample 1	993.0-994.0	N/A	X	X			
M-1912C Run 1, Sample 1	63.0-64.0	N/A	X	X			
M-1912C Run 2, Sample 1	130.7-131.7	N/A	X	X			
M-1912C Run 3, Sample 1	255.0-255.5	N/A	X	X			
M-1912C Run 3, Sample 2	260.4-260.9	N/A	X	X			
M-1912C Run 4, Sample 1	974.5-975.0	N/A	X	X			
M-1912C Run 4, Sample 2	968.7-969.7	N/A	X	X			
M-1956C Run 1, Sample 1	42.0-43.0	N/A	X	X			
M-1956C Run 3, Sample 1	78.0-79.0	N/A	X	X			
M-1956C Run 4, Sample 1	196.5-197.1	N/A	X	X			
M-1956C Run 4, Sample 2	202.0-202.5	N/A	X	X			
M-1956C Run 5, Sample 1	425.6-426.2	N/A	X	X			
M-1956C Run 5, Sample 2	431.0-431.6	N/A	X	X			
M-1956C Run 6, Sample 1	1011.8-1012.4	N/A	X	X			

PTS Laboratories

Project Name: Marsland Core
Project Number: N/A

PTS File No: 43570
Client: Crow Butte Resources, Inc.

TEST PROGRAM - 20130829

CORE ID	Depth ft.	Core Recovery ft.	Grain Size Analysis	*X-Ray Diffraction Proprietary		Notes
		Plugs:	Grab	Bulk		
M-2169C Run 1, Sample 1	110.0-110.5	N/A	X	X		
M-2169C Run 2, Sample 3	156.5-157.2	N/A	X	X		
M-2169C Run 3, Sample 1	355.0-356.0	N/A	X	X		
M-2169C Run 4, Sample 1	470.0-470.5	N/A	X	X		
M-2169C Run 5, Sample 1	608.9-609.5	N/A	X	X		
M-2169C Run 7, Sample 1	1135.5-1136.0	N/A	X	X		
TOTALS:	30 bags		30	30		30

Laboratory Test Program Notes

Contaminant identification:

PARTICLE SIZE SUMMARY (METHODOLOGY: ASTM D422/D4464M)

PROJECT NAME: Marsland Core
PROJECT NO: N/A

Sample ID	Depth, ft.	Mean Grain Size Description (1)	Median Grain Size mm	Particle Size Distribution, wt. percent							Silt & Clay
				Gravel	Sand Size			Silt	Clay		
					Coarse	Medium	Fine				
M-533C Run 1, Sample 1	63.9-64.9	Fine sand	0.238	0.00	0.00	18.42	71.95	8.22	1.41	9.63	
M-533C Run 1, Sample 2	68.8-69.8	Silt	0.033	0.00	0.00	0.00	20.53	63.04	16.44	79.47	
M-533C Run 3, Sample 1	299.0-300.0	Silt	0.034	0.00	0.00	0.00	12.97	81.45	5.57	87.03	
M-533C Run 3, Sample 2	306.0-307.0	Silt	0.051	0.00	0.00	0.00	26.00	70.23	3.77	74.00	
M-533C Run 5, Sample 1	1052.5-1053.0	Clay	0.003	0.00	0.00	0.00	0.00	34.81	65.19	100.00	
M-1635C Run 1, Sample 1	70.0-70.5	Silt	0.046	0.00	0.00	0.00	27.88	60.57	11.55	72.12	
M-1635C Run 1, Sample 2	79.5-80.0	Silt	0.063	0.00	0.00	0.00	39.61	53.90	6.50	60.39	
M-1635C Run 2, Sample 1	197.0-197.5	Silt	0.041	0.00	0.00	0.00	13.73	81.80	4.47	86.27	
M-1635C Run 2, Sample 2	206.5-207.0	Silt	0.055	0.00	0.00	0.00	29.24	67.17	3.59	70.76	
M-1635C Run 3, Sample 1	530.0-530.5	Silt	0.040	0.00	0.00	2.83	25.96	61.01	10.20	71.21	
M-1635C Run 6, Sample 1	993.0-994.0	Clay	0.003	0.00	0.00	0.00	0.00	24.05	75.95	100.00	
M-1912C Run 1, Sample 1	63.0-64.0	Fine sand	0.135	0.00	0.00	3.85	76.54	17.60	2.01	19.61	
M-1912C Run 2, Sample 1	130.7-131.7	Fine sand	0.087	0.00	0.00	7.84	49.02	36.10	7.03	43.14	
M-1912C Run 3, Sample 1	255.0-255.5	Fine sand	0.072	0.00	0.00	4.42	43.67	48.95	2.96	51.91	

(1) Based on Mean from Trask

PARTICLE SIZE SUMMARY (METHODOLOGY: ASTM D422/D4464M)

PROJECT NAME: Marsland Core
PROJECT NO: N/A

Sample ID	Depth, ft.	Mean Grain Size Description (1)	Median Grain Size mm	Particle Size Distribution, wt. percent						Silt & Clay
				Gravel	Sand Size			Silt	Clay	
					Coarse	Medium	Fine			
M-1912C Run 3, Sample 2	260.4-260.9	Silt	0.062	0.00	0.00	0.00	36.63	59.98	3.40	63.37
M-1912C Run 4, Sample 1	974.5-975.0	Clay	0.003	0.00	0.00	0.00	0.00	28.79	71.21	100.00
*M-1912C Run 4, Sample 2	968.7-969.7	Clay	0.003	0.00	0.00	0.00	0.00	27.94	72.06	100.00
*M-1912C Run 4, Sample 2 Rerun	968.7-969.7	Silt	0.004	0.00	0.00	0.00	5.35	36.27	58.38	94.65
*M-1912C Run 4, Sample 2 Rerun 2	968.7-969.7	Medium sand	0.850	0.00	0.00	74.30	6.83	7.90	10.97	18.87
M-1956C Run 1, Sample 1	42.0-43.0	Fine sand	0.266	0.00	0.00	16.97	79.36	2.75	0.92	3.67
M-1956C Run 3, Sample 1	78.0-79.0	Silt	0.054	0.00	0.00	1.00	32.36	60.43	6.21	66.64
M-1956C Run 4, Sample 1	196.5-197.1	Silt	0.062	0.00	0.00	2.22	37.09	56.30	4.39	60.69
M-1956C Run 4, Sample 2	202.0-202.5	Silt	0.052	0.00	0.00	0.00	27.65	67.34	5.00	72.35
M-1956C Run 5, Sample 1	425.6-426.2	Silt	0.029	0.00	0.00	0.00	12.54	73.63	13.84	87.46
M-1956C Run 5, Sample 2	431.0-431.6	Silt	0.046	0.00	0.00	3.76	28.81	60.64	6.79	67.43
M-1956C Run 6, Sample 1	1011.8-1012.4	Clay	0.004	0.00	0.00	0.00	0.00	39.14	60.86	100.00
M-2169C Run 1, Sample 1	110.0-110.5	Silt	0.037	0.00	0.00	0.00	20.58	65.73	13.69	79.42
M-2169C Run 2, Sample 3	156.5-157.2	Silt	0.059	0.00	0.00	0.00	37.21	54.28	8.51	62.79

(1) Based on Mean from Trask

PARTICLE SIZE SUMMARY (METHODOLOGY: ASTM D422/D464M)

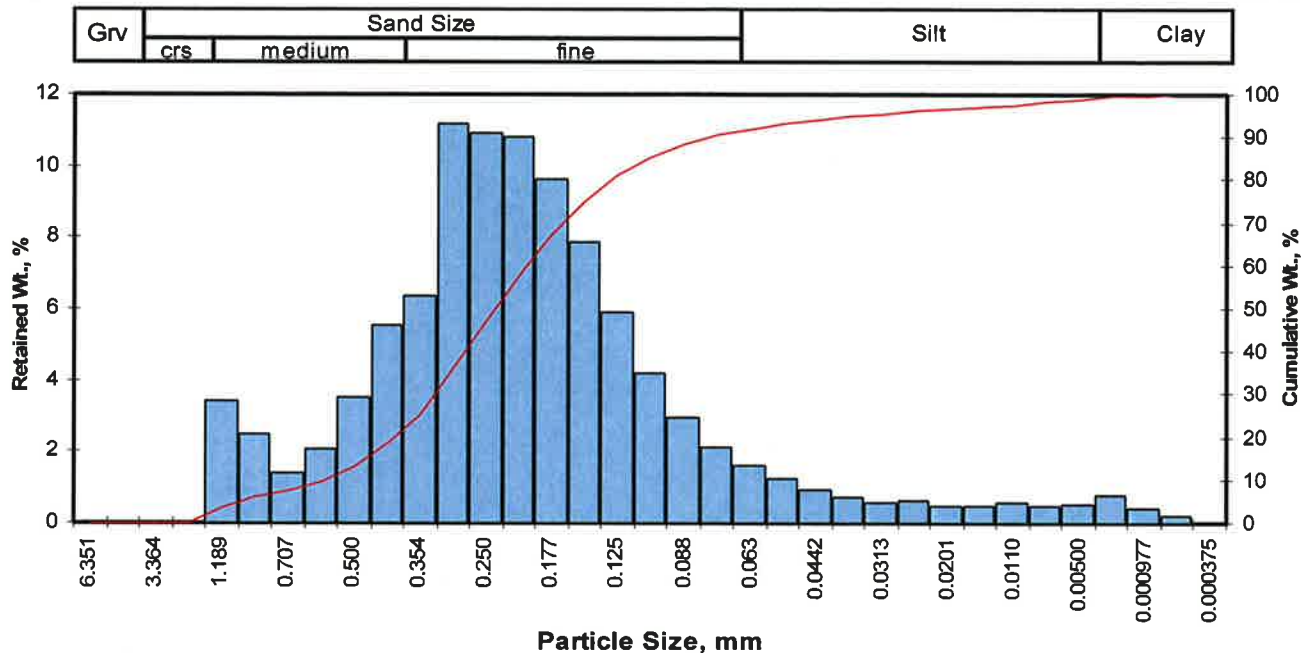
PROJECT NAME: Marsland Core
PROJECT NO: N/A

Sample ID	Depth, ft.	Mean Grain Size Description (1)	Median Grain Size mm	Particle Size Distribution, wt. percent						Silt & Clay
				Gravel	Sand Size			Silt		
					Coarse	Medium	Fine			
M-2169C Run 3, Sample 1	355.0-356.0	Silt	0.036	0.00	0.00	0.00	15.97	74.53	9.51	84.03
M-2169C Run 4, Sample 1	470.0-470.5	Silt	0.040	0.00	0.00	1.05	24.67	64.33	9.95	74.28
M-2169C Run 5, Sample 1	608.9-609.5	Fine sand	0.050	0.00	0.00	13.87	23.80	52.86	9.46	62.33
M-2169C Run 7, Sample 1	1135.5-1136.0	Silt	0.004	0.00	0.00	0.00	0.00	45.40	54.60	100.00

*Note: Sample M-1912C Run 4, Sample 2 is a heterogeneous core consisting of clay with entrained sand. The small amount of sample volume required for LPSA (~1 gm) can over-represent the lithology depending on sample location and composition. Visual estimation of sand contained is 10-20%. MMB 20131008

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-533C Run 1, Sample 1
Depth, ft: 63.9-64.9



Particle Size, mm

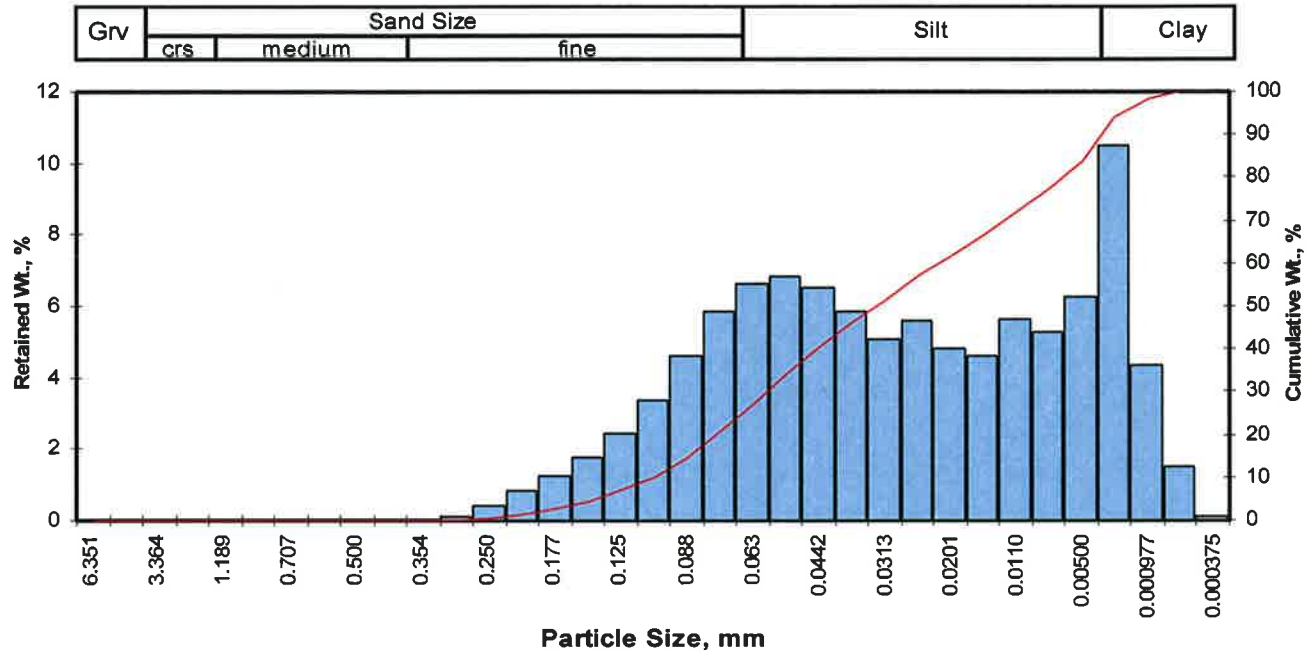
Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than			
Inches	Millimeters						Weight percent	Phi Value	Particle Size	
							Inches	Millimeters		
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	0.07	0.0375	0.952
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	0.79	0.0227	0.577
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	1.14	0.0179	0.453
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	1.50	0.0139	0.353
0.0468	1.189	-0.25	16	3.42	3.42	3.42	40	1.84	0.0110	0.279
0.0331	0.841	0.25	20	2.47	2.47	5.89	50	2.07	0.0094	0.238
0.0278	0.707	0.50	25	1.42	1.42	7.31	60	2.31	0.0079	0.202
0.0234	0.595	0.75	30	2.07	2.07	9.38	75	2.74	0.0059	0.149
0.0197	0.500	1.00	35	3.50	3.50	12.87	84	3.17	0.0044	0.111
0.0166	0.420	1.25	40	5.55	5.55	18.42	90	3.71	0.0030	0.077
0.0139	0.354	1.50	45	6.39	6.39	24.81	95	4.80	0.0014	0.036
0.0117	0.297	1.75	50	11.20	11.20	36.01				
0.0098	0.250	2.00	60	10.90	10.90	46.90				
0.0083	0.210	2.25	70	10.80	10.80	57.70				
0.0070	0.177	2.50	80	9.65	9.65	67.34				
0.0059	0.149	2.75	100	7.85	7.85	75.19				
0.0049	0.125	3.00	120	5.92	5.92	81.11				
0.0041	0.105	3.25	140	4.21	4.21	85.32				
0.0035	0.088	3.50	170	2.94	2.94	88.25				
0.0029	0.074	3.75	200	2.12	2.12	90.37				
0.0025	0.063	4.00	230	1.60	1.60	91.97				
0.0021	0.053	4.25	270	1.23	1.23	93.20				
0.00174	0.0442	4.50	325	0.95	0.95	94.15				
0.00146	0.0372	4.75	400	0.74	0.74	94.89				
0.00123	0.0313	5.00	450	0.58	0.58	95.47				
0.000986	0.0250	5.32	500	0.60	0.60	96.07				
0.000790	0.0201	5.64	635	0.49	0.49	96.56				
0.000615	0.0156	6.00		0.47	0.47	97.03				
0.000435	0.0110	6.50		0.56	0.56	97.59				
0.000308	0.00781	7.00		0.48	0.48	98.07				
0.000197	0.00500	7.65		0.52	0.52	98.59				
0.000077	0.00195	9.00		0.80	0.80	99.39				
0.000038	0.000977	10.00		0.39	0.39	99.78				
0.000019	0.000488	11.00		0.20	0.20	99.98				
0.000015	0.000375	11.38		0.02	0.02	100.00				
TOTALS				100.00	100.00	100.00				

Measure	Trask	Inman	Folk-Ward
Median, phi	2.07	2.07	2.07
Median, in.	0.0094	0.0094	0.0094
Median, mm	0.238	0.238	0.238
Mean, phi	1.99	2.16	2.13
Mean, in.	0.0099	0.0088	0.0090
Mean, mm	0.251	0.224	0.229
Sorting	1.537	1.016	1.224
Skewness	0.964	0.083	0.118
Kurtosis	0.203	1.327	1.562
Grain Size Description (ASTM-USCS Scale)	Fine sand (based on Mean from Trask)		

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	18.42
Fine Sand	200	71.95
Silt	>0.005 mm	8.22
Clay	<0.005 mm	1.41
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-533C Run 1, Sample 2
Depth, ft: 68.8-69.8



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.11	0.11	0.11
0.0098	0.250	2.00	60	0.41	0.41	0.52
0.0083	0.210	2.25	70	0.83	0.83	1.35
0.0070	0.177	2.50	80	1.24	1.24	2.59
0.0059	0.149	2.75	100	1.75	1.75	4.34
0.0049	0.125	3.00	120	2.41	2.41	6.75
0.0041	0.105	3.25	140	3.35	3.35	10.10
0.0035	0.088	3.50	170	4.59	4.59	14.69
0.0029	0.074	3.75	200	5.84	5.84	20.53
0.0025	0.063	4.00	230	6.64	6.64	27.17
0.0021	0.053	4.25	270	6.82	6.82	33.99
0.00174	0.0442	4.50	325	6.51	6.51	40.49
0.00146	0.0372	4.75	400	5.84	5.84	46.33
0.00123	0.0313	5.00	450	5.09	5.09	51.42
0.000986	0.0250	5.32	500	5.57	5.57	56.99
0.000790	0.0201	5.64	635	4.80	4.80	61.79
0.000615	0.0156	6.00		4.61	4.61	66.40
0.000435	0.0110	6.50		5.64	5.64	72.04
0.000308	0.00781	7.00		5.27	5.27	77.31
0.000197	0.00500	7.65		6.26	6.26	83.56
0.000077	0.00195	9.00		10.50	10.50	94.06
0.000038	0.000977	10.00		4.34	4.34	98.40
0.000019	0.000488	11.00		1.49	1.49	99.89
0.000015	0.000375	11.38		0.11	0.11	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.82	0.0056	0.142
10	3.24	0.0042	0.106
16	3.56	0.0033	0.085
25	3.92	0.0026	0.066
40	4.48	0.0018	0.045
50	4.93	0.0013	0.033
60	5.52	0.0009	0.022
75	6.78	0.0004	0.009
84	7.70	0.0002	0.005
90	8.48	0.0001	0.003
95	9.22	0.0001	0.002

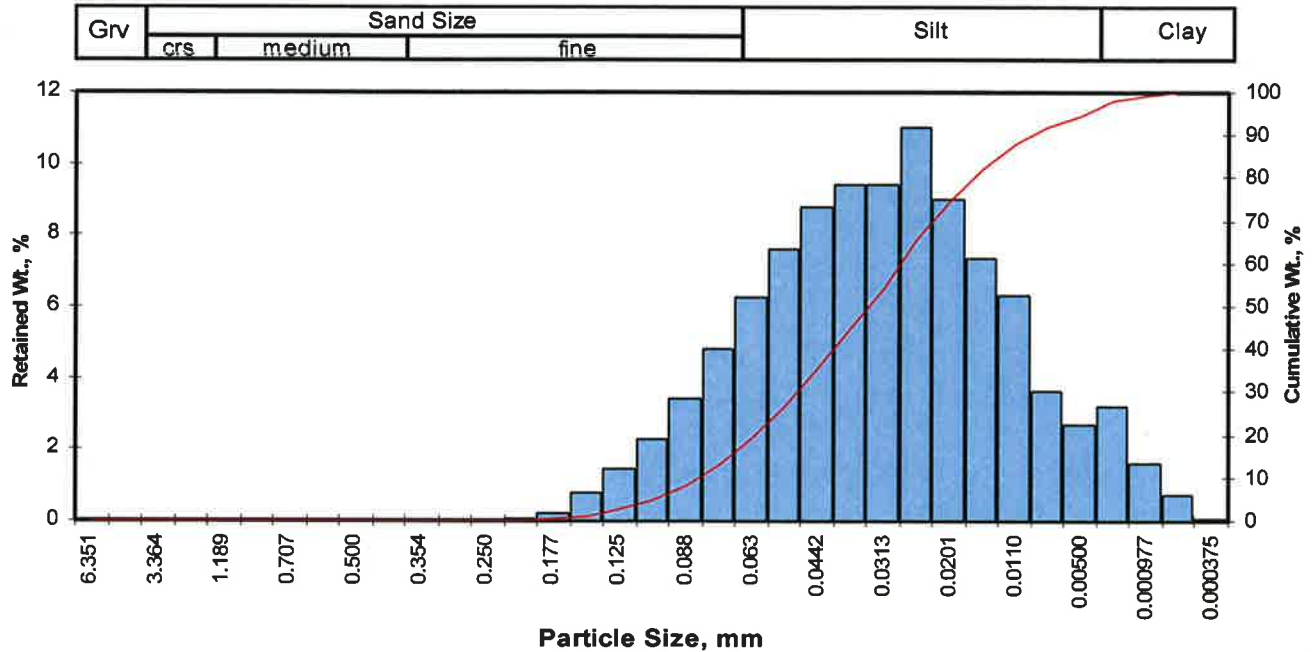
Measure	Trask	Inman	Folk-Ward
Median, phi	4.93	4.93	4.93
Median, in.	0.0013	0.0013	0.0013
Median, mm	0.033	0.033	0.033
Mean, phi	4.73	5.63	5.40
Mean, in.	0.0015	0.0008	0.0009
Mean, mm	0.038	0.020	0.024
Sorting	2.697	2.073	2.006
Skewness	0.748	0.337	0.338
Kurtosis	0.277	0.543	0.916

Grain Size Description	Silt
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	20.53
Silt	>0.005 mm	63.04
Clay	<0.005 mm	16.44
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-533C Run 3, Sample 1
Depth, ft: 299.0-300.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.03	0.03	0.03
0.0070	0.177	2.50	80	0.23	0.23	0.26
0.0059	0.149	2.75	100	0.75	0.75	1.01
0.0049	0.125	3.00	120	1.43	1.43	2.44
0.0041	0.105	3.25	140	2.30	2.30	4.74
0.0035	0.088	3.50	170	3.43	3.43	8.17
0.0029	0.074	3.75	200	4.80	4.80	12.97
0.0025	0.063	4.00	230	6.25	6.25	19.22
0.0021	0.053	4.25	270	7.61	7.61	26.84
0.00174	0.0442	4.50	325	8.79	8.79	35.63
0.00146	0.0372	4.75	400	9.40	9.40	45.04
0.00123	0.0313	5.00	450	9.40	9.40	54.44
0.000986	0.0250	5.32	500	11.00	11.00	65.44
0.000790	0.0201	5.64	635	9.01	9.01	74.46
0.000615	0.0156	6.00		7.36	7.36	81.82
0.000435	0.0110	6.50		6.32	6.32	88.14
0.000308	0.00781	7.00		3.60	3.60	91.74
0.000197	0.00500	7.65		2.68	2.68	94.43
0.000077	0.00195	9.00		3.23	3.23	97.66
0.000038	0.000977	10.00		1.58	1.58	99.24
0.000019	0.000488	11.00		0.70	0.70	99.94
0.000015	0.000375	11.38		0.06	0.06	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	3.27	0.0041	0.104
10	3.60	0.0033	0.083
16	3.87	0.0027	0.068
25	4.19	0.0022	0.055
40	4.62	0.0016	0.041
50	4.88	0.0013	0.034
60	5.16	0.0011	0.028
75	5.67	0.0008	0.020
84	6.17	0.0005	0.014
90	6.76	0.0004	0.009
95	7.89	0.0002	0.004

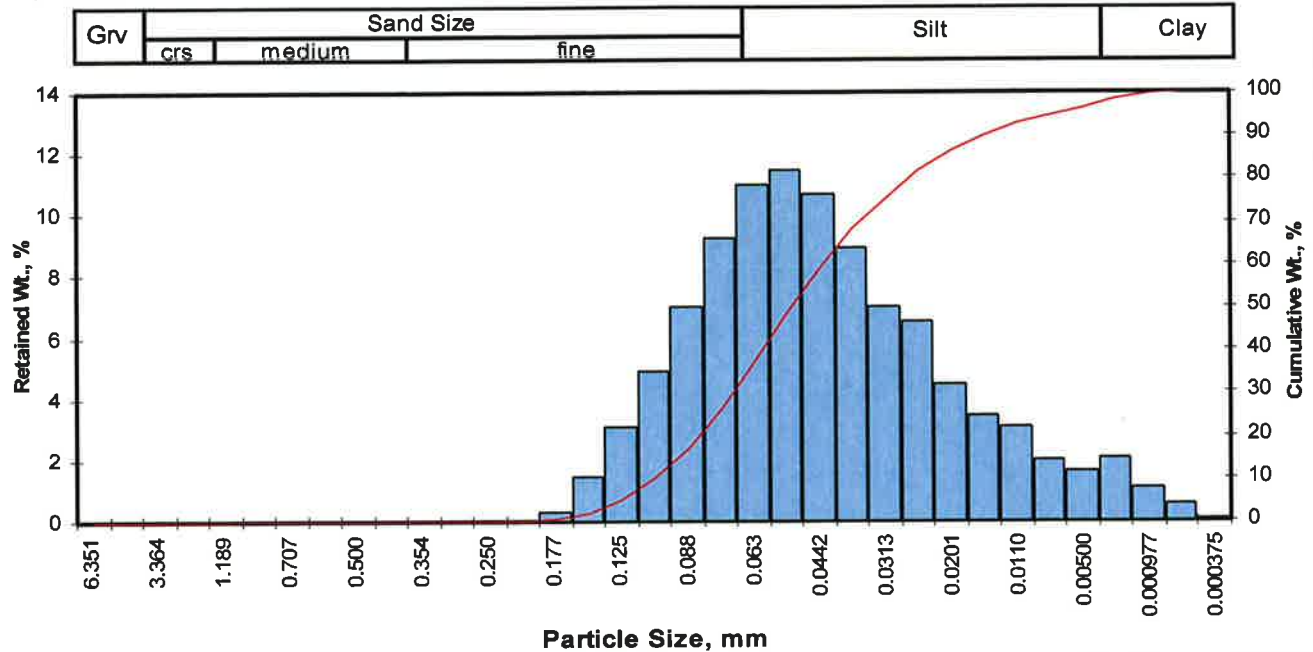
Measure	Trask	Inman	Folk-Ward
Median, phi	4.88	4.88	4.88
Median, in.	0.0013	0.0013	0.0013
Median, mm	0.034	0.034	0.034
Mean, phi	4.75	5.02	4.98
Mean, in.	0.0015	0.0012	0.0013
Mean, mm	0.037	0.031	0.032
Sorting	1.668	1.151	1.275
Skewness	0.969	0.121	0.211
Kurtosis	0.239	1.006	1.281

Grain Size Description	Silt
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	12.97
Silt	>0.005 mm	81.45
Clay	<0.005 mm	5.57
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-533C Run 3, Sample 2
Depth, ft: 306.0-307.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.02	0.02	0.02
0.0070	0.177	2.50	80	0.32	0.32	0.34
0.0059	0.149	2.75	100	1.46	1.46	1.80
0.0049	0.125	3.00	120	3.09	3.09	4.89
0.0041	0.105	3.25	140	4.89	4.89	9.77
0.0035	0.088	3.50	170	6.99	6.98	16.76
0.0029	0.074	3.75	200	9.25	9.24	26.00
0.0025	0.063	4.00	230	11.00	10.99	36.99
0.0021	0.053	4.25	270	11.50	11.49	48.48
0.00174	0.0442	4.50	325	10.70	10.69	59.16
0.00146	0.0372	4.75	400	8.92	8.91	68.08
0.00123	0.0313	5.00	450	6.98	6.97	75.05
0.000986	0.0250	5.32	500	6.53	6.52	81.57
0.000790	0.0201	5.64	635	4.48	4.48	86.05
0.000615	0.0156	6.00		3.45	3.45	89.50
0.000435	0.0110	6.50		3.10	3.10	92.59
0.000308	0.00781	7.00		1.98	1.98	94.57
0.000197	0.00500	7.65		1.66	1.66	96.23
0.000077	0.00195	9.00		2.08	2.08	98.31
0.000038	0.000977	10.00		1.08	1.08	99.39
0.000019	0.000488	11.00		0.56	0.56	99.95
0.000015	0.000375	11.38		0.06	0.05	100.00
TOTALS				100.10	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	3.01	0.0049	0.125
10	3.26	0.0041	0.105
16	3.47	0.0035	0.090
25	3.72	0.0030	0.076
40	4.07	0.0024	0.060
50	4.29	0.0020	0.051
60	4.52	0.0017	0.043
75	5.00	0.0012	0.031
84	5.49	0.0009	0.022
90	6.08	0.0006	0.015
95	7.17	0.0003	0.007

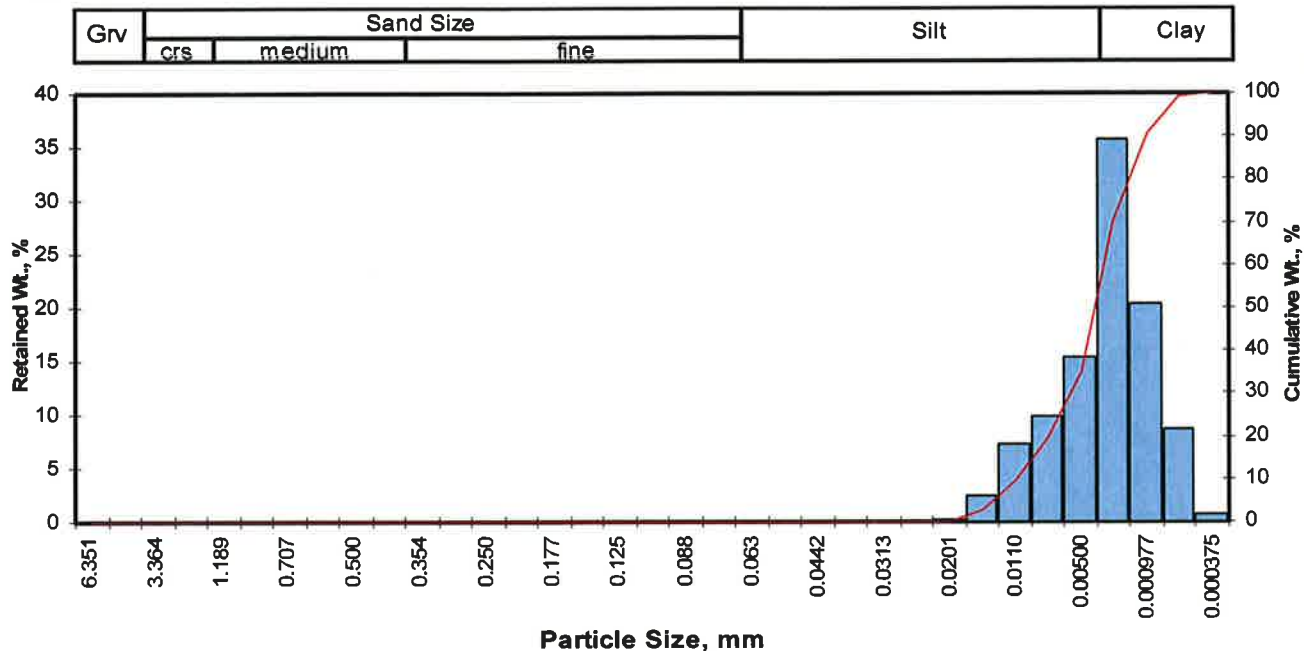
Measure	Trask	Inman	Folk-Ward
Median, phi	4.29	4.29	4.29
Median, in.	0.0020	0.0020	0.0020
Median, mm	0.051	0.051	0.051
Mean, phi	4.22	4.48	4.42
Mean, in.	0.0021	0.0018	0.0018
Mean, mm	0.054	0.045	0.047
Sorting	1.556	1.010	1.136
Skewness	0.949	0.196	0.290
Kurtosis	0.248	1.059	1.337

Grain Size Description	Silt
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	26.00
Silt	>0.005 mm	70.23
Clay	<0.005 mm	3.77
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-533C Run 5, Sample 1
Depth, ft: 1052.5-1053.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.00	0.00	0.00
0.0070	0.177	2.50	80	0.00	0.00	0.00
0.0059	0.149	2.75	100	0.00	0.00	0.00
0.0049	0.125	3.00	120	0.00	0.00	0.00
0.0041	0.105	3.25	140	0.00	0.00	0.00
0.0035	0.088	3.50	170	0.00	0.00	0.00
0.0029	0.074	3.75	200	0.00	0.00	0.00
0.0025	0.063	4.00	230	0.00	0.00	0.00
0.0021	0.053	4.25	270	0.00	0.00	0.00
0.00174	0.0442	4.50	325	0.00	0.00	0.00
0.00146	0.0372	4.75	400	0.00	0.00	0.00
0.00123	0.0313	5.00	450	0.00	0.00	0.00
0.000986	0.0250	5.32	500	0.00	0.00	0.00
0.000790	0.0201	5.64	635	0.09	0.09	0.09
0.000615	0.0156	6.00		2.33	2.33	2.42
0.000435	0.0110	6.50		7.27	7.27	9.69
0.000308	0.00781	7.00		9.81	9.81	19.50
0.000197	0.00500	7.65		15.30	15.30	34.81
0.000077	0.00195	9.00		35.60	35.61	70.41
0.000038	0.000977	10.00		20.30	20.30	90.72
0.000019	0.000488	11.00		8.56	8.56	99.28
0.000015	0.000375	11.38		0.72	0.72	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	6.18	0.0005	0.014
10	6.52	0.0004	0.011
16	6.82	0.0003	0.009
25	7.23	0.0003	0.007
40	7.84	0.0002	0.004
50	8.22	0.0001	0.003
60	8.60	0.0001	0.003
75	9.23	0.0001	0.002
84	9.67	0.0000	0.001
90	9.96	0.0000	0.001
95	10.50	0.0000	0.001

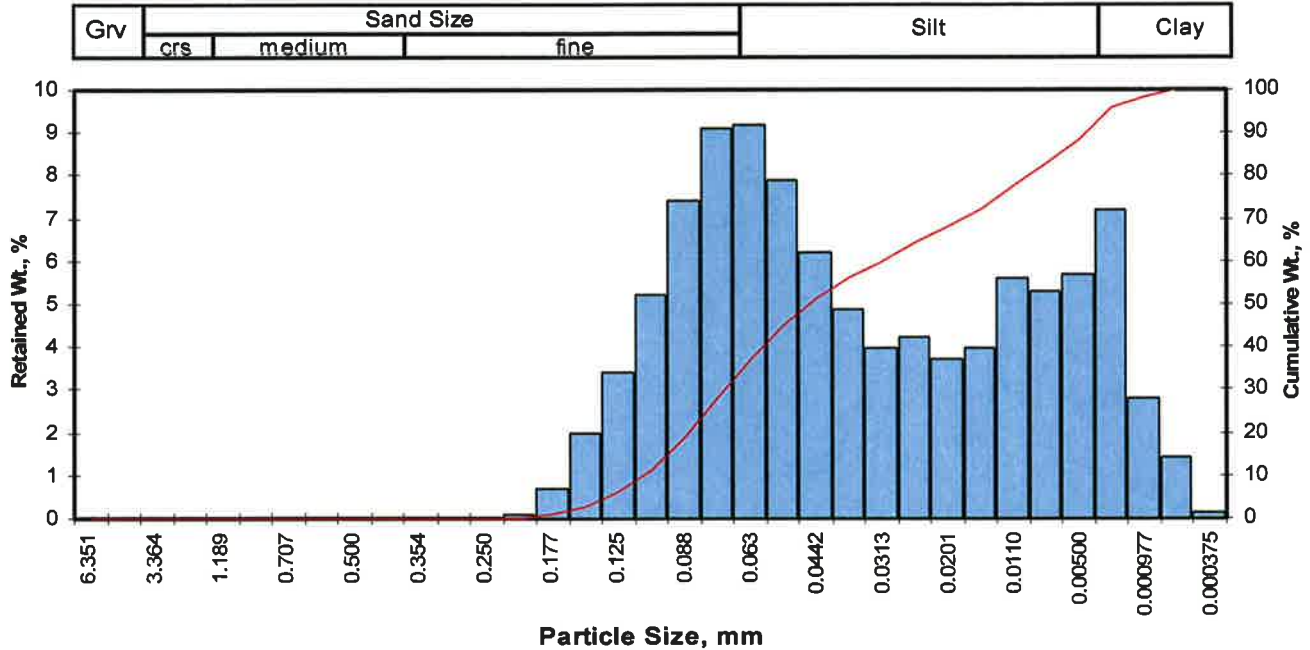
Measure	Trask	Inman	Folk-Ward
Median, phi	8.22	8.22	8.22
Median, in.	0.0001	0.0001	0.0001
Median, mm	0.003	0.003	0.003
Mean, phi	7.91	8.25	8.24
Mean, in.	0.0002	0.0001	0.0001
Mean, mm	0.004	0.003	0.003
Sorting	1.996	1.424	1.367
Skewness	0.996	0.016	0.035
Kurtosis	0.251	0.518	0.888

Grain Size Description	Clay
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	0.00
Silt	>0.005 mm	34.81
Clay	<0.005 mm	65.19
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1635C Run 1, Sample 1
Depth, ft: 70.0-70.5

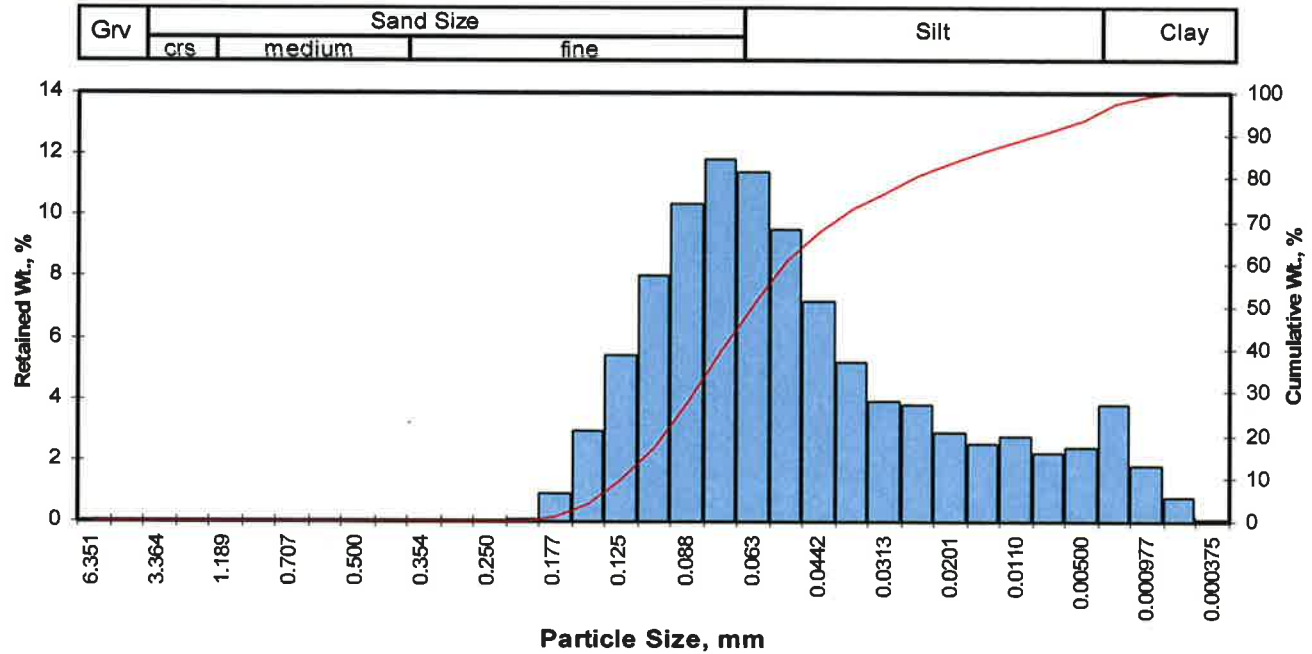


Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than			
Inches	Millimeters						Weight percent	Phi Value	Particle Size	
							Inches	Millimeters		
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	2.92	0.0052	0.132
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	3.18	0.0043	0.110
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	3.41	0.0037	0.094
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	3.67	0.0031	0.079
0.0468	1.189	-0.25	16	0.00	0.00	0.00	40	4.09	0.0023	0.059
0.0331	0.841	0.25	20	0.00	0.00	0.00	50	4.45	0.0018	0.046
0.0278	0.707	0.50	25	0.00	0.00	0.00	60	5.00	0.0012	0.031
0.0234	0.595	0.75	30	0.00	0.00	0.00	75	6.28	0.0005	0.013
0.0197	0.500	1.00	35	0.00	0.00	0.00	84	7.14	0.0003	0.007
0.0166	0.420	1.25	40	0.00	0.00	0.00	90	7.94	0.0002	0.004
0.0139	0.354	1.50	45	0.00	0.00	0.00	95	8.88	0.0001	0.002
0.0117	0.297	1.75	50	0.00	0.00	0.00				
0.0098	0.250	2.00	60	0.00	0.00	0.00				
0.0083	0.210	2.25	70	0.08	0.08	0.08				
0.0070	0.177	2.50	80	0.67	0.67	0.75				
0.0059	0.149	2.75	100	1.98	1.98	2.73				
0.0049	0.125	3.00	120	3.41	3.41	6.14				
0.0041	0.105	3.25	140	5.23	5.23	11.37				
0.0035	0.088	3.50	170	7.43	7.43	18.80				
0.0029	0.074	3.75	200	9.08	9.08	27.88				
0.0025	0.063	4.00	230	9.18	9.18	37.06				
0.0021	0.053	4.25	270	7.90	7.90	44.97				
0.00174	0.0442	4.50	325	6.22	6.22	51.19				
0.00146	0.0372	4.75	400	4.87	4.87	56.06				
0.00123	0.0313	5.00	450	3.96	3.96	60.02				
0.000986	0.0250	5.32	500	4.21	4.21	64.23				
0.000790	0.0201	5.64	635	3.69	3.69	67.92				
0.000615	0.0156	6.00		3.96	3.96	71.88				
0.000435	0.0110	6.50		5.59	5.59	77.47				
0.000308	0.00781	7.00		5.31	5.31	82.78				
0.000197	0.00500	7.65		5.67	5.67	88.45				
0.000077	0.00195	9.00		7.19	7.19	95.64				
0.000038	0.000977	10.00		2.79	2.79	98.43				
0.000019	0.000488	11.00		1.43	1.43	99.86				
0.000015	0.000375	11.38		0.14	0.14	100.00				
TOTALS				100.00	100.00	100.00				

Grain Size Description				Silt			
(ASTM-USCS Scale)				(based on Mean from Trask)			
Description				Retained on Sieve #	Weight Percent		
Gravel				4	0.00		
Coarse Sand				10	0.00		
Medium Sand				40	0.00		
Fine Sand				200	27.88		
Silt				>0.005 mm	60.57		
Clay				<0.005 mm	11.55		
Total				100			

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1635C Run 1, Sample 2
Depth, ft: 79.5-80.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.09	0.09	0.09
0.0070	0.177	2.50	80	0.88	0.88	0.97
0.0059	0.149	2.75	100	2.96	2.96	3.93
0.0049	0.125	3.00	120	5.43	5.43	9.36
0.0041	0.105	3.25	140	8.03	8.03	17.40
0.0035	0.088	3.50	170	10.40	10.41	27.80
0.0029	0.074	3.75	200	11.80	11.81	39.61
0.0025	0.063	4.00	230	11.40	11.41	51.01
0.0021	0.053	4.25	270	9.55	9.55	60.57
0.00174	0.0442	4.50	325	7.16	7.16	67.73
0.00146	0.0372	4.75	400	5.21	5.21	72.94
0.00123	0.0313	5.00	450	3.91	3.91	76.86
0.000986	0.0250	5.32	500	3.82	3.82	80.68
0.000790	0.0201	5.64	635	2.89	2.89	83.57
0.000615	0.0156	6.00		2.52	2.52	86.09
0.000435	0.0110	6.50		2.77	2.77	88.86
0.000308	0.00781	7.00		2.25	2.25	91.11
0.000197	0.00500	7.65		2.39	2.39	93.50
0.000077	0.00195	9.00		3.82	3.82	97.33
0.000038	0.000977	10.00		1.80	1.80	99.13
0.000019	0.000488	11.00		0.80	0.80	99.93
0.000015	0.000375	11.38		0.07	0.07	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.80	0.0057	0.144
10	3.02	0.0049	0.123
16	3.21	0.0043	0.108
25	3.43	0.0036	0.093
40	3.76	0.0029	0.074
50	3.98	0.0025	0.063
60	4.24	0.0021	0.053
75	4.88	0.0013	0.034
84	5.70	0.0008	0.019
90	6.75	0.0004	0.009
95	8.18	0.0001	0.003

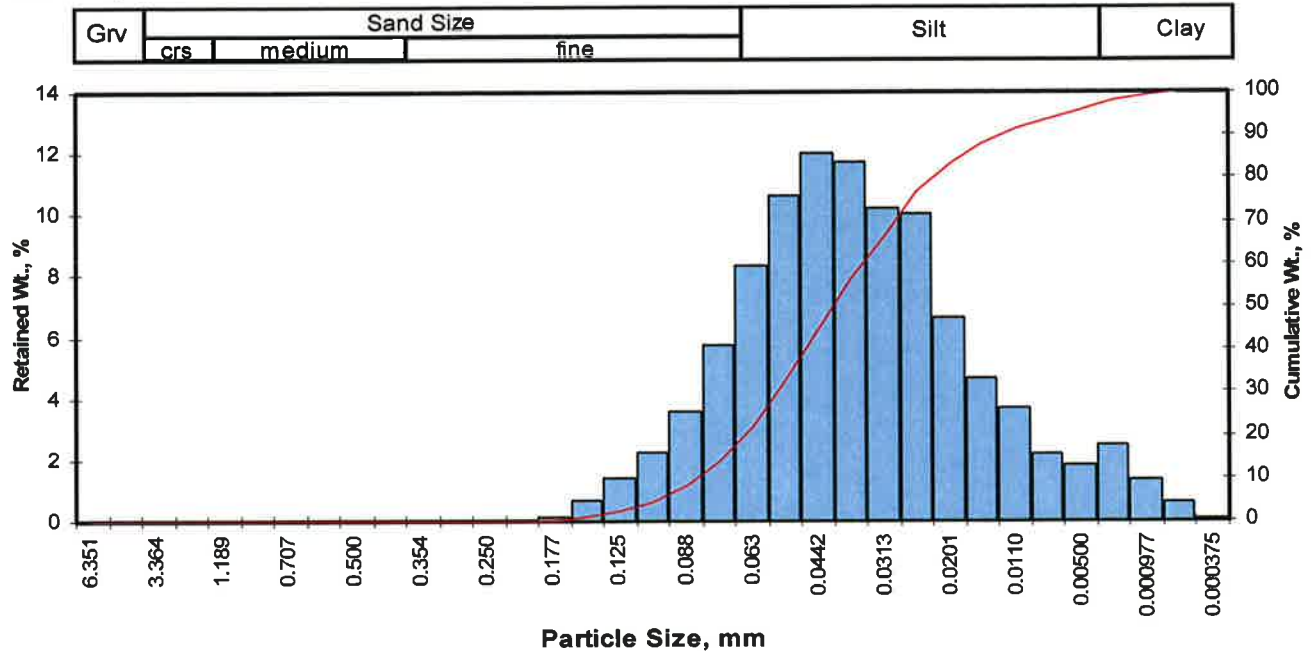
Measure	Trask	Inman	Folk-Ward
Median, phi	3.98	3.98	3.98
Median, in.	0.0025	0.0025	0.0025
Median, mm	0.063	0.063	0.063
Mean, phi	3.98	4.45	4.30
Mean, in.	0.0025	0.0018	0.0020
Mean, mm	0.063	0.046	0.051
Sorting	1.652	1.247	1.438
Skewness	0.883	0.382	0.472
Kurtosis	0.257	1.155	1.521

Grain Size Description	Silt
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	39.61
Silt	>0.005 mm	53.90
Clay	<0.005 mm	6.50
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1635C Run 2, Sample 1
Depth, ft: 197.0-197.5



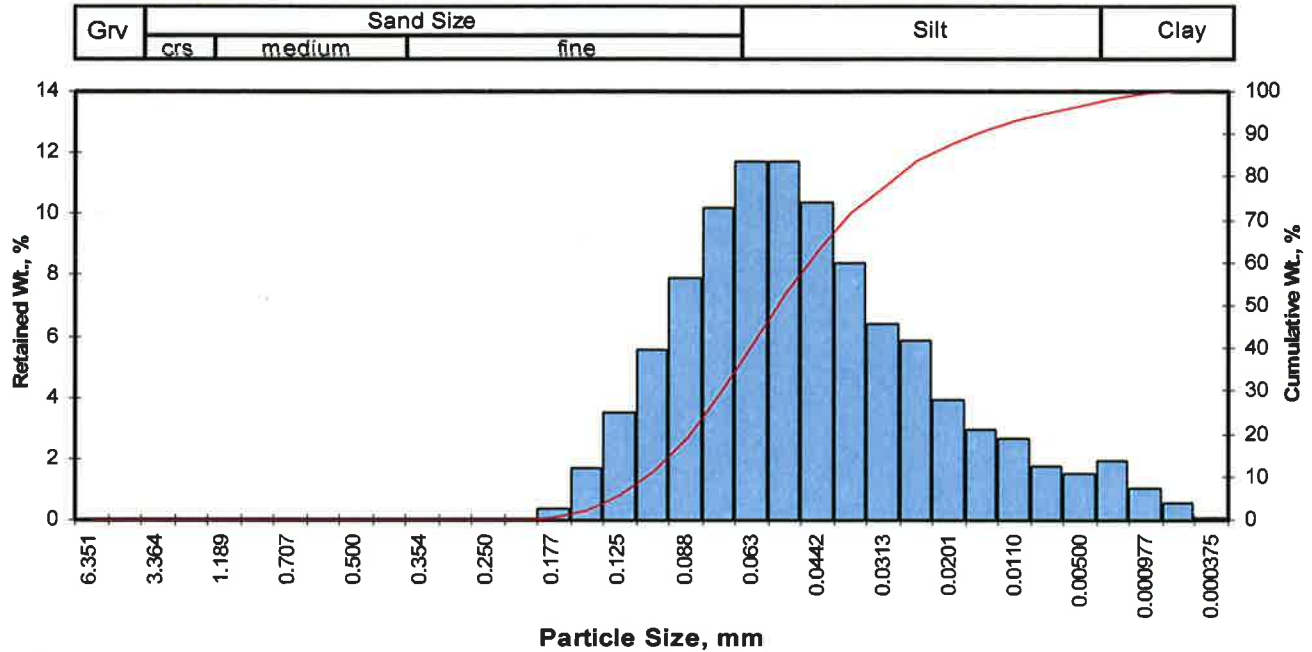
Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than				
Inches	Millimeters						Weight percent	Phi Value	Particle Size		
							Inches	Millimeters			
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	3.29	0.0040	0.102	
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	3.59	0.0033	0.083	
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	3.82	0.0028	0.071	
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	4.07	0.0023	0.060	
0.0468	1.189	-0.25	16	0.00	0.00	0.00	40	4.40	0.0019	0.047	
0.0331	0.841	0.25	20	0.00	0.00	0.00	50	4.61	0.0016	0.041	
0.0278	0.707	0.50	25	0.00	0.00	0.00	60	4.84	0.0014	0.035	
0.0234	0.595	0.75	30	0.00	0.00	0.00	75	5.27	0.0010	0.026	
0.0197	0.500	1.00	35	0.00	0.00	0.00	84	5.70	0.0008	0.019	
0.0166	0.420	1.25	40	0.00	0.00	0.00	90	6.29	0.0005	0.013	
0.0139	0.354	1.50	45	0.00	0.00	0.00	95	7.45	0.0002	0.006	
0.0117	0.297	1.75	50	0.00	0.00	0.00					
0.0098	0.250	2.00	60	0.00	0.00	0.00					
0.0083	0.210	2.25	70	0.00	0.00	0.00					
0.0070	0.177	2.50	80	0.11	0.11	0.11					
0.0059	0.149	2.75	100	0.66	0.66	0.77					
0.0049	0.125	3.00	120	1.41	1.41	2.18					
0.0041	0.105	3.25	140	2.24	2.24	4.42					
0.0035	0.088	3.50	170	3.58	3.58	8.00					
0.0029	0.074	3.75	200	5.73	5.73	13.73					
0.0025	0.063	4.00	230	8.34	8.34	22.07					
0.0021	0.053	4.25	270	10.60	10.60	32.67					
0.00174	0.0442	4.50	325	12.00	12.00	44.67					
0.00146	0.0372	4.75	400	11.70	11.70	56.37					
0.00123	0.0313	5.00	450	10.20	10.20	66.57					
0.000986	0.0250	5.32	500	10.00	10.00	76.57					
0.000790	0.0201	5.64	635	6.66	6.66	83.23					
0.000615	0.0156	6.00		4.67	4.67	87.90					
0.000435	0.0110	6.50		3.67	3.67	91.57					
0.000308	0.00781	7.00		2.16	2.16	93.73					
0.000197	0.00500	7.65		1.80	1.80	95.53					
0.000077	0.00195	9.00		2.48	2.48	98.01					
0.000038	0.000977	10.00		1.30	1.30	99.31					
0.000019	0.000488	11.00		0.63	0.63	99.94					
0.000015	0.000375	11.38		0.06	0.06	100.00					
TOTALS				100.00	100.00	100.00					

Measure	Trask	Inman	Folk-Ward
Median, phi	4.61	4.61	4.61
Median, in.	0.0016	0.0016	0.0016
Median, mm	0.041	0.041	0.041
Mean, phi	4.55	4.76	4.71
Mean, in.	0.0017	0.0015	0.0015
Mean, mm	0.043	0.037	0.038
Sorting	1.516	0.941	1.101
Skewness	0.962	0.154	0.259
Kurtosis	0.239	1.214	1.421
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	13.73
Silt	>0.005 mm	81.80
Clay	<0.005 mm	4.47
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1635C Run 2, Sample 2
Depth, ft: 206.5-207.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.03	0.03	0.03
0.0070	0.177	2.50	80	0.39	0.39	0.42
0.0059	0.149	2.75	100	1.67	1.67	2.09
0.0049	0.125	3.00	120	3.49	3.49	5.58
0.0041	0.105	3.25	140	5.56	5.56	11.14
0.0035	0.088	3.50	170	7.91	7.91	19.04
0.0029	0.074	3.75	200	10.20	10.20	29.24
0.0025	0.063	4.00	230	11.70	11.70	40.94
0.0021	0.053	4.25	270	11.70	11.70	52.63
0.00174	0.0442	4.50	325	10.40	10.40	63.03
0.00146	0.0372	4.75	400	8.38	8.38	71.41
0.00123	0.0313	5.00	450	6.39	6.39	77.79
0.000986	0.0250	5.32	500	5.85	5.85	83.64
0.000790	0.0201	5.64	635	3.93	3.93	87.57
0.000615	0.0156	6.00		2.97	2.97	90.54
0.000435	0.0110	6.50		2.65	2.65	93.19
0.000308	0.00781	7.00		1.73	1.73	94.92
0.000197	0.00500	7.65		1.49	1.49	96.41
0.000077	0.00195	9.00		1.96	1.96	98.37
0.000038	0.000977	10.00		1.03	1.03	99.40
0.000019	0.000488	11.00		0.55	0.55	99.95
0.000015	0.000375	11.38		0.05	0.05	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.96	0.0051	0.129
10	3.20	0.0043	0.109
16	3.40	0.0037	0.094
25	3.65	0.0031	0.080
40	3.98	0.0025	0.063
50	4.19	0.0022	0.055
60	4.43	0.0018	0.046
75	4.89	0.0013	0.034
84	5.35	0.0010	0.025
90	5.93	0.0006	0.016
95	7.04	0.0003	0.008

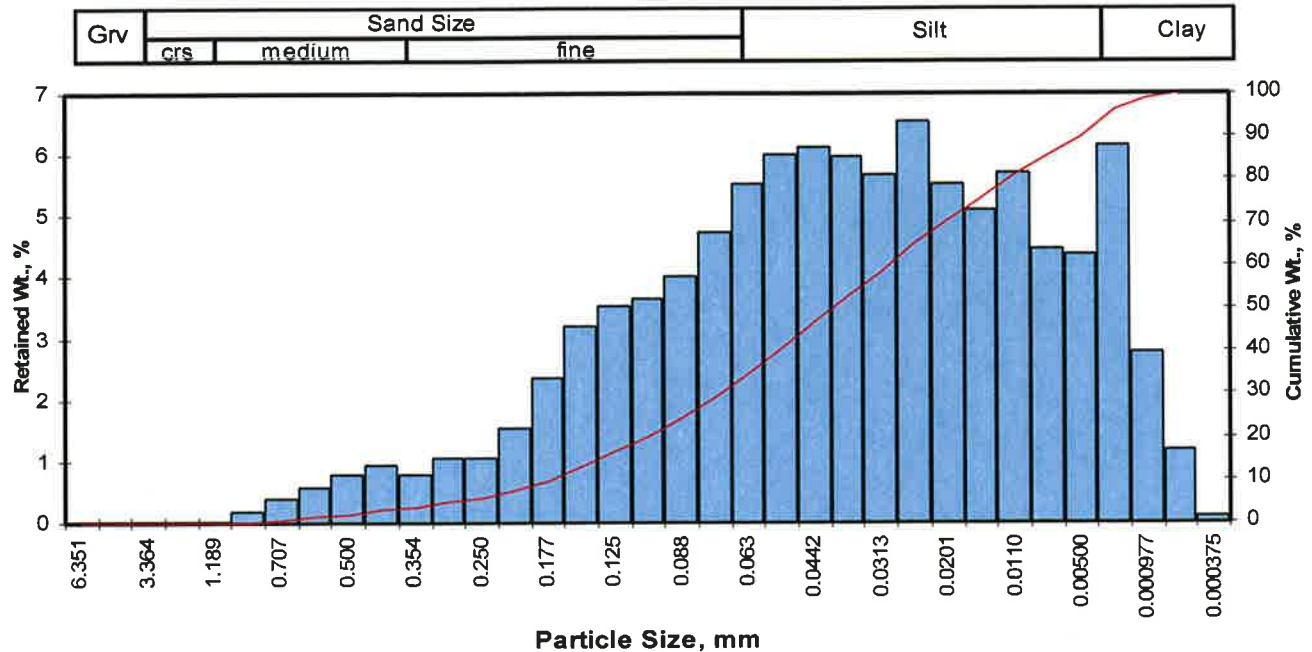
Measure	Trask	Inman	Folk-Ward
Median, phi	4.19	4.19	4.19
Median, in.	0.0022	0.0022	0.0022
Median, mm	0.055	0.055	0.055
Mean, phi	4.14	4.38	4.32
Mean, in.	0.0022	0.0019	0.0020
Mean, mm	0.057	0.048	0.050
Sorting	1.539	0.973	1.104
Skewness	0.950	0.188	0.291
Kurtosis	0.249	1.096	1.342

Grain Size Description	Silt
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	29.24
Silt	>0.005 mm	67.17
Clay	<0.005 mm	3.59
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1635C Run 3, Sample 1
Depth, ft: 530.0-530.5

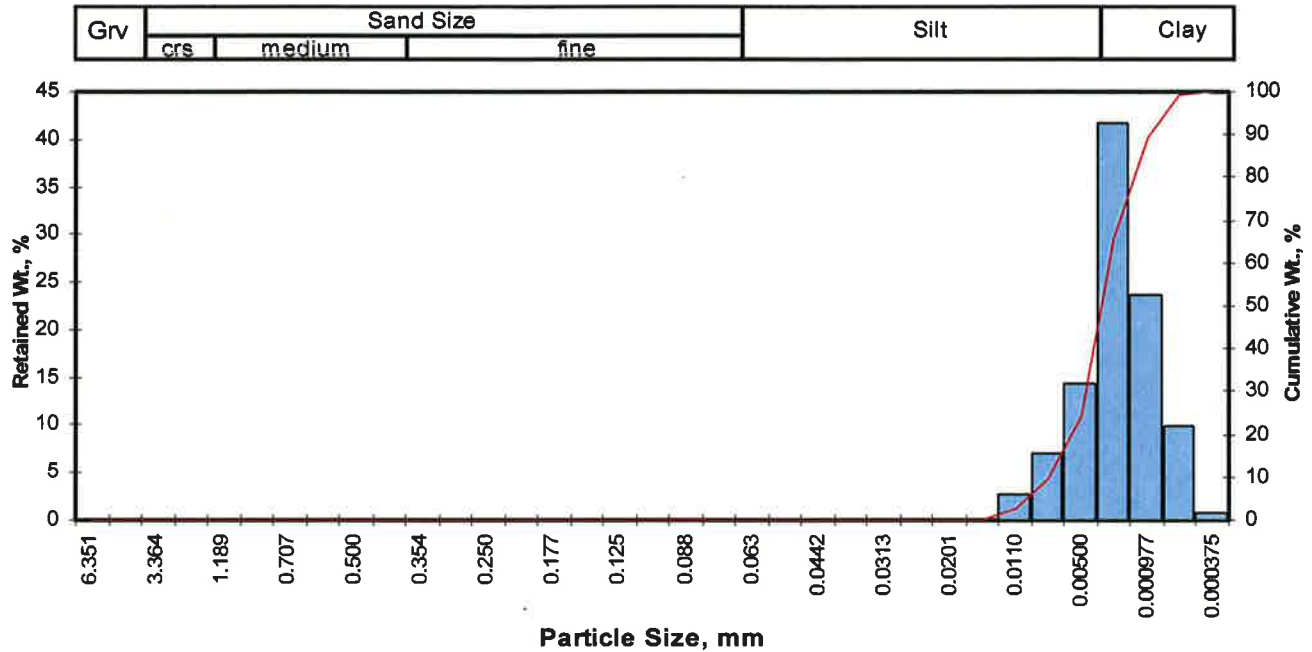


Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than			
Inches	Millimeters						Weight percent	Phi Value	Particle Size	
									Inches	Millimeters
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	1.82	0.0111	0.282
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	2.53	0.0068	0.173
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	2.97	0.0050	0.127
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	3.55	0.0034	0.085
0.0468	1.189	-0.25	16	0.00	0.00	0.00	40	4.24	0.0021	0.053
0.0331	0.841	0.25	20	0.17	0.17	0.17	50	4.65	0.0016	0.040
0.0278	0.707	0.50	25	0.40	0.40	0.57	60	5.09	0.0012	0.029
0.0234	0.595	0.75	30	0.56	0.56	1.13	75	5.98	0.0006	0.016
0.0197	0.500	1.00	35	0.77	0.77	1.90	84	6.84	0.0003	0.009
0.0166	0.420	1.25	40	0.93	0.93	2.83	90	7.69	0.0002	0.005
0.0139	0.354	1.50	45	0.79	0.79	3.62	95	8.79	0.0001	0.002
0.0117	0.297	1.75	50	1.07	1.07	4.69				
0.0098	0.250	2.00	60	1.05	1.05	5.74				
0.0083	0.210	2.25	70	1.53	1.53	7.27				
0.0070	0.177	2.50	80	2.36	2.36	9.63				
0.0059	0.149	2.75	100	3.19	3.19	12.82				
0.0049	0.125	3.00	120	3.54	3.54	16.36				
0.0041	0.105	3.25	140	3.66	3.66	20.02				
0.0035	0.088	3.50	170	4.02	4.02	24.04				
0.0029	0.074	3.75	200	4.75	4.75	28.79				
0.0025	0.063	4.00	230	5.53	5.53	34.32				
0.0021	0.053	4.25	270	5.99	5.99	40.31				
0.00174	0.0442	4.50	325	6.12	6.12	46.43				
0.00146	0.0372	4.75	400	5.98	5.98	52.41				
0.00123	0.0313	5.00	450	5.68	5.68	58.09				
0.000986	0.0250	5.32	500	6.54	6.54	64.63				
0.000790	0.0201	5.64	635	5.53	5.53	70.16				
0.000615	0.0156	6.00		5.10	5.10	75.26				
0.000435	0.0110	6.50		5.70	5.70	80.96				
0.000308	0.00781	7.00		4.47	4.47	85.43				
0.000197	0.00500	7.65		4.37	4.37	89.80				
0.000077	0.00195	9.00		6.15	6.15	95.95				
0.000038	0.000977	10.00		2.77	2.77	98.72				
0.000019	0.000488	11.00		1.18	1.18	99.90				
0.000015	0.000375	11.38		0.10	0.10	100.00				
TOTALS				100.00	100.00	100.00				

Grain Size Description (ASTM-USCS Scale)				Silt (based on Mean from Trask)			
Description	Retained on Sieve #	Weight Percent					
Gravel	4	0.00					
Coarse Sand	10	0.00					
Medium Sand	40	2.83					
Fine Sand	200	25.96					
Silt	>0.005 mm	61.01					
Clay	<0.005 mm	10.20					
Total		100					

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1635C Run 6, Sample 1
Depth, ft: 993.0-994.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.00	0.00	0.00
0.0070	0.177	2.50	80	0.00	0.00	0.00
0.0059	0.149	2.75	100	0.00	0.00	0.00
0.0049	0.125	3.00	120	0.00	0.00	0.00
0.0041	0.105	3.25	140	0.00	0.00	0.00
0.0035	0.088	3.50	170	0.00	0.00	0.00
0.0029	0.074	3.75	200	0.00	0.00	0.00
0.0025	0.063	4.00	230	0.00	0.00	0.00
0.0021	0.053	4.25	270	0.00	0.00	0.00
0.00174	0.0442	4.50	325	0.00	0.00	0.00
0.00146	0.0372	4.75	400	0.00	0.00	0.00
0.00123	0.0313	5.00	450	0.00	0.00	0.00
0.000986	0.0250	5.32	500	0.00	0.00	0.00
0.000790	0.0201	5.64	635	0.00	0.00	0.00
0.000615	0.0156	6.00		0.06	0.06	0.06
0.000435	0.0110	6.50		2.68	2.68	2.75
0.000308	0.00781	7.00		6.89	6.89	9.64
0.000197	0.00500	7.65		14.40	14.41	24.05
0.000077	0.00195	9.00		41.60	41.62	65.67
0.000038	0.000977	10.00		23.60	23.61	89.28
0.000019	0.000488	11.00		9.86	9.87	99.15
0.000015	0.000375	11.38		0.85	0.85	100.00
TOTALS				99.90	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	6.66	0.0004	0.010
10	7.02	0.0003	0.008
16	7.28	0.0003	0.006
25	7.68	0.0002	0.005
40	8.16	0.0001	0.003
50	8.49	0.0001	0.003
60	8.82	0.0001	0.002
75	9.40	0.0001	0.001
84	9.78	0.0000	0.001
90	10.07	0.0000	0.001
95	10.58	0.0000	0.001

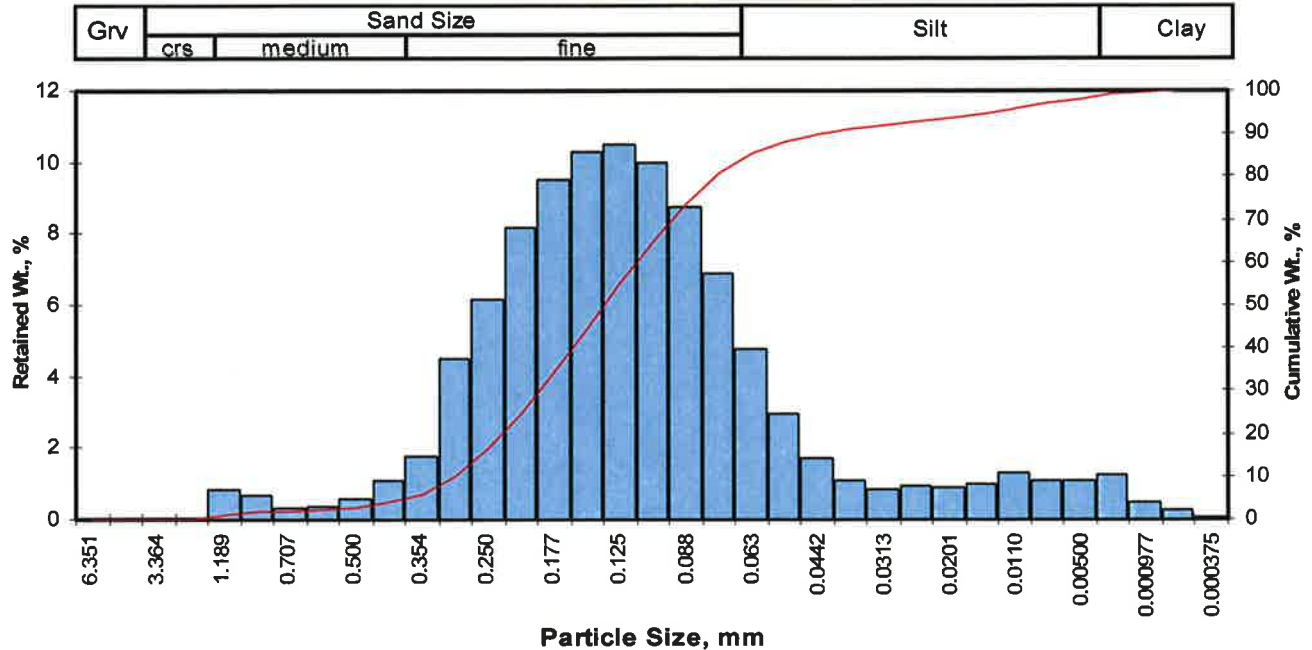
Measure	Trask	Inman	Folk-Ward
Median, phi	8.49	8.49	8.49
Median, in.	0.0001	0.0001	0.0001
Median, mm	0.003	0.003	0.003
Mean, phi	8.29	8.53	8.52
Mean, in.	0.0001	0.0001	0.0001
Mean, mm	0.003	0.003	0.003
Sorting	1.814	1.246	1.216
Skewness	0.969	0.033	0.050
Kurtosis	0.250	0.572	0.934

Grain Size Description	Clay
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	0.00
Silt	>0.005 mm	24.05
Clay	<0.005 mm	75.95
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1912C Run 1, Sample 1
Depth, ft: 63.0-64.0



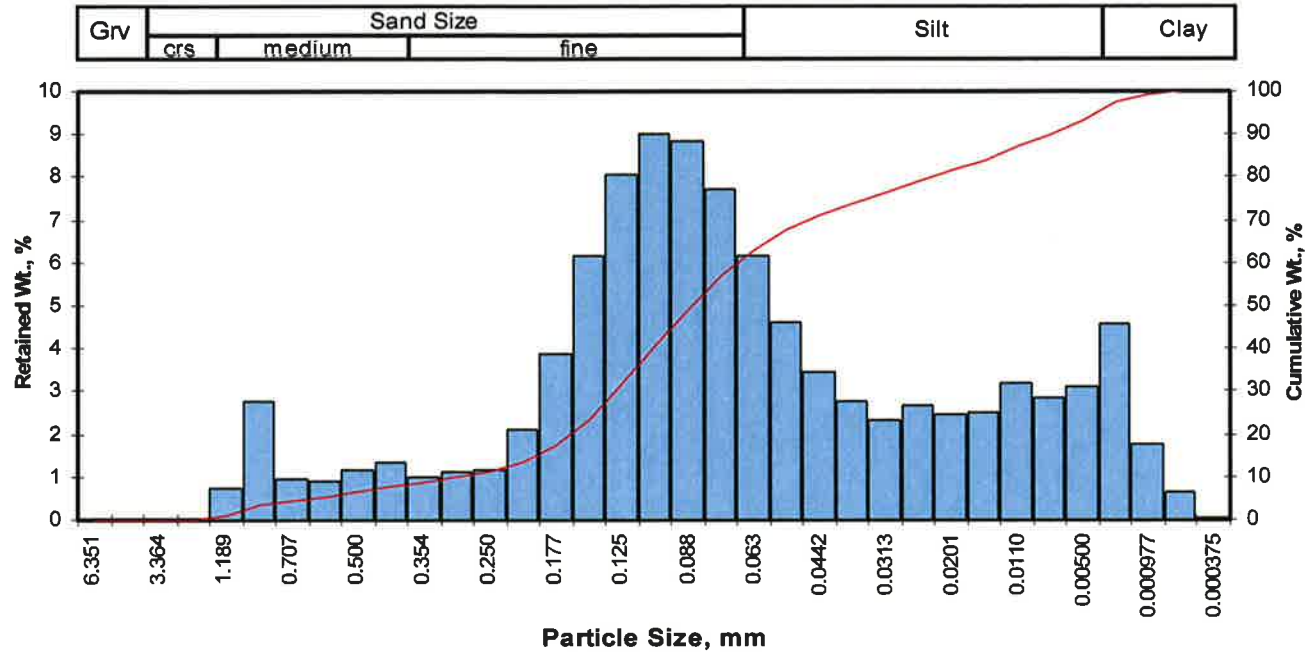
Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than			
Inches	Millimeters						Weight percent	Phi Value	Particle Size	
							Inches	Millimeters		
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	1.41	0.0148	0.376
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	1.74	0.0118	0.299
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	1.99	0.0099	0.252
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	2.26	0.0082	0.208
0.0468	1.189	-0.25	16	0.82	0.82	0.82	40	2.65	0.0063	0.160
0.0331	0.841	0.25	20	0.69	0.69	1.51	50	2.89	0.0053	0.135
0.0278	0.707	0.50	25	0.32	0.32	1.83	60	3.13	0.0045	0.114
0.0234	0.595	0.75	30	0.35	0.35	2.18	75	3.55	0.0034	0.085
0.0197	0.500	1.00	35	0.56	0.56	2.74	84	3.94	0.0026	0.065
0.0166	0.420	1.25	40	1.11	1.11	3.85	90	4.53	0.0017	0.043
0.0139	0.354	1.50	45	1.76	1.76	5.61	95	6.17	0.0005	0.014
0.0117	0.297	1.75	50	4.49	4.49	10.11				
0.0098	0.250	2.00	60	6.17	6.17	16.28				
0.0083	0.210	2.25	70	8.15	8.16	24.44				
0.0070	0.177	2.50	80	9.52	9.53	33.96				
0.0059	0.149	2.75	100	10.30	10.31	44.27				
0.0049	0.125	3.00	120	10.50	10.51	54.77				
0.0041	0.105	3.25	140	9.99	10.00	64.77				
0.0035	0.088	3.50	170	8.74	8.75	73.52				
0.0029	0.074	3.75	200	6.87	6.87	80.39				
0.0025	0.063	4.00	230	4.77	4.77	85.16				
0.0021	0.053	4.25	270	2.95	2.95	88.11				
0.00174	0.0442	4.50	325	1.73	1.73	89.85				
0.00146	0.0372	4.75	400	1.11	1.11	90.96				
0.00123	0.0313	5.00	450	0.83	0.83	91.79				
0.000986	0.0250	5.32	500	0.92	0.92	92.71				
0.000790	0.0201	5.64	635	0.88	0.88	93.59				
0.000615	0.0156	6.00		0.97	0.97	94.56				
0.000435	0.0110	6.50		1.28	1.28	95.84				
0.000308	0.00781	7.00		1.09	1.09	96.93				
0.000197	0.00500	7.65		1.06	1.06	97.99				
0.000077	0.00195	9.00		1.22	1.22	99.21				
0.000038	0.000977	10.00		0.49	0.49	99.70				
0.000019	0.000488	11.00		0.27	0.27	99.97				
0.000015	0.000375	11.38		0.03	0.03	100.00				
TOTALS				99.90	100.00	100.00				

Grain Size Description (ASTM-USCS Scale)				Fine sand (based on Mean from Trask)	
Measure	Trask	Inman	Folk-Ward		
Median, phi	2.89	2.89	2.89		
Median, in.	0.0053	0.0053	0.0053		
Median, mm	0.135	0.135	0.135		
Mean, phi	2.77	2.96	2.94		
Mean, in.	0.0058	0.0050	0.0051		
Mean, mm	0.147	0.128	0.130		
Sorting	1.563	0.975	1.209		
Skewness	0.984	0.079	0.230		
Kurtosis	0.241	1.440	1.513		

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	3.85
Fine Sand	200	76.54
Silt	>0.005 mm	17.60
Clay	<0.005 mm	2.01
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1912C Run 2, Sample 1
Depth, ft: 130.7-131.7

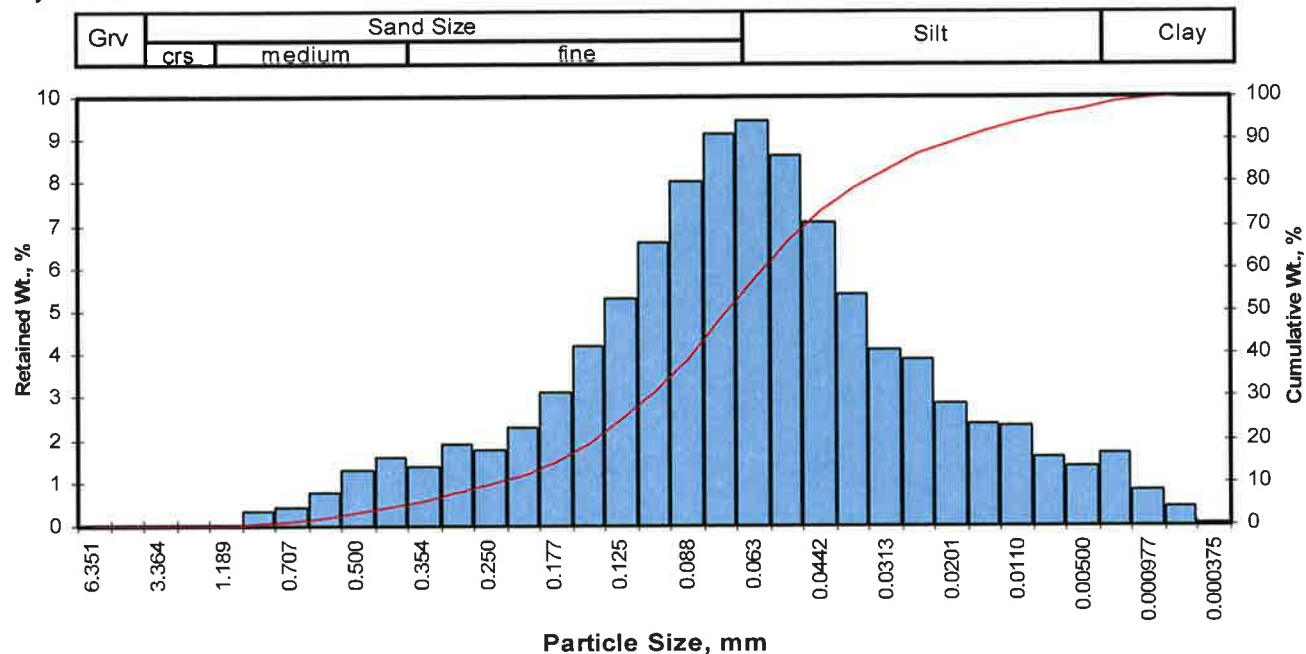


Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than			
Inches	Millimeters						Weight percent	Phi Value	Particle Size	
									Inches	Millimeters
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	0.65	0.0250	0.635
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	1.77	0.0116	0.294
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	2.43	0.0073	0.186
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	2.80	0.0056	0.143
0.0468	1.189	-0.25	16	0.74	0.74	0.74	40	3.24	0.0042	0.106
0.0331	0.841	0.25	20	2.75	2.75	3.49	50	3.53	0.0034	0.087
0.0278	0.707	0.50	25	0.96	0.96	4.45	60	3.88	0.0027	0.068
0.0234	0.595	0.75	30	0.89	0.89	5.34	75	4.87	0.0013	0.034
0.0197	0.500	1.00	35	1.17	1.17	6.51	84	6.03	0.0006	0.015
0.0166	0.420	1.25	40	1.33	1.33	7.84	90	7.03	0.0003	0.008
0.0139	0.354	1.50	45	0.98	0.98	8.82	95	8.25	0.0001	0.003
0.0117	0.297	1.75	50	1.10	1.10	9.92				
0.0098	0.250	2.00	60	1.17	1.17	11.09				
0.0083	0.210	2.25	70	2.13	2.13	13.22				
0.0070	0.177	2.50	80	3.87	3.87	17.09				
0.0059	0.149	2.75	100	6.15	6.15	23.24				
0.0049	0.125	3.00	120	8.05	8.05	31.29				
0.0041	0.105	3.25	140	9.01	9.01	40.30				
0.0035	0.088	3.50	170	8.83	8.83	49.13				
0.0029	0.074	3.75	200	7.73	7.73	56.86				
0.0025	0.063	4.00	230	6.16	6.16	63.02				
0.0021	0.053	4.25	270	4.63	4.63	67.65				
0.00174	0.0442	4.50	325	3.46	3.46	71.11				
0.00146	0.0372	4.75	400	2.74	2.74	73.86				
0.00123	0.0313	5.00	450	2.34	2.34	76.20				
0.000986	0.0250	5.32	500	2.67	2.67	78.87				
0.000790	0.0201	5.64	635	2.44	2.44	81.31				
0.000615	0.0156	6.00		2.50	2.50	83.81				
0.000435	0.0110	6.50		3.19	3.19	87.00				
0.000308	0.00781	7.00		2.85	2.85	89.85				
0.000197	0.00500	7.65		3.12	3.12	92.97				
0.000077	0.00195	9.00		4.56	4.56	97.53				
0.000038	0.000977	10.00		1.77	1.77	99.30				
0.000019	0.000488	11.00		0.65	0.65	99.95				
0.000015	0.000375	11.38		0.05	0.05	100.00				
TOTALS				100.00	100.00	100.00				

Grain Size Description (ASTM-USCS Scale)				Fine sand (based on Mean from Trask)			
Description	Retained on Sieve #	Weight Percent					
Gravel	4	0.00					
Coarse Sand	10	0.00					
Medium Sand	40	7.84					
Fine Sand	200	49.02					
Silt	>0.005 mm	36.10					
Clay	<0.005 mm	7.03					
Total		100					

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1912C Run 3, Sample 1
Depth, ft: 255.0-255.5



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.02	0.02	0.02
0.0331	0.841	0.25	20	0.35	0.35	0.37
0.0278	0.707	0.50	25	0.41	0.41	0.78
0.0234	0.595	0.75	30	0.78	0.78	1.56
0.0197	0.500	1.00	35	1.28	1.28	2.84
0.0166	0.420	1.25	40	1.58	1.58	4.42
0.0139	0.354	1.50	45	1.38	1.38	5.80
0.0117	0.297	1.75	50	1.89	1.89	7.69
0.0098	0.250	2.00	60	1.77	1.77	9.46
0.0083	0.210	2.25	70	2.28	2.28	11.74
0.0070	0.177	2.50	80	3.12	3.12	14.86
0.0059	0.149	2.75	100	4.20	4.20	19.06
0.0049	0.125	3.00	120	5.30	5.30	24.36
0.0041	0.105	3.25	140	6.58	6.58	30.94
0.0035	0.088	3.50	170	8.00	8.00	38.94
0.0029	0.074	3.75	200	9.15	9.15	48.09
0.0025	0.063	4.00	230	9.44	9.44	57.53
0.0021	0.053	4.25	270	8.62	8.62	66.15
0.00174	0.0442	4.50	325	7.06	7.06	73.21
0.00146	0.0372	4.75	400	5.39	5.39	78.60
0.00123	0.0313	5.00	450	4.08	4.08	82.68
0.000986	0.0250	5.32	500	3.90	3.90	86.58
0.000790	0.0201	5.64	635	2.85	2.85	89.43
0.000615	0.0156	6.00		2.36	2.36	91.79
0.000435	0.0110	6.50		2.31	2.31	94.10
0.000308	0.00781	7.00		1.58	1.58	95.68
0.000197	0.00500	7.65		1.36	1.36	97.04
0.000077	0.00195	9.00		1.66	1.66	98.70
0.000038	0.000977	10.00		0.82	0.82	99.52
0.000019	0.000488	11.00		0.44	0.44	99.96
0.000015	0.000375	11.38		0.04	0.04	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	1.35	0.0154	0.391
10	2.06	0.0094	0.240
16	2.57	0.0066	0.169
25	3.02	0.0048	0.123
40	3.53	0.0034	0.087
50	3.80	0.0028	0.072
60	4.07	0.0023	0.059
75	4.58	0.0016	0.042
84	5.11	0.0011	0.029
90	5.73	0.0007	0.019
95	6.79	0.0004	0.009

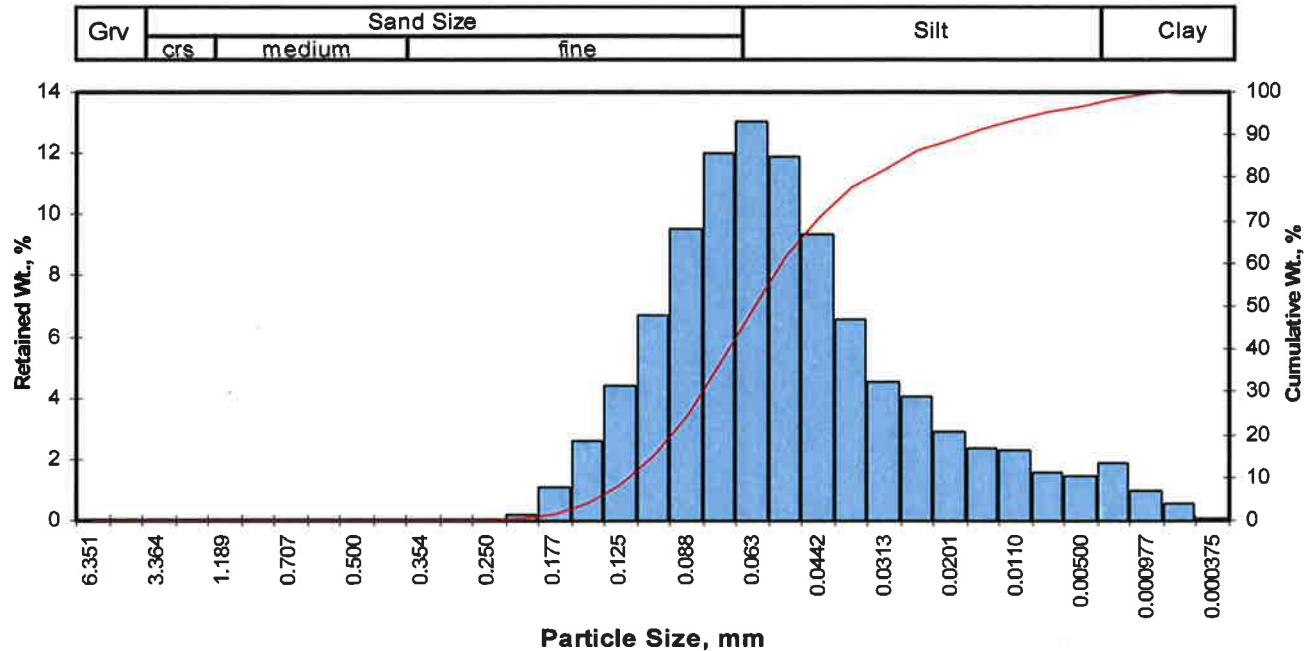
Measure	Trask	Inman	Folk-Ward
Median, phi	3.80	3.80	3.80
Median, in.	0.0028	0.0028	0.0028
Median, mm	0.072	0.072	0.072
Mean, phi	3.60	3.84	3.83
Mean, in.	0.0032	0.0028	0.0028
Mean, mm	0.082	0.070	0.071
Sorting	1.716	1.270	1.458
Skewness	0.998	0.030	0.064
Kurtosis	0.184	1.138	1.428

Grain Size Description	Fine sand
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	4.42
Fine Sand	200	43.67
Silt	>0.005 mm	48.95
Clay	<0.005 mm	2.96
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1912C Run 3, Sample 2
Depth, ft: 260.4-260.9



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.01	0.01	0.01
0.0083	0.210	2.25	70	0.21	0.21	0.22
0.0070	0.177	2.50	80	1.09	1.09	1.31
0.0059	0.149	2.75	100	2.62	2.62	3.93
0.0049	0.125	3.00	120	4.42	4.42	8.36
0.0041	0.105	3.25	140	6.72	6.73	15.08
0.0035	0.088	3.50	170	9.52	9.53	24.61
0.0029	0.074	3.75	200	12.00	12.01	36.63
0.0025	0.063	4.00	230	13.00	13.01	49.64
0.0021	0.053	4.25	270	11.90	11.91	61.55
0.00174	0.0442	4.50	325	9.34	9.35	70.90
0.00146	0.0372	4.75	400	6.58	6.59	77.49
0.00123	0.0313	5.00	450	4.53	4.53	82.02
0.000986	0.0250	5.32	500	4.03	4.03	86.05
0.000790	0.0201	5.64	635	2.87	2.87	88.93
0.000615	0.0156	6.00		2.36	2.36	91.29
0.000435	0.0110	6.50		2.30	2.30	93.59
0.000308	0.00781	7.00		1.59	1.59	95.18
0.000197	0.00500	7.65		1.42	1.42	96.60
0.000077	0.00195	9.00		1.87	1.87	98.48
0.000038	0.000977	10.00		0.95	0.95	99.43
0.000019	0.000488	11.00		0.52	0.52	99.95
0.000015	0.000375	11.38		0.05	0.05	100.00
TOTALS				99.90	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.81	0.0056	0.143
10	3.06	0.0047	0.120
16	3.27	0.0041	0.103
25	3.51	0.0035	0.088
40	3.81	0.0028	0.071
50	4.01	0.0024	0.062
60	4.22	0.0021	0.054
75	4.66	0.0016	0.040
84	5.16	0.0011	0.028
90	5.80	0.0007	0.018
95	6.94	0.0003	0.008

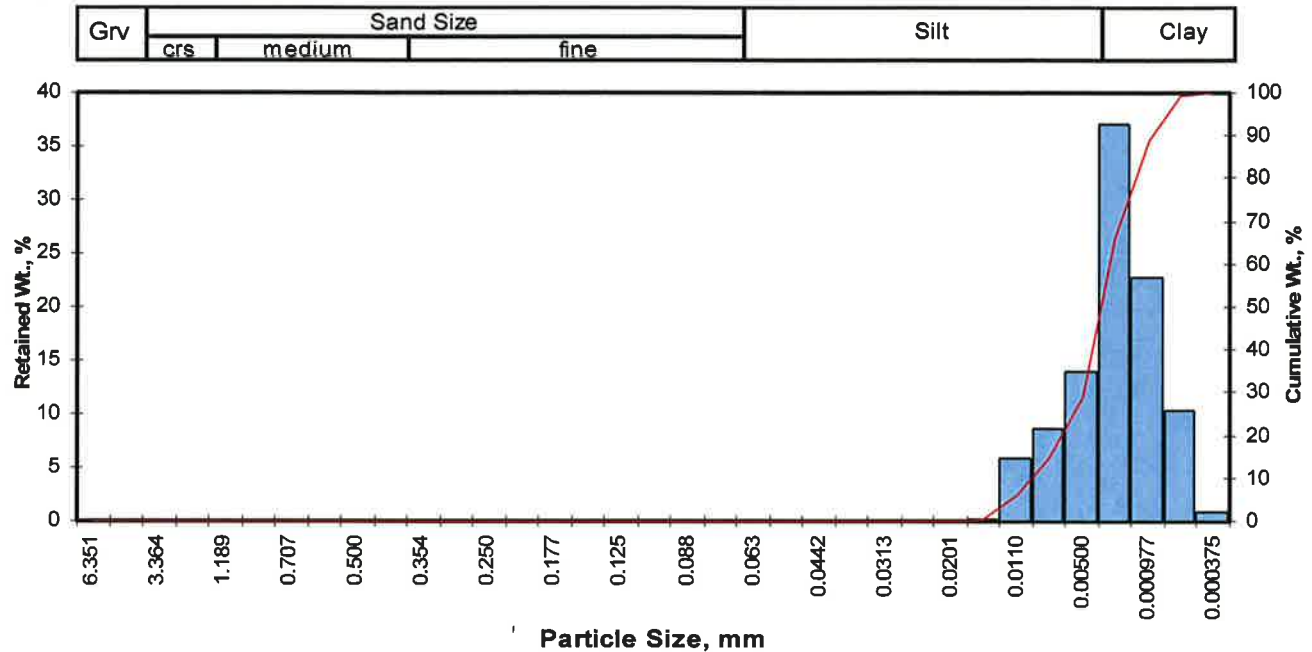
Measure	Trask	Inman	Folk-Ward
Median, phi	4.01	4.01	4.01
Median, in.	0.0024	0.0024	0.0024
Median, mm	0.062	0.062	0.062
Mean, phi	3.97	4.22	4.15
Mean, in.	0.0025	0.0021	0.0022
Mean, mm	0.064	0.054	0.056
Sorting	1.488	0.942	1.097
Skewness	0.950	0.221	0.321
Kurtosis	0.237	1.194	1.476

Grain Size Description	Silt
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	36.63
Silt	>0.005 mm	59.98
Clay	<0.005 mm	3.40
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1912C Run 4, Sample 1
Depth, ft: 974.5-975.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.00	0.00	0.00
0.0070	0.177	2.50	80	0.00	0.00	0.00
0.0059	0.149	2.75	100	0.00	0.00	0.00
0.0049	0.125	3.00	120	0.00	0.00	0.00
0.0041	0.105	3.25	140	0.00	0.00	0.00
0.0035	0.088	3.50	170	0.00	0.00	0.00
0.0029	0.074	3.75	200	0.00	0.00	0.00
0.0025	0.063	4.00	230	0.00	0.00	0.00
0.0021	0.053	4.25	270	0.00	0.00	0.00
0.00174	0.0442	4.50	325	0.00	0.00	0.00
0.00146	0.0372	4.75	400	0.00	0.00	0.00
0.00123	0.0313	5.00	450	0.00	0.00	0.00
0.000986	0.0250	5.32	500	0.00	0.00	0.00
0.000790	0.0201	5.64	635	0.00	0.00	0.00
0.000615	0.0156	6.00		0.22	0.22	0.22
0.000435	0.0110	6.50		5.93	5.93	6.15
0.000308	0.00781	7.00		8.65	8.65	14.80
0.000197	0.00500	7.65		14.00	14.00	28.79
0.000077	0.00195	9.00		37.10	37.09	65.89
0.000038	0.000977	10.00		22.80	22.80	88.68
0.000019	0.000488	11.00		10.40	10.40	99.08
0.000015	0.000375	11.38		0.92	0.92	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	6.40	0.0005	0.012
10	6.72	0.0004	0.009
16	7.06	0.0003	0.008
25	7.47	0.0002	0.006
40	8.05	0.0001	0.004
50	8.42	0.0001	0.003
60	8.78	0.0001	0.002
75	9.40	0.0001	0.001
84	9.79	0.0000	0.001
90	10.13	0.0000	0.001
95	10.61	0.0000	0.001

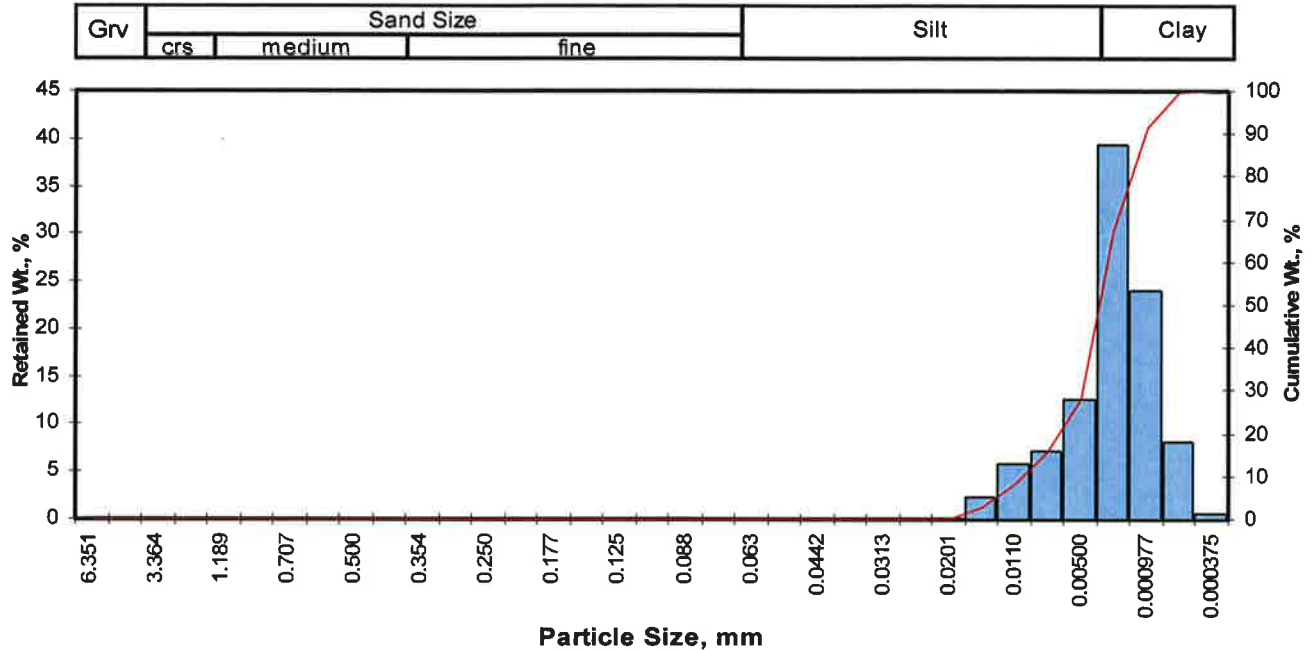
Measure	Trask	Inman	Folk-Ward
Median, phi	8.42	8.42	8.42
Median, in.	0.0001	0.0001	0.0001
Median, mm	0.003	0.003	0.003
Mean, phi	8.13	8.43	8.42
Mean, in.	0.0001	0.0001	0.0001
Mean, mm	0.004	0.003	0.003
Sorting	1.952	1.370	1.322
Skewness	0.989	0.004	0.022
Kurtosis	0.243	0.535	0.893

Grain Size Description	Clay
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	0.00
Silt	>0.005 mm	28.79
Clay	<0.005 mm	71.21
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1912C Run 4, Sample 2
Depth, ft: 968.7-969.7



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.00	0.00	0.00
0.0070	0.177	2.50	80	0.00	0.00	0.00
0.0059	0.149	2.75	100	0.00	0.00	0.00
0.0049	0.125	3.00	120	0.00	0.00	0.00
0.0041	0.105	3.25	140	0.00	0.00	0.00
0.0035	0.088	3.50	170	0.00	0.00	0.00
0.0029	0.074	3.75	200	0.00	0.00	0.00
0.0025	0.063	4.00	230	0.00	0.00	0.00
0.0021	0.053	4.25	270	0.00	0.00	0.00
0.00174	0.0442	4.50	325	0.00	0.00	0.00
0.00146	0.0372	4.75	400	0.00	0.00	0.00
0.00123	0.0313	5.00	450	0.00	0.00	0.00
0.000986	0.0250	5.32	500	0.00	0.00	0.00
0.000790	0.0201	5.64	635	0.10	0.10	0.10
0.000615	0.0156	6.00		2.33	2.33	2.42
0.000435	0.0110	6.50		5.79	5.79	8.21
0.000308	0.00781	7.00		7.14	7.14	15.35
0.000197	0.00500	7.65		12.60	12.59	27.94
0.000077	0.00195	9.00		39.40	39.38	67.32
0.000038	0.000977	10.00		24.00	23.99	91.30
0.000019	0.000488	11.00		8.14	8.14	99.44
0.000015	0.000375	11.38		0.56	0.56	100.00
TOTALS				100.10	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	6.22	0.0005	0.013
10	6.63	0.0004	0.010
16	7.03	0.0003	0.008
25	7.49	0.0002	0.006
40	8.06	0.0001	0.004
50	8.40	0.0001	0.003
60	8.75	0.0001	0.002
75	9.32	0.0001	0.002
84	9.70	0.0000	0.001
90	9.95	0.0000	0.001
95	10.45	0.0000	0.001

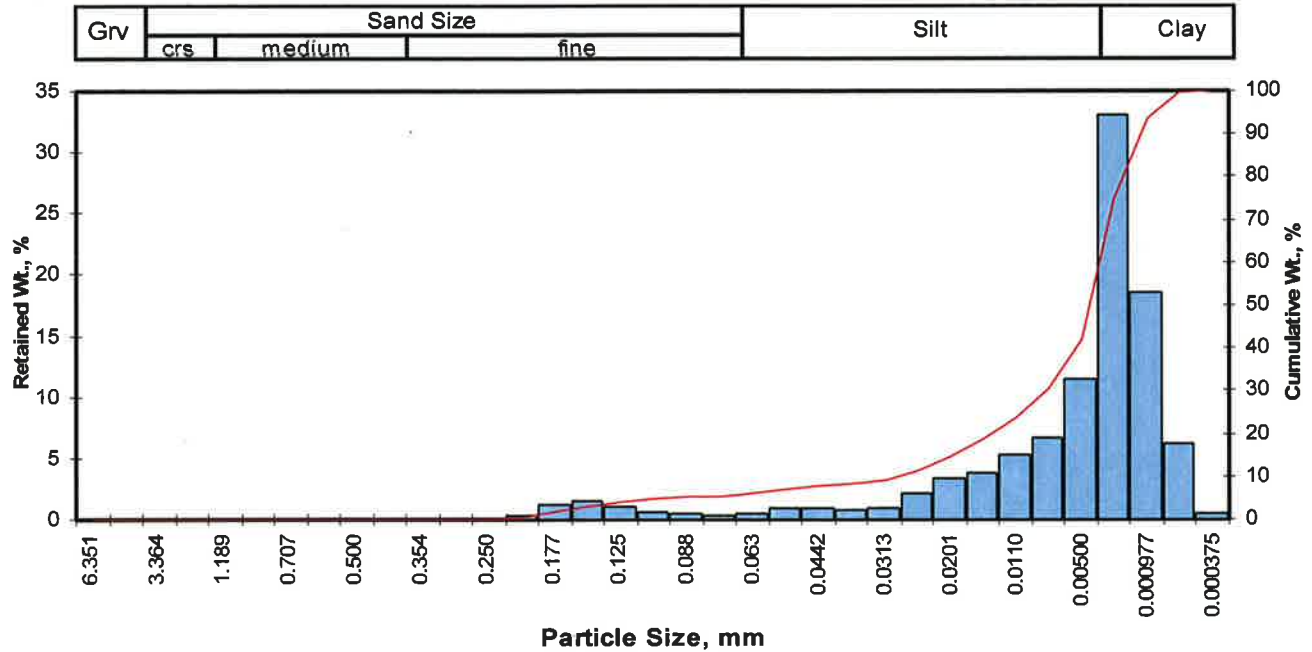
Measure	Trask	Inman	Folk-Ward
Median, phi	8.40	8.40	8.40
Median, in.	0.0001	0.0001	0.0001
Median, mm	0.003	0.003	0.003
Mean, phi	8.14	8.36	8.38
Mean, in.	0.0001	0.0001	0.0001
Mean, mm	0.004	0.003	0.003
Sorting	1.883	1.331	1.307
Skewness	0.998	-0.030	-0.030
Kurtosis	0.218	0.590	0.950

Grain Size Description	Clay
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	0.00
Silt	>0.005 mm	27.94
Clay	<0.005 mm	72.06
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1912C Run 4, Sample 2 Rerun
Depth, ft: 968.7-969.7



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.02	0.02	0.02
0.0083	0.210	2.25	70	0.33	0.33	0.35
0.0070	0.177	2.50	80	1.18	1.18	1.53
0.0059	0.149	2.75	100	1.48	1.48	3.01
0.0049	0.125	3.00	120	1.03	1.03	4.04
0.0041	0.105	3.25	140	0.63	0.63	4.67
0.0035	0.088	3.50	170	0.39	0.39	5.06
0.0029	0.074	3.75	200	0.29	0.29	5.35
0.0025	0.063	4.00	230	0.48	0.48	5.83
0.0021	0.053	4.25	270	0.86	0.86	6.69
0.00174	0.0442	4.50	325	0.91	0.91	7.60
0.00146	0.0372	4.75	400	0.71	0.71	8.31
0.00123	0.0313	5.00	450	0.86	0.86	9.17
0.000986	0.0250	5.32	500	2.12	2.12	11.29
0.000790	0.0201	5.64	635	3.31	3.31	14.60
0.000615	0.0156	6.00		3.78	3.78	18.38
0.000435	0.0110	6.50		5.24	5.24	23.62
0.000308	0.00781	7.00		6.60	6.60	30.22
0.000197	0.00500	7.65		11.40	11.40	41.62
0.000077	0.00195	9.00		33.10	33.10	74.72
0.000038	0.000977	10.00		18.60	18.60	93.32
0.000019	0.000488	11.00		6.24	6.24	99.56
0.000015	0.000375	11.38		0.44	0.44	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	3.46	0.0036	0.091
10	5.13	0.0011	0.029
16	5.77	0.0007	0.018
25	6.60	0.0004	0.010
40	7.55	0.0002	0.005
50	7.99	0.0002	0.004
60	8.40	0.0001	0.003
75	9.02	0.0001	0.002
84	9.50	0.0001	0.001
90	9.82	0.0000	0.001
95	10.27	0.0000	0.001

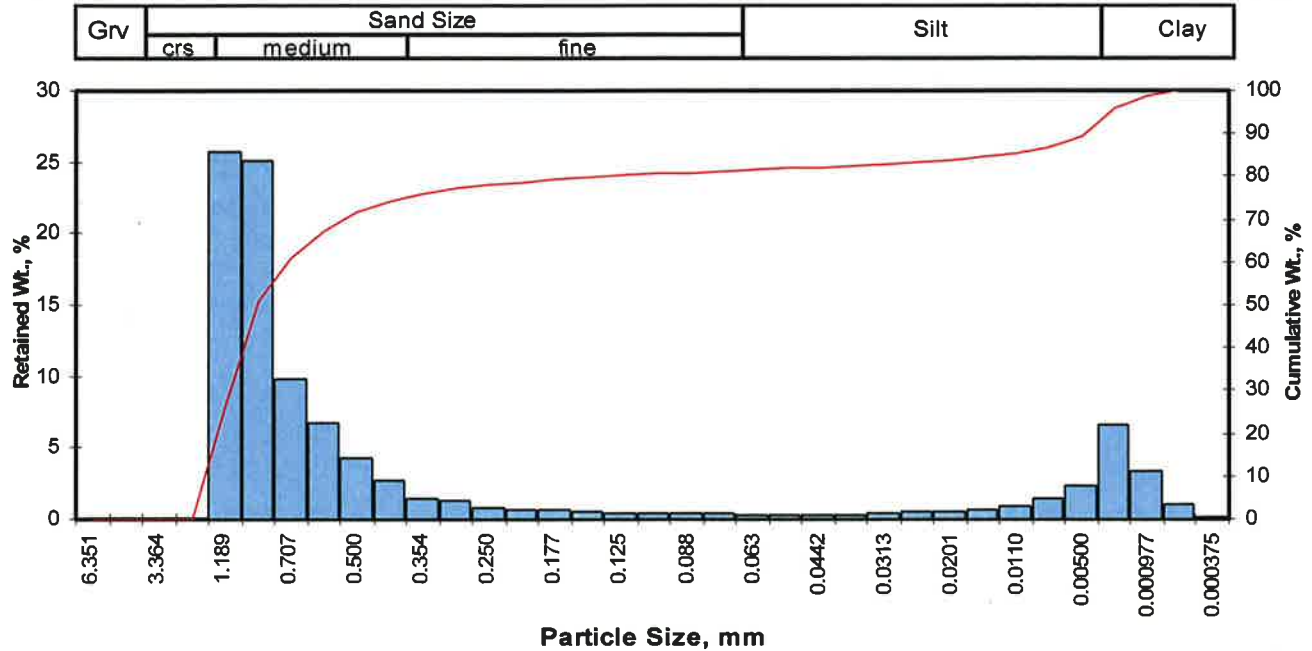
Measure	Trask	Inman	Folk-Ward
Median, phi	7.99	7.99	7.99
Median, in.	0.0002	0.0002	0.0002
Median, mm	0.004	0.004	0.004
Mean, phi	7.36	7.64	7.75
Mean, in.	0.0002	0.0002	0.0002
Mean, mm	0.006	0.005	0.005
Sorting	2.306	1.863	1.963
Skewness	1.131	-0.189	-0.259
Kurtosis	0.151	0.827	1.157

Grain Size Description	Silt
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	5.35
Silt	>0.005 mm	36.27
Clay	<0.005 mm	58.38
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1912C Run 4, Sample 2 Rerun 2
Depth, ft: 968.7-969.7



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than			
Inches	Millimeters						Weight percent	Phi Value	Particle Size	
									Inches	Millimeters
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	-0.85	0.0712	1.808
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	-0.71	0.0643	1.634
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	-0.53	0.0570	1.447
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	-0.27	0.0475	1.206
0.0468	1.189	-0.25	16	25.70	25.70	25.70	40	0.03	0.0384	0.976
0.0331	0.841	0.25	20	25.10	25.10	50.81	50	0.23	0.0335	0.850
0.0278	0.707	0.50	25	9.82	9.82	60.63	60	0.48	0.0281	0.715
0.0234	0.595	0.75	30	6.77	6.77	67.40	75	1.37	0.0152	0.387
0.0197	0.500	1.00	35	4.24	4.24	71.64	84	5.80	0.0007	0.018
0.0166	0.420	1.25	40	2.66	2.66	74.30	90	7.85	0.0002	0.004
0.0139	0.354	1.50	45	1.46	1.46	75.76	95	8.88	0.0001	0.002
0.0117	0.297	1.75	50	1.33	1.33	77.09				
0.0098	0.250	2.00	60	0.82	0.82	77.91				
0.0083	0.210	2.25	70	0.70	0.70	78.61				
0.0070	0.177	2.50	80	0.59	0.59	79.20				
0.0059	0.149	2.75	100	0.48	0.48	79.68				
0.0049	0.125	3.00	120	0.40	0.40	80.08				
0.0041	0.105	3.25	140	0.37	0.37	80.45				
0.0035	0.088	3.50	170	0.35	0.35	80.80				
0.0029	0.074	3.75	200	0.33	0.33	81.13				
0.0025	0.063	4.00	230	0.31	0.31	81.44				
0.0021	0.053	4.25	270	0.30	0.30	81.74				
0.00174	0.0442	4.50	325	0.30	0.30	82.04				
0.00146	0.0372	4.75	400	0.31	0.31	82.35				
0.00123	0.0313	5.00	450	0.33	0.33	82.68				
0.000986	0.0250	5.32	500	0.48	0.48	83.16				
0.000790	0.0201	5.64	635	0.56	0.56	83.72				
0.000615	0.0156	6.00		0.63	0.63	84.35				
0.000435	0.0110	6.50		0.94	0.94	85.29				
0.000308	0.00781	7.00		1.36	1.36	86.65				
0.000197	0.00500	7.65		2.38	2.38	89.03				
0.000077	0.00195	9.00		6.53	6.53	95.56				
0.000038	0.000977	10.00		3.35	3.35	98.91				
0.000019	0.000488	11.00		1.02	1.02	99.93				
0.000015	0.000375	11.38		0.07	0.07	100.00				
TOTALS				100.00	100.00	100.00				

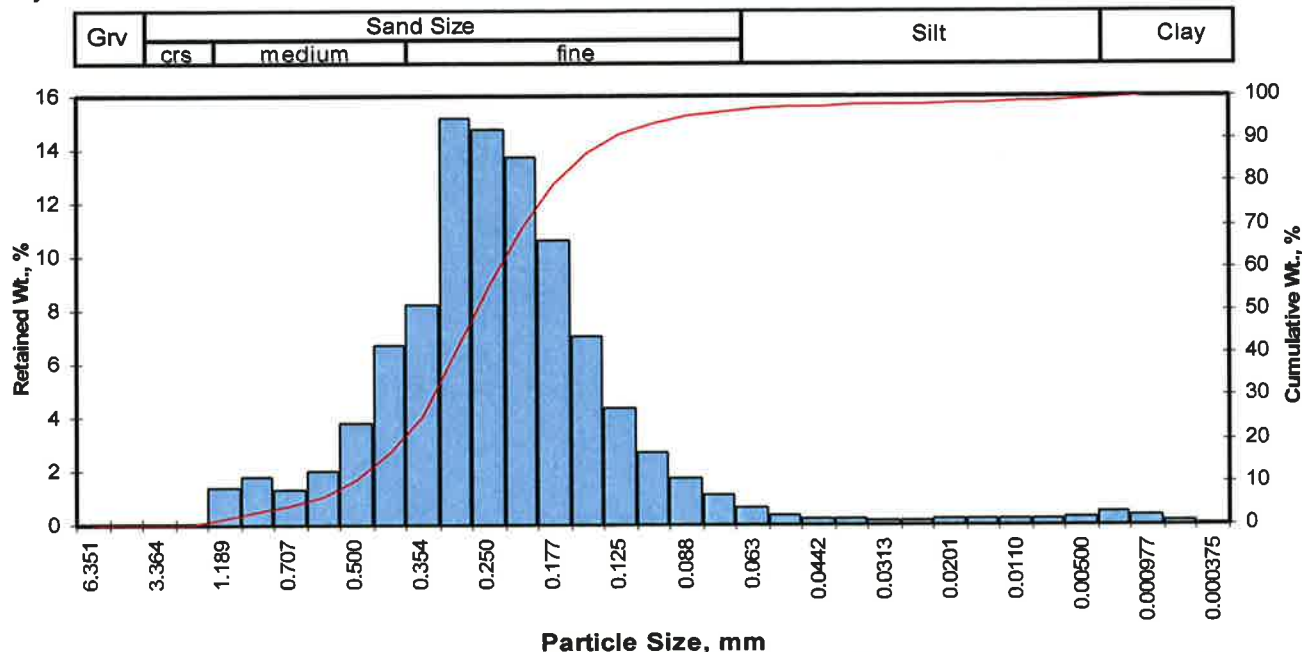
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	-0.85	0.0712	1.808
10	-0.71	0.0643	1.634
16	-0.53	0.0570	1.447
25	-0.27	0.0475	1.206
40	0.03	0.0384	0.976
50	0.23	0.0335	0.850
60	0.48	0.0281	0.715
75	1.37	0.0152	0.387
84	5.80	0.0007	0.018
90	7.85	0.0002	0.004
95	8.88	0.0001	0.002

Measure	Trask	Inman	Folk-Ward
Median, phi	0.23	0.23	0.23
Median, in.	0.0335	0.0335	0.0335
Median, mm	0.850	0.850	0.850
Mean, phi	0.33	2.63	1.83
Mean, in.	0.0314	0.0063	0.0110
Mean, mm	0.797	0.161	0.281
Sorting	1.766	3.166	3.058
Skewness	0.803	0.758	0.767
Kurtosis	0.251	0.538	2.433

Grain Size Description		Medium sand	
(ASTM-USCS Scale)		(based on Mean from Trask)	
Description	Retained on Sieve #	Weight Percent	
Gravel	4	0.00	
Coarse Sand	10	0.00	
Medium Sand	40	74.30	
Fine Sand	200	6.83	
Silt	>0.005 mm	7.90	
Clay	<0.005 mm	10.97	
Total		100	

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1956C Run 1, Sample 1
Depth, ft: 42.0-43.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than			
Inches	Millimeters						Weight percent	Phi Value	Particle Size	
									Inches	Millimeters
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	0.57	0.0266	0.676
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	0.98	0.0200	0.507
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	1.21	0.0170	0.431
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	1.49	0.0140	0.355
0.0468	1.189	-0.25	16	1.37	1.37	1.37	40	1.74	0.0118	0.299
0.0331	0.841	0.25	20	1.79	1.79	3.16	50	1.91	0.0105	0.266
0.0278	0.707	0.50	25	1.31	1.31	4.47	60	2.09	0.0093	0.235
0.0234	0.595	0.75	30	2.02	2.02	6.49	75	2.39	0.0075	0.190
0.0197	0.500	1.00	35	3.82	3.82	10.30	84	2.66	0.0062	0.158
0.0166	0.420	1.25	40	6.67	6.67	16.97	90	2.95	0.0051	0.129
0.0139	0.354	1.50	45	8.24	8.24	25.20	95	3.46	0.0036	0.091
0.0117	0.297	1.75	50	15.20	15.19	40.40				
0.0098	0.250	2.00	60	14.80	14.79	55.19				
0.0083	0.210	2.25	70	13.70	13.69	68.88				
0.0070	0.177	2.50	80	10.60	10.59	79.47				
0.0059	0.149	2.75	100	7.02	7.02	86.49				
0.0049	0.125	3.00	120	4.36	4.36	90.85				
0.0041	0.105	3.25	140	2.69	2.69	93.53				
0.0035	0.088	3.50	170	1.72	1.72	95.25				
0.0029	0.074	3.75	200	1.08	1.08	96.33				
0.0025	0.063	4.00	230	0.62	0.62	96.95				
0.0021	0.053	4.25	270	0.34	0.34	97.29				
0.00174	0.0442	4.50	325	0.22	0.22	97.51				
0.00146	0.0372	4.75	400	0.18	0.18	97.69				
0.00123	0.0313	5.00	450	0.15	0.15	97.84				
0.000986	0.0250	5.32	500	0.17	0.17	98.01				
0.000790	0.0201	5.64	635	0.18	0.18	98.19				
0.000615	0.0156	6.00		0.19	0.19	98.38				
0.000435	0.0110	6.50		0.23	0.23	98.61				
0.000308	0.00781	7.00		0.21	0.21	98.82				
0.000197	0.00500	7.65		0.26	0.26	99.08				
0.000077	0.00195	9.00		0.47	0.47	99.55				
0.000038	0.000977	10.00		0.32	0.32	99.87				
0.000019	0.000488	11.00		0.13	0.13	100.00				
0.000015	0.000375	11.38		0.00	0.00	100.00				
TOTALS				100.10	100.00	100.00				

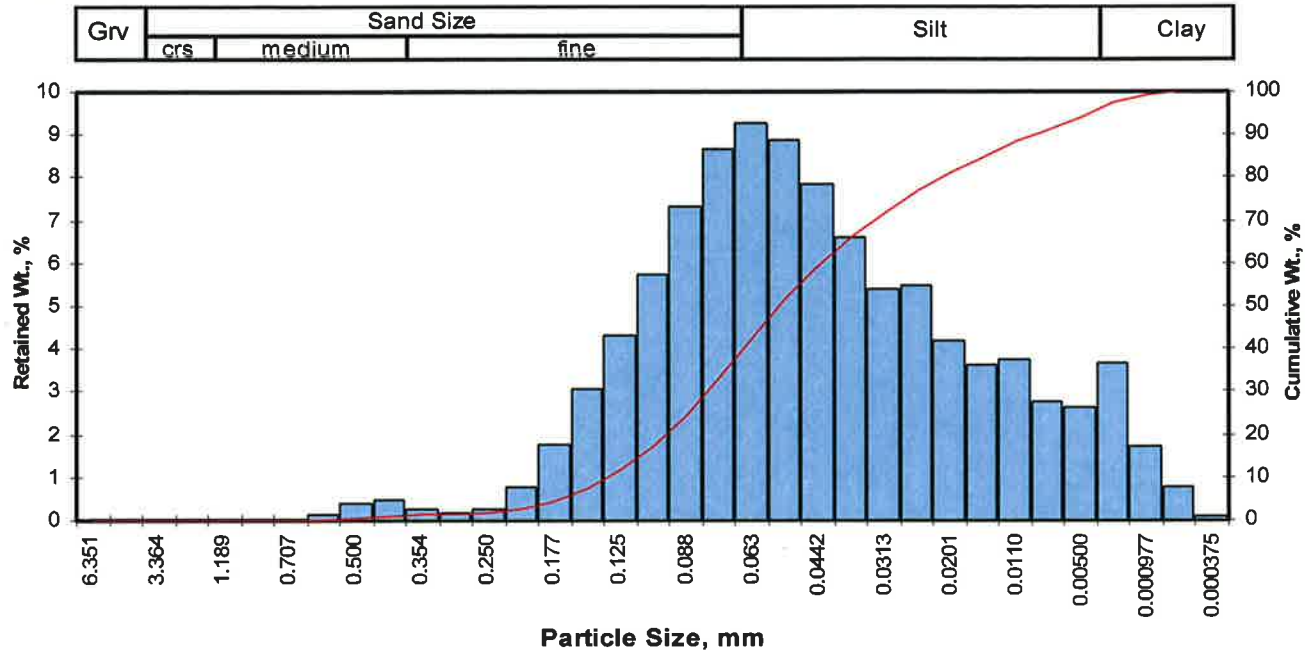
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	0.57	0.0266	0.676
10	0.98	0.0200	0.507
16	1.21	0.0170	0.431
25	1.49	0.0140	0.355
40	1.74	0.0118	0.299
50	1.91	0.0105	0.266
60	2.09	0.0093	0.235
75	2.39	0.0075	0.190
84	2.66	0.0062	0.158
90	2.95	0.0051	0.129
95	3.46	0.0036	0.091

Measure	Trask	Inman	Folk-Ward
Median, phi	1.91	1.91	1.91
Median, in.	0.0105	0.0105	0.0105
Median, mm	0.266	0.266	0.266
Mean, phi	1.87	1.94	1.93
Mean, in.	0.0107	0.0103	0.0103
Mean, mm	0.273	0.261	0.263
Sorting	1.366	0.724	0.801
Skewness	0.978	0.035	0.053
Kurtosis	0.218	1.001	1.318

Grain Size Description		Fine sand	
(ASTM-USCS Scale)		(based on Mean from Trask)	
Description	Retained on Sieve #	Weight Percent	
Gravel	4	0.00	
Coarse Sand	10	0.00	
Medium Sand	40	16.97	
Fine Sand	200	79.36	
Silt	>0.005 mm	2.75	
Clay	<0.005 mm	0.92	
Total		100	

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1956C Run 3, Sample 1
Depth, ft: 78.0-79.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.01	0.01	0.01
0.0234	0.595	0.75	30	0.14	0.14	0.15
0.0197	0.500	1.00	35	0.39	0.39	0.54
0.0166	0.420	1.25	40	0.46	0.46	1.00
0.0139	0.354	1.50	45	0.27	0.27	1.27
0.0117	0.297	1.75	50	0.19	0.19	1.46
0.0098	0.250	2.00	60	0.25	0.25	1.71
0.0083	0.210	2.25	70	0.78	0.78	2.49
0.0070	0.177	2.50	80	1.77	1.77	4.26
0.0059	0.149	2.75	100	3.04	3.04	7.30
0.0049	0.125	3.00	120	4.33	4.33	11.63
0.0041	0.105	3.25	140	5.74	5.74	17.37
0.0035	0.088	3.50	170	7.32	7.32	24.69
0.0029	0.074	3.75	200	8.67	8.67	33.36
0.0025	0.063	4.00	230	9.27	9.27	42.63
0.0021	0.053	4.25	270	8.89	8.89	51.52
0.00174	0.0442	4.50	325	7.85	7.85	59.37
0.00146	0.0372	4.75	400	6.58	6.58	65.95
0.00123	0.0313	5.00	450	5.41	5.41	71.36
0.000986	0.0250	5.32	500	5.49	5.49	76.84
0.000790	0.0201	5.64	635	4.19	4.19	81.03
0.000615	0.0156	6.00		3.60	3.60	84.63
0.000435	0.0110	6.50		3.74	3.74	88.37
0.000308	0.00781	7.00		2.78	2.78	91.15
0.000197	0.00500	7.65		2.64	2.64	93.79
0.000077	0.00195	9.00		3.67	3.67	97.46
0.000038	0.000977	10.00		1.71	1.71	99.17
0.000019	0.000488	11.00		0.76	0.76	99.93
0.000015	0.000375	11.38		0.07	0.07	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.56	0.0067	0.170
10	2.91	0.0053	0.133
16	3.19	0.0043	0.110
25	3.51	0.0035	0.088
40	3.93	0.0026	0.066
50	4.21	0.0021	0.054
60	4.52	0.0017	0.043
75	5.21	0.0011	0.027
84	5.94	0.0006	0.016
90	6.79	0.0004	0.009
95	8.09	0.0001	0.004

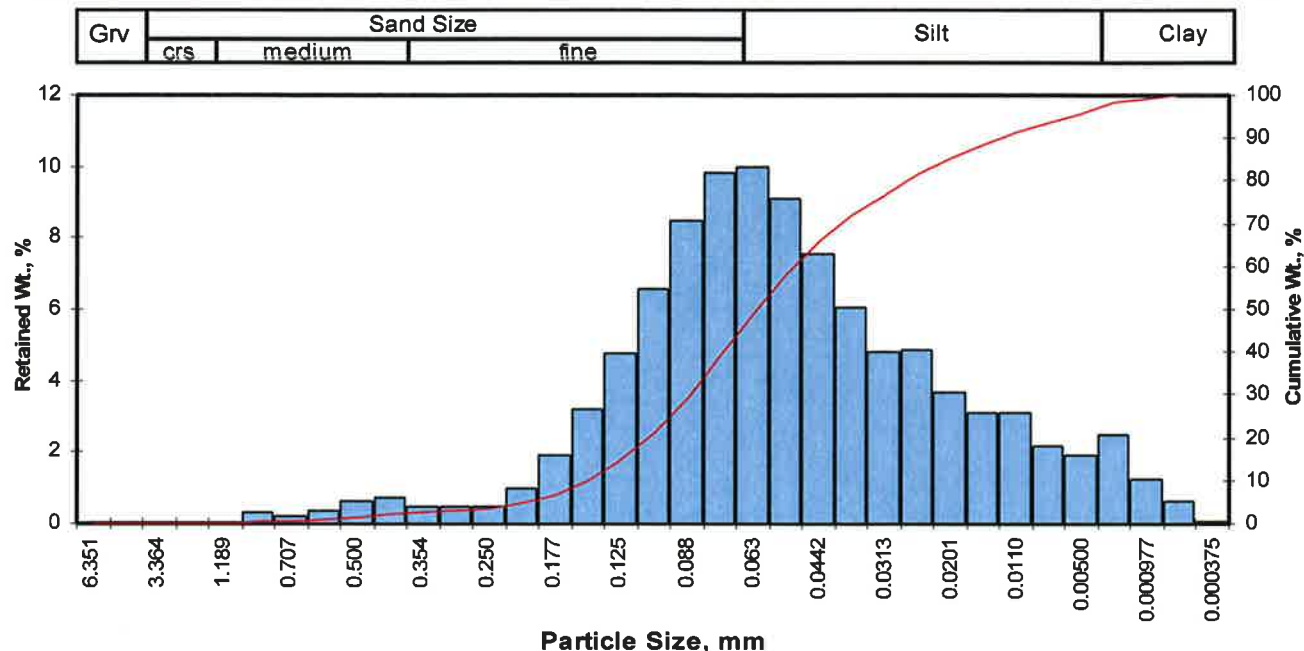
Measure	Trask	Inman	Folk-Ward
Median, phi	4.21	4.21	4.21
Median, in.	0.0021	0.0021	0.0021
Median, mm	0.054	0.054	0.054
Mean, phi	4.12	4.56	4.44
Mean, in.	0.0023	0.0017	0.0018
Mean, mm	0.057	0.042	0.046
Sorting	1.805	1.373	1.525
Skewness	0.899	0.259	0.332
Kurtosis	0.245	1.014	1.330

Grain Size Description	Silt
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	1.00
Fine Sand	200	32.36
Silt	>0.005 mm	60.43
Clay	<0.005 mm	6.21
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1956C Run 4, Sample 1
Depth, ft: 196.5-197.1



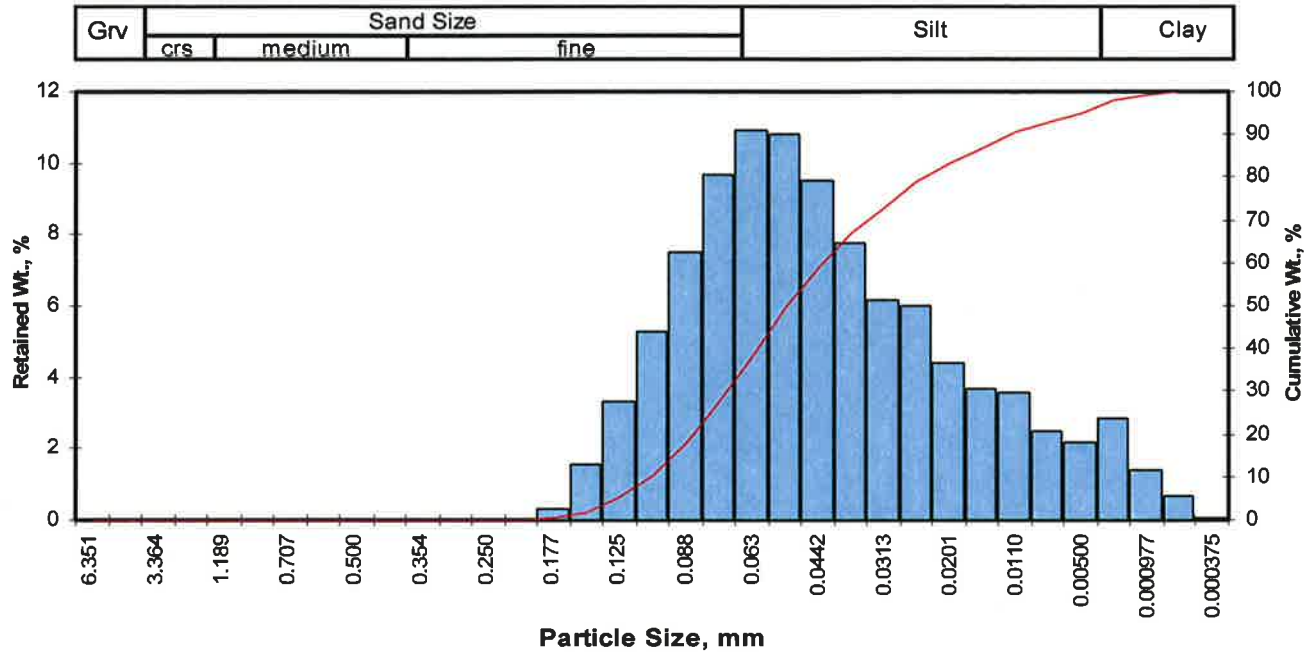
Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than			
Inches	Millimeters						Weight percent	Phi Value	Particle Size	
									Inches	Millimeters
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	2.30	0.0080	0.203
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	2.77	0.0058	0.147
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	3.06	0.0047	0.120
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	3.37	0.0038	0.097
0.0468	1.189	-0.25	16	0.03	0.03	0.03	40	3.77	0.0029	0.073
0.0331	0.841	0.25	20	0.30	0.30	0.33	50	4.02	0.0024	0.062
0.0278	0.707	0.50	25	0.19	0.19	0.52	60	4.30	0.0020	0.051
0.0234	0.595	0.75	30	0.34	0.34	0.86	75	4.91	0.0013	0.033
0.0197	0.500	1.00	35	0.64	0.64	1.50	84	5.52	0.0009	0.022
0.0166	0.420	1.25	40	0.72	0.72	2.22	90	6.25	0.0005	0.013
0.0139	0.354	1.50	45	0.48	0.48	2.70	95	7.44	0.0002	0.006
0.0117	0.297	1.75	50	0.46	0.46	3.16				
0.0098	0.250	2.00	60	0.47	0.47	3.63				
0.0083	0.210	2.25	70	0.97	0.97	4.60				
0.0070	0.177	2.50	80	1.90	1.90	6.50				
0.0059	0.149	2.75	100	3.20	3.20	9.70				
0.0049	0.125	3.00	120	4.74	4.74	14.44				
0.0041	0.105	3.25	140	6.58	6.58	21.02				
0.0035	0.088	3.50	170	8.47	8.47	29.50				
0.0029	0.074	3.75	200	9.81	9.81	39.31				
0.0025	0.063	4.00	230	10.00	10.00	49.31				
0.0021	0.053	4.25	270	9.08	9.08	58.40				
0.00174	0.0442	4.50	325	7.55	7.55	65.95				
0.00146	0.0372	4.75	400	6.03	6.03	71.98				
0.00123	0.0313	5.00	450	4.83	4.83	76.81				
0.000986	0.0250	5.32	500	4.86	4.86	81.68				
0.000790	0.0201	5.64	635	3.68	3.68	85.36				
0.000615	0.0156	6.00		3.10	3.10	88.46				
0.000435	0.0110	6.50		3.08	3.08	91.54				
0.000308	0.00781	7.00		2.15	2.15	93.69				
0.000197	0.00500	7.65		1.92	1.92	95.61				
0.000077	0.00195	9.00		2.50	2.50	98.11				
0.000038	0.000977	10.00		1.22	1.22	99.33				
0.000019	0.000488	11.00		0.61	0.61	99.94				
0.000015	0.000375	11.38		0.06	0.06	100.00				
TOTALS				100.00	100.00	100.00				

Grain Size Description (ASTM-USCS Scale)				Silt (based on Mean from Trask)	
Gravel	4	0.00			
Coarse Sand	10	0.00			
Medium Sand	40	2.22			
Fine Sand	200	37.09			
Silt	>0.005 mm	56.30			
Clay	<0.005 mm	4.39			
Total			100		

Measure	Trask	Inman	Folk-Ward
Median, phi	4.02	4.02	4.02
Median, in.	0.0024	0.0024	0.0024
Median, mm	0.062	0.062	0.062
Mean, phi	3.94	4.29	4.20
Mean, in.	0.0026	0.0020	0.0021
Mean, mm	0.065	0.051	0.054
Sorting	1.705	1.231	1.394
Skewness	0.922	0.221	0.276
Kurtosis	0.237	1.086	1.368

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1956C Run 4, Sample 2
Depth, ft: 202.0-202.5



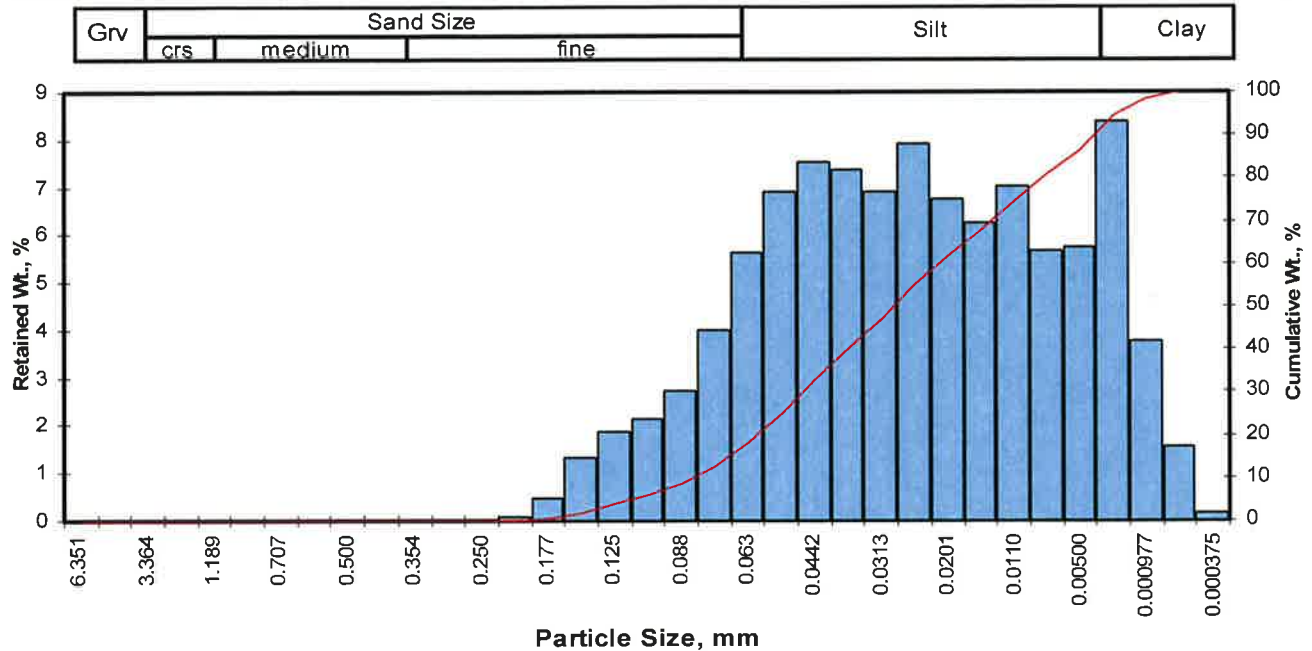
Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than			
Inches	Millimeters						Weight percent	Phi Value	Particle Size	
							Inches	Millimeters		
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	2.99	0.0050	0.126
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	3.23	0.0042	0.107
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	3.43	0.0036	0.092
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	3.68	0.0031	0.078
0.0468	1.189	-0.25	16	0.00	0.00	0.00	40	4.03	0.0024	0.061
0.0331	0.841	0.25	20	0.00	0.00	0.00	50	4.27	0.0020	0.052
0.0278	0.707	0.50	25	0.00	0.00	0.00	60	4.54	0.0017	0.043
0.0234	0.595	0.75	30	0.00	0.00	0.00	75	5.12	0.0011	0.029
0.0197	0.500	1.00	35	0.00	0.00	0.00	84	5.72	0.0007	0.019
0.0166	0.420	1.25	40	0.00	0.00	0.00	90	6.45	0.0005	0.011
0.0139	0.354	1.50	45	0.00	0.00	0.00	95	7.65	0.0002	0.005
0.0117	0.297	1.75	50	0.00	0.00	0.00				
0.0098	0.250	2.00	60	0.00	0.00	0.00				
0.0083	0.210	2.25	70	0.02	0.02	0.02				
0.0070	0.177	2.50	80	0.32	0.32	0.34				
0.0059	0.149	2.75	100	1.54	1.54	1.88				
0.0049	0.125	3.00	120	3.30	3.30	5.18				
0.0041	0.105	3.25	140	5.27	5.27	10.45				
0.0035	0.088	3.50	170	7.51	7.51	17.96				
0.0029	0.074	3.75	200	9.69	9.69	27.65				
0.0025	0.063	4.00	230	10.90	10.90	38.56				
0.0021	0.053	4.25	270	10.80	10.80	49.36				
0.00174	0.0442	4.50	325	9.50	9.50	58.86				
0.00146	0.0372	4.75	400	7.74	7.74	66.60				
0.00123	0.0313	5.00	450	6.13	6.13	72.73				
0.000986	0.0250	5.32	500	5.99	5.99	78.72				
0.000790	0.0201	5.64	635	4.42	4.42	83.14				
0.000615	0.0156	6.00		3.66	3.66	86.80				
0.000435	0.0110	6.50		3.57	3.57	90.37				
0.000308	0.00781	7.00		2.46	2.46	92.83				
0.000197	0.00500	7.65		2.16	2.16	95.00				
0.000077	0.00195	9.00		2.84	2.84	97.84				
0.000038	0.000977	10.00		1.41	1.41	99.25				
0.000019	0.000488	11.00		0.69	0.69	99.94				
0.000015	0.000375	11.38		0.06	0.06	100.00				
TOTALS				100.00	100.00	100.00				

Measure	Trask	Inman	Folk-Ward
Median, phi	4.27	4.27	4.27
Median, in.	0.0020	0.0020	0.0020
Median, mm	0.052	0.052	0.052
Mean, phi	4.23	4.58	4.48
Mean, in.	0.0021	0.0016	0.0018
Mean, mm	0.053	0.042	0.045
Sorting	1.647	1.145	1.279
Skewness	0.911	0.273	0.362
Kurtosis	0.258	1.036	1.327
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	27.65
Silt	>0.005 mm	67.34
Clay	<0.005 mm	5.00
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1956C Run 5, Sample 1
Depth, ft: 425.6-426.2



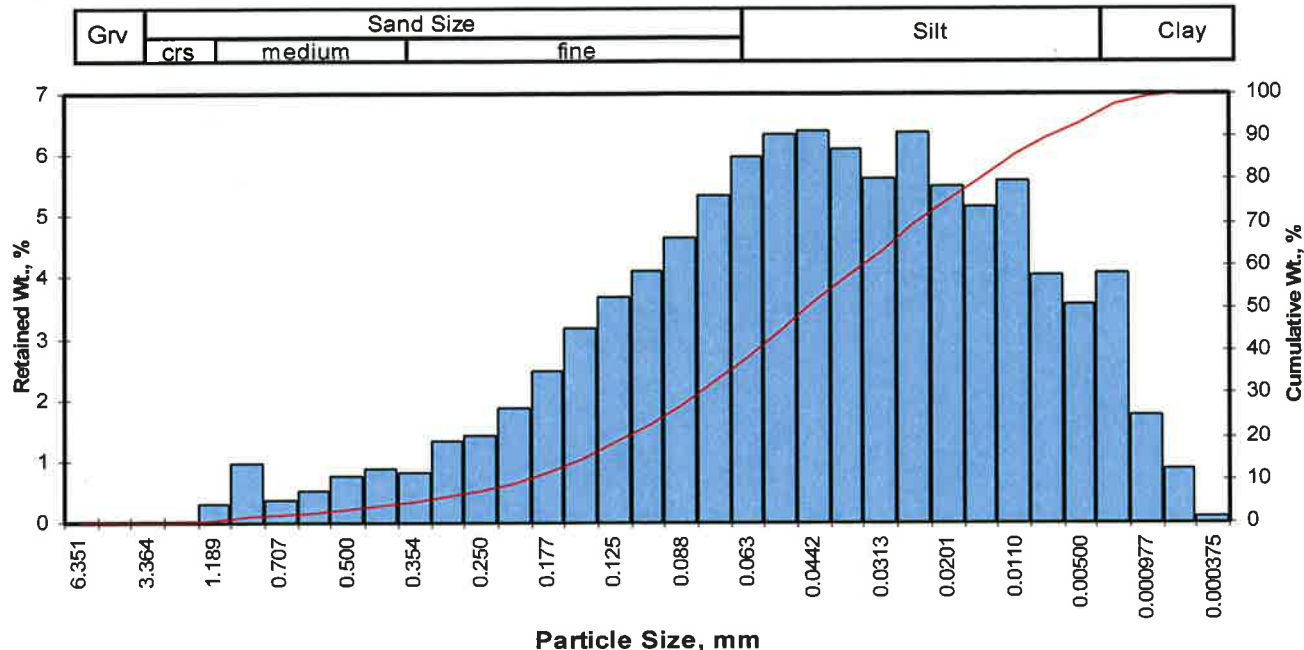
Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than			
Inches	Millimeters						Weight percent	Phi Value	Particle Size	
							Inches	Millimeters		
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	3.15	0.0044	0.113
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	3.59	0.0033	0.083
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	3.90	0.0026	0.067
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	4.25	0.0021	0.053
0.0468	1.189	-0.25	16	0.00	0.00	0.00	40	4.75	0.0015	0.037
0.0331	0.841	0.25	20	0.00	0.00	0.00	50	5.13	0.0011	0.029
0.0278	0.707	0.50	25	0.00	0.00	0.00	60	5.57	0.0008	0.021
0.0234	0.595	0.75	30	0.00	0.00	0.00	75	6.52	0.0004	0.011
0.0197	0.500	1.00	35	0.00	0.00	0.00	84	7.40	0.0002	0.006
0.0166	0.420	1.25	40	0.00	0.00	0.00	90	8.27	0.0001	0.003
0.0139	0.354	1.50	45	0.00	0.00	0.00	95	9.12	0.0001	0.002
0.0117	0.297	1.75	50	0.00	0.00	0.00				
0.0098	0.250	2.00	60	0.00	0.00	0.00				
0.0083	0.210	2.25	70	0.07	0.07	0.07				
0.0070	0.177	2.50	80	0.48	0.48	0.55				
0.0059	0.149	2.75	100	1.31	1.31	1.86				
0.0049	0.125	3.00	120	1.85	1.85	3.71				
0.0041	0.105	3.25	140	2.13	2.13	5.84				
0.0035	0.088	3.50	170	2.72	2.72	8.56				
0.0029	0.074	3.75	200	3.98	3.98	12.54				
0.0025	0.063	4.00	230	5.62	5.62	18.15				
0.0021	0.053	4.25	270	6.92	6.92	25.07				
0.00174	0.0442	4.50	325	7.52	7.52	32.59				
0.00146	0.0372	4.75	400	7.36	7.36	39.95				
0.00123	0.0313	5.00	450	6.89	6.89	46.84				
0.000986	0.0250	5.32	500	7.90	7.90	54.74				
0.000790	0.0201	5.64	635	6.75	6.75	61.49				
0.000615	0.0156	6.00		6.26	6.26	67.75				
0.000435	0.0110	6.50		7.04	7.04	74.78				
0.000308	0.00781	7.00		5.65	5.65	80.43				
0.000197	0.00500	7.65		5.73	5.73	86.16				
0.000077	0.00195	9.00		8.38	8.38	94.54				
0.000038	0.000977	10.00		3.76	3.76	98.30				
0.000019	0.000488	11.00		1.56	1.56	99.86				
0.000015	0.000375	11.38		0.14	0.14	100.00				
TOTALS				100.00	100.00	100.00				

Measure	Trask	Inman	Folk-Ward
Median, phi	5.13	5.13	5.13
Median, in.	0.0011	0.0011	0.0011
Median, mm	0.029	0.029	0.029
Mean, phi	4.98	5.65	5.48
Mean, in.	0.0013	0.0008	0.0009
Mean, mm	0.032	0.020	0.022
Sorting	2.197	1.749	1.779
Skewness	0.838	0.300	0.319
Kurtosis	0.262	0.707	1.077
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	12.54
Silt	>0.005 mm	73.63
Clay	<0.005 mm	13.84
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1956C Run 5, Sample 2
Depth, ft: 431.0-431.6



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than			
Inches	Millimeters						Weight percent	Phi Value	Particle Size	
									Inches	Millimeters
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	1.58	0.0132	0.334
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	2.33	0.0078	0.198
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	2.83	0.0055	0.141
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	3.38	0.0038	0.096
0.0468	1.189	-0.25	16	0.30	0.30	0.30	40	4.06	0.0024	0.060
0.0331	0.841	0.25	20	0.96	0.96	1.26	50	4.45	0.0018	0.046
0.0278	0.707	0.50	25	0.36	0.36	1.62	60	4.87	0.0013	0.034
0.0234	0.595	0.75	30	0.50	0.50	2.12	75	5.65	0.0008	0.020
0.0197	0.500	1.00	35	0.75	0.75	2.87	84	6.36	0.0005	0.012
0.0166	0.420	1.25	40	0.89	0.89	3.76	90	7.06	0.0003	0.007
0.0139	0.354	1.50	45	0.81	0.81	4.57	95	8.24	0.0001	0.003
0.0117	0.297	1.75	50	1.32	1.32	5.89				
0.0098	0.250	2.00	60	1.42	1.42	7.31				
0.0083	0.210	2.25	70	1.86	1.86	9.17				
0.0070	0.177	2.50	80	2.47	2.47	11.64				
0.0059	0.149	2.75	100	3.17	3.17	14.81				
0.0049	0.125	3.00	120	3.67	3.67	18.48				
0.0041	0.105	3.25	140	4.09	4.09	22.57				
0.0035	0.088	3.50	170	4.65	4.65	27.22				
0.0029	0.074	3.75	200	5.35	5.35	32.57				
0.0025	0.063	4.00	230	5.98	5.98	38.55				
0.0021	0.053	4.25	270	6.34	6.34	44.89				
0.00174	0.0442	4.50	325	6.40	6.40	51.29				
0.00146	0.0372	4.75	400	6.10	6.10	57.39				
0.00123	0.0313	5.00	450	5.62	5.62	63.01				
0.000986	0.0250	5.32	500	6.38	6.38	69.39				
0.000790	0.0201	5.64	635	5.50	5.50	74.89				
0.000615	0.0156	6.00		5.15	5.15	80.04				
0.000435	0.0110	6.50		5.57	5.57	85.61				
0.000308	0.00781	7.00		4.05	4.05	89.66				
0.000197	0.00500	7.65		3.55	3.55	93.21				
0.000077	0.00195	9.00		4.08	4.08	97.29				
0.000038	0.000977	10.00		1.76	1.76	99.05				
0.000019	0.000488	11.00		0.87	0.87	99.92				
0.000015	0.000375	11.38		0.08	0.08	100.00				
TOTALS				100.00	100.00	100.00				

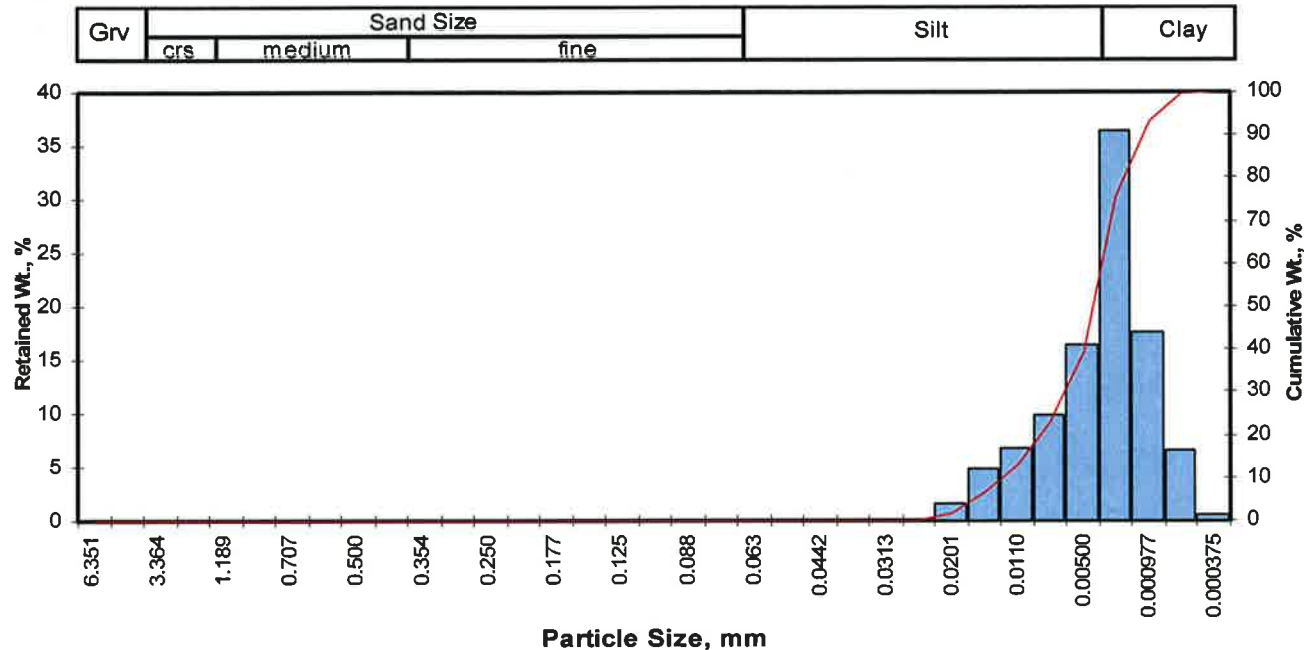
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	1.58	0.0132	0.334
10	2.33	0.0078	0.198
16	2.83	0.0055	0.141
25	3.38	0.0038	0.096
40	4.06	0.0024	0.060
50	4.45	0.0018	0.046
60	4.87	0.0013	0.034
75	5.65	0.0008	0.020
84	6.36	0.0005	0.012
90	7.06	0.0003	0.007
95	8.24	0.0001	0.003

Measure	Trask	Inman	Folk-Ward
Median, phi	4.45	4.45	4.45
Median, in.	0.0018	0.0018	0.0018
Median, mm	0.046	0.046	0.046
Mean, phi	4.11	4.59	4.55
Mean, in.	0.0023	0.0016	0.0017
Mean, mm	0.058	0.041	0.043
Sorting	2.194	1.762	1.890
Skewness	0.956	0.082	0.110
Kurtosis	0.199	0.889	1.204

Grain Size Description		Silt	
(ASTM-USCS Scale)		(based on Mean from Trask)	
Description	Retained on Sieve #	Weight Percent	
Gravel	4	0.00	
Coarse Sand	10	0.00	
Medium Sand	40	3.76	
Fine Sand	200	28.81	
Silt	>0.005 mm	60.64	
Clay	<0.005 mm	6.79	
Total		100	

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-1956C Run 6, Sample 1
Depth, ft: 1011.8-1012.4



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.00	0.00	0.00
0.0070	0.177	2.50	80	0.00	0.00	0.00
0.0059	0.149	2.75	100	0.00	0.00	0.00
0.0049	0.125	3.00	120	0.00	0.00	0.00
0.0041	0.105	3.25	140	0.00	0.00	0.00
0.0035	0.088	3.50	170	0.00	0.00	0.00
0.0029	0.074	3.75	200	0.00	0.00	0.00
0.0025	0.063	4.00	230	0.00	0.00	0.00
0.0021	0.053	4.25	270	0.00	0.00	0.00
0.00174	0.0442	4.50	325	0.00	0.00	0.00
0.00146	0.0372	4.75	400	0.00	0.00	0.00
0.00123	0.0313	5.00	450	0.00	0.00	0.00
0.000986	0.0250	5.32	500	0.02	0.02	0.02
0.000790	0.0201	5.64	635	1.49	1.49	1.51
0.000615	0.0156	6.00		4.74	4.74	6.25
0.000435	0.0110	6.50		6.64	6.64	12.90
0.000308	0.00781	7.00		9.83	9.84	22.73
0.000197	0.00500	7.65		16.40	16.41	39.14
0.000077	0.00195	9.00		36.30	36.32	75.46
0.000038	0.000977	10.00		17.50	17.51	92.97
0.000019	0.000488	11.00		6.51	6.51	99.48
0.000015	0.000375	11.38		0.52	0.52	100.00
TOTALS				99.90	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	5.90	0.0007	0.017
10	6.28	0.0005	0.013
16	6.66	0.0004	0.010
25	7.09	0.0003	0.007
40	7.68	0.0002	0.005
50	8.05	0.0001	0.004
60	8.42	0.0001	0.003
75	8.98	0.0001	0.002
84	9.49	0.0001	0.001
90	9.83	0.0000	0.001
95	10.31	0.0000	0.001

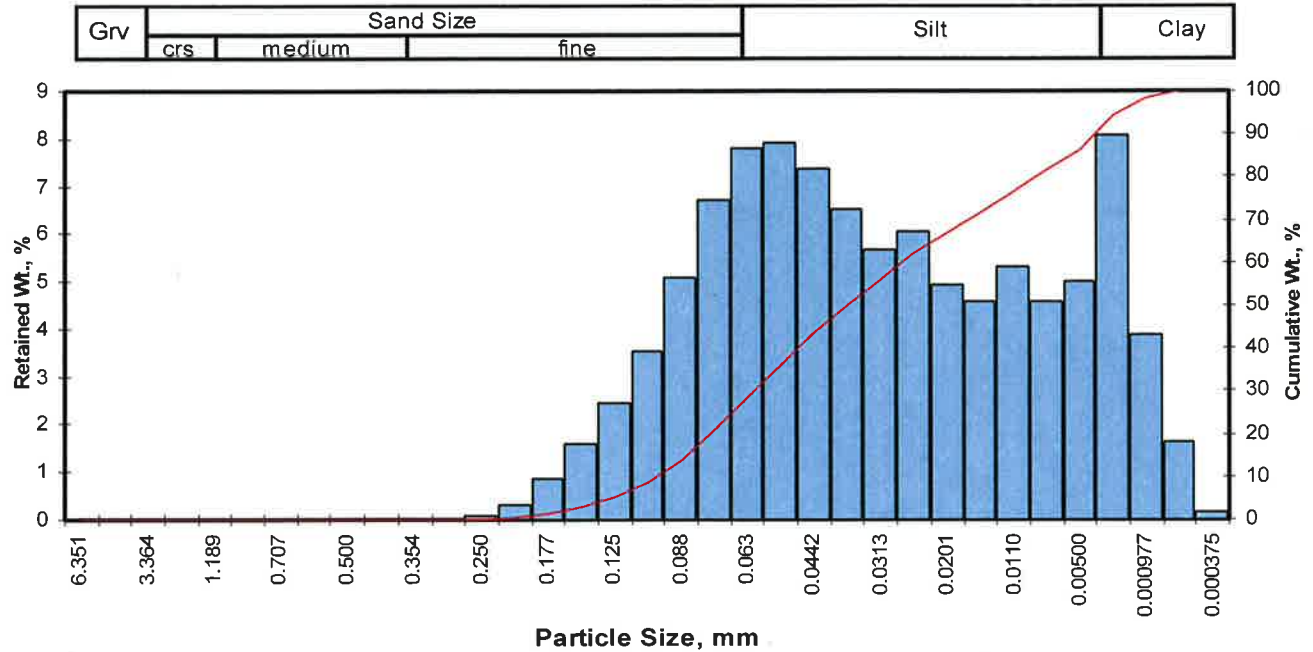
Measure	Trask	Inman	Folk-Ward
Median, phi	8.05	8.05	8.05
Median, in.	0.0001	0.0001	0.0001
Median, mm	0.004	0.004	0.004
Mean, phi	7.75	8.07	8.07
Mean, in.	0.0002	0.0001	0.0001
Mean, mm	0.005	0.004	0.004
Sorting	1.928	1.415	1.375
Skewness	1.010	0.016	0.021
Kurtosis	0.228	0.557	0.954

Grain Size Description	Clay
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	0.00
Silt	>0.005 mm	39.14
Clay	<0.005 mm	60.86
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-2169C Run 1, Sample 1
Depth, ft: 110.0-110.5



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.06	0.06	0.06
0.0083	0.210	2.25	70	0.32	0.32	0.38
0.0070	0.177	2.50	80	0.85	0.85	1.23
0.0059	0.149	2.75	100	1.60	1.60	2.83
0.0049	0.125	3.00	120	2.43	2.43	5.26
0.0041	0.105	3.25	140	3.54	3.54	8.80
0.0035	0.088	3.50	170	5.07	5.07	13.87
0.0029	0.074	3.75	200	6.71	6.71	20.58
0.0025	0.063	4.00	230	7.79	7.79	28.37
0.0021	0.053	4.25	270	7.92	7.92	36.29
0.00174	0.0442	4.50	325	7.37	7.37	43.66
0.00146	0.0372	4.75	400	6.51	6.51	50.17
0.00123	0.0313	5.00	450	5.65	5.65	55.82
0.000986	0.0250	5.32	500	6.07	6.07	61.89
0.000790	0.0201	5.64	635	4.94	4.94	66.83
0.000615	0.0156	6.00		4.56	4.56	71.39
0.000435	0.0110	6.50		5.32	5.32	76.71
0.000308	0.00781	7.00		4.59	4.59	81.30
0.000197	0.00500	7.65		5.01	5.01	86.31
0.000077	0.00195	9.00		8.07	8.07	94.38
0.000038	0.000977	10.00		3.87	3.87	98.25
0.000019	0.000488	11.00		1.61	1.61	99.86
0.000015	0.000375	11.38		0.14	0.14	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.97	0.0050	0.127
10	3.31	0.0040	0.101
16	3.58	0.0033	0.084
25	3.89	0.0027	0.067
40	4.38	0.0019	0.048
50	4.74	0.0015	0.037
60	5.22	0.0011	0.027
75	6.34	0.0005	0.012
84	7.35	0.0002	0.006
90	8.26	0.0001	0.003
95	9.16	0.0001	0.002

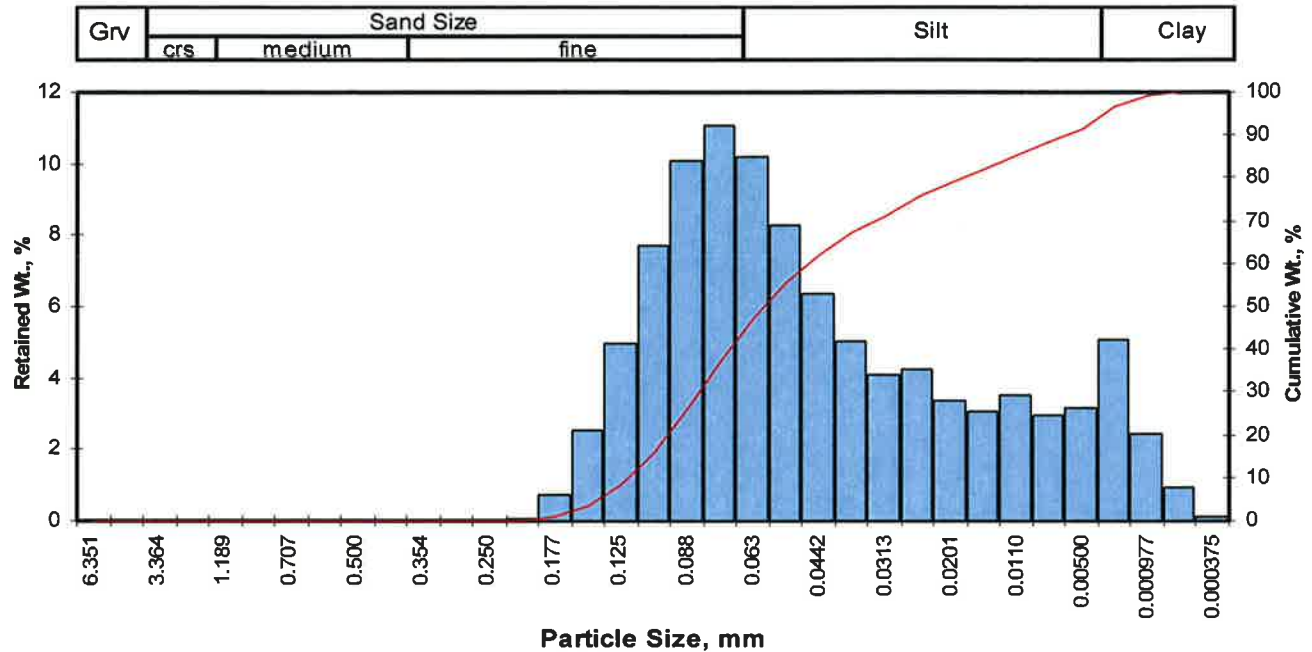
Measure	Trask	Inman	Folk-Ward
Median, phi	4.74	4.74	4.74
Median, in.	0.0015	0.0015	0.0015
Median, mm	0.037	0.037	0.037
Mean, phi	4.65	5.46	5.22
Mean, in.	0.0016	0.0009	0.0011
Mean, mm	0.040	0.023	0.027
Sorting	2.335	1.884	1.880
Skewness	0.773	0.382	0.405
Kurtosis	0.282	0.642	1.036

Grain Size Description	Silt
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	20.58
Silt	>0.005 mm	65.73
Clay	<0.005 mm	13.69
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-2169C Run 2, Sample 3
Depth, ft: 156.5-157.2



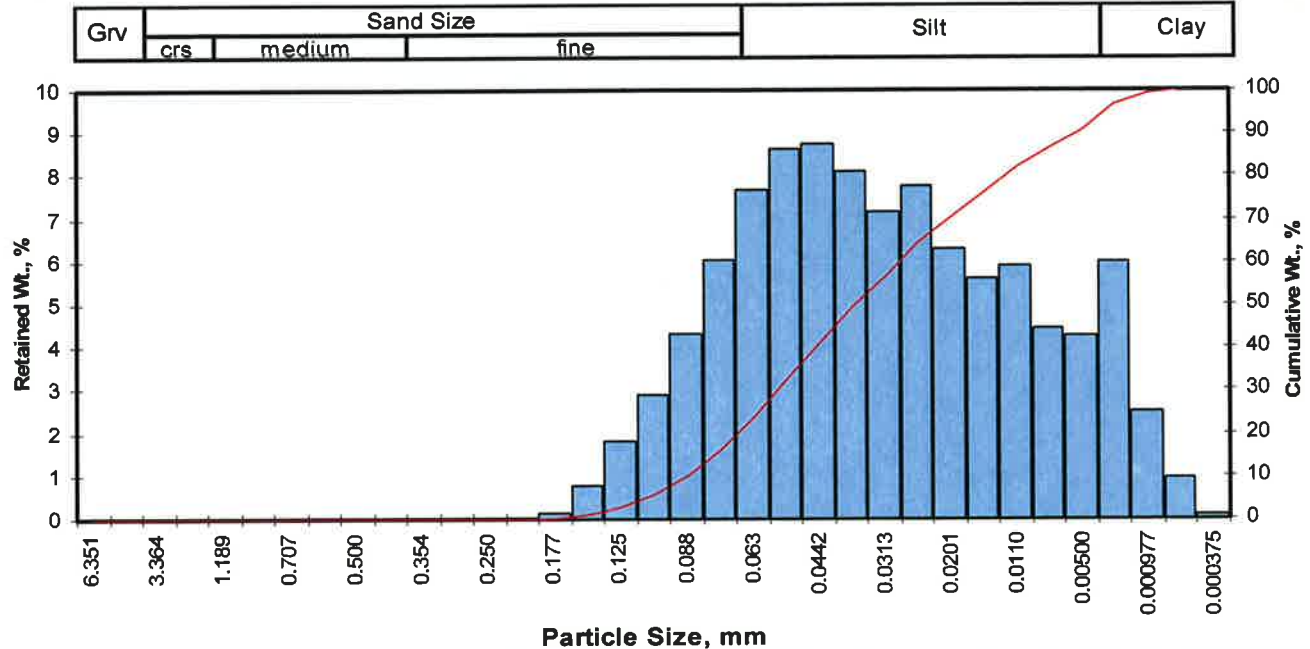
Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than			
Inches	Millimeters						Weight percent	Phi Value	Particle Size	
							Inches	Millimeters		
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	2.83	0.0055	0.140
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	3.05	0.0047	0.120
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	3.25	0.0041	0.105
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	3.47	0.0035	0.090
0.0468	1.189	-0.25	16	0.00	0.00	0.00	40	3.82	0.0028	0.071
0.0331	0.841	0.25	20	0.00	0.00	0.00	50	4.08	0.0023	0.059
0.0278	0.707	0.50	25	0.00	0.00	0.00	60	4.42	0.0018	0.047
0.0234	0.595	0.75	30	0.00	0.00	0.00	75	5.29	0.0010	0.026
0.0197	0.500	1.00	35	0.00	0.00	0.00	84	6.30	0.0005	0.013
0.0166	0.420	1.25	40	0.00	0.00	0.00	90	7.34	0.0002	0.006
0.0139	0.354	1.50	45	0.00	0.00	0.00	95	8.58	0.0001	0.003
0.0117	0.297	1.75	50	0.00	0.00	0.00				
0.0098	0.250	2.00	60	0.00	0.00	0.00				
0.0083	0.210	2.25	70	0.07	0.07	0.07				
0.0070	0.177	2.50	80	0.73	0.73	0.80				
0.0059	0.149	2.75	100	2.55	2.55	3.35				
0.0049	0.125	3.00	120	4.98	4.98	8.33				
0.0041	0.105	3.25	140	7.70	7.70	16.02				
0.0035	0.088	3.50	170	10.10	10.09	26.12				
0.0029	0.074	3.75	200	11.10	11.09	37.21				
0.0025	0.063	4.00	230	10.20	10.19	47.40				
0.0021	0.053	4.25	270	8.30	8.29	55.70				
0.00174	0.0442	4.50	325	6.38	6.38	62.08				
0.00146	0.0372	4.75	400	5.02	5.02	67.09				
0.00123	0.0313	5.00	450	4.11	4.11	71.20				
0.000986	0.0250	5.32	500	4.26	4.26	75.46				
0.000790	0.0201	5.64	635	3.36	3.36	78.81				
0.000615	0.0156	6.00		3.06	3.06	81.87				
0.000435	0.0110	6.50		3.52	3.52	85.39				
0.000308	0.00781	7.00		2.95	2.95	88.34				
0.000197	0.00500	7.65		3.15	3.15	91.49				
0.000077	0.00195	9.00		5.08	5.08	96.56				
0.000038	0.000977	10.00		2.41	2.41	98.97				
0.000019	0.000488	11.00		0.95	0.95	99.92				
0.000015	0.000375	11.38		0.08	0.08	100.00				
TOTALS				100.10	100.00	100.00				

Measure	Trask	Inman	Folk-Ward
Median, phi	4.08	4.08	4.08
Median, in.	0.0023	0.0023	0.0023
Median, mm	0.059	0.059	0.059
Mean, phi	4.11	4.78	4.54
Mean, in.	0.0023	0.0014	0.0017
Mean, mm	0.058	0.037	0.043
Sorting	1.875	1.527	1.634
Skewness	0.812	0.457	0.512
Kurtosis	0.282	0.883	1.300

Grain Size Description		Silt	
(ASTM-USCS Scale)		(based on Mean from Trask)	
Description	Retained on Sieve #	Weight Percent	
Gravel	4	0.00	
Coarse Sand	10	0.00	
Medium Sand	40	0.00	
Fine Sand	200	37.21	
Silt	>0.005 mm	54.28	
Clay	<0.005 mm	8.51	
Total		100	

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-2169C Run 3, Sample 1
Depth, ft: 355.0-356.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than			
Inches	Millimeters						Weight percent	Phi Value	Particle Size	
									Inches	Millimeters
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	3.20	0.0043	0.109
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	3.50	0.0035	0.088
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	3.75	0.0029	0.074
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	4.04	0.0024	0.061
0.0468	1.189	-0.25	16	0.00	0.00	0.00	40	4.47	0.0018	0.045
0.0331	0.841	0.25	20	0.00	0.00	0.00	50	4.78	0.0014	0.036
0.0278	0.707	0.50	25	0.00	0.00	0.00	60	5.15	0.0011	0.028
0.0234	0.595	0.75	30	0.00	0.00	0.00	75	5.94	0.0006	0.016
0.0197	0.500	1.00	35	0.00	0.00	0.00	84	6.75	0.0004	0.009
0.0166	0.420	1.25	40	0.00	0.00	0.00	90	7.57	0.0002	0.005
0.0139	0.354	1.50	45	0.00	0.00	0.00	95	8.67	0.0001	0.002
0.0117	0.297	1.75	50	0.00	0.00	0.00				
0.0098	0.250	2.00	60	0.00	0.00	0.00				
0.0083	0.210	2.25	70	0.00	0.00	0.00				
0.0070	0.177	2.50	80	0.13	0.13	0.13				
0.0059	0.149	2.75	100	0.79	0.79	0.92				
0.0049	0.125	3.00	120	1.80	1.80	2.73				
0.0041	0.105	3.25	140	2.90	2.90	5.63				
0.0035	0.088	3.50	170	4.30	4.30	9.93				
0.0029	0.074	3.75	200	6.04	6.04	15.97				
0.0025	0.063	4.00	230	7.67	7.67	23.64				
0.0021	0.053	4.25	270	8.62	8.62	32.26				
0.00174	0.0442	4.50	325	8.74	8.74	41.00				
0.00146	0.0372	4.75	400	8.10	8.10	49.10				
0.00123	0.0313	5.00	450	7.16	7.16	56.26				
0.000986	0.0250	5.32	500	7.75	7.75	64.01				
0.000790	0.0201	5.64	635	6.28	6.28	70.29				
0.000615	0.0156	6.00		5.59	5.59	75.88				
0.000435	0.0110	6.50		5.90	5.90	81.78				
0.000308	0.00781	7.00		4.43	4.43	86.21				
0.000197	0.00500	7.65		4.28	4.28	90.49				
0.000077	0.00195	9.00		5.97	5.97	96.46				
0.000038	0.000977	10.00		2.52	2.52	98.98				
0.000019	0.000488	11.00		0.94	0.94	99.92				
0.000015	0.000375	11.38		0.08	0.08	100.00				
TOTALS				100.00	100.00	100.00				

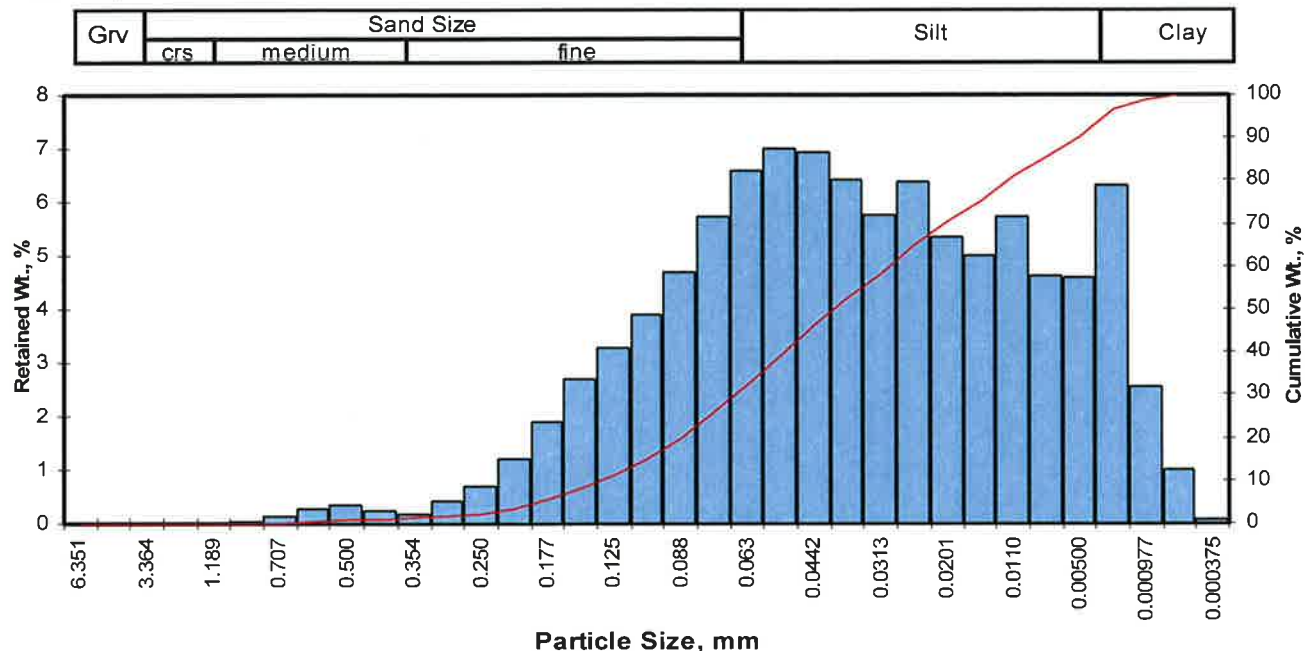
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	3.20	0.0043	0.109
10	3.50	0.0035	0.088
16	3.75	0.0029	0.074
25	4.04	0.0024	0.061
40	4.47	0.0018	0.045
50	4.78	0.0014	0.036
60	5.15	0.0011	0.028
75	5.94	0.0006	0.016
84	6.75	0.0004	0.009
90	7.57	0.0002	0.005
95	8.67	0.0001	0.002

Measure	Trask	Inman	Folk-Ward
Median, phi	4.78	4.78	4.78
Median, in.	0.0014	0.0014	0.0014
Median, mm	0.036	0.036	0.036
Mean, phi	4.70	5.25	5.09
Mean, in.	0.0015	0.0010	0.0012
Mean, mm	0.039	0.026	0.029
Sorting	1.934	1.500	1.579
Skewness	0.865	0.313	0.367
Kurtosis	0.269	0.824	1.178

Grain Size Description		Silt	
(ASTM-USCS Scale)		(based on Mean from Trask)	
Description	Retained on Sieve #	Weight Percent	
Gravel	4	0.00	
Coarse Sand	10	0.00	
Medium Sand	40	0.00	
Fine Sand	200	15.97	
Silt	>0.005 mm	74.53	
Clay	<0.005 mm	9.51	
Total		100	

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-2169C Run 4, Sample 1
Depth, ft: 470.0-470.5



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than			
Inches	Millimeters						Weight percent	Phi Value	Particle Size	
									Inches	Millimeters
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	2.44	0.0072	0.184
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	2.89	0.0053	0.135
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	3.29	0.0040	0.102
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	3.72	0.0030	0.076
0.0468	1.189	-0.25	16	0.00	0.00	0.00	40	4.27	0.0020	0.052
0.0331	0.841	0.25	20	0.05	0.05	0.05	50	4.65	0.0016	0.040
0.0278	0.707	0.50	25	0.15	0.15	0.20	60	5.08	0.0012	0.030
0.0234	0.595	0.75	30	0.28	0.28	0.48	75	5.99	0.0006	0.016
0.0197	0.500	1.00	35	0.33	0.33	0.81	84	6.84	0.0003	0.009
0.0166	0.420	1.25	40	0.24	0.24	1.05	90	7.64	0.0002	0.005
0.0139	0.354	1.50	45	0.18	0.18	1.23	95	8.71	0.0001	0.002
0.0117	0.297	1.75	50	0.40	0.40	1.63				
0.0098	0.250	2.00	60	0.69	0.69	2.32				
0.0083	0.210	2.25	70	1.21	1.21	3.53				
0.0070	0.177	2.50	80	1.91	1.91	5.44				
0.0059	0.149	2.75	100	2.69	2.69	8.13				
0.0049	0.125	3.00	120	3.29	3.29	11.42				
0.0041	0.105	3.25	140	3.88	3.88	15.30				
0.0035	0.088	3.50	170	4.70	4.70	20.00				
0.0029	0.074	3.75	200	5.72	5.72	25.72				
0.0025	0.063	4.00	230	6.60	6.60	32.32				
0.0021	0.053	4.25	270	7.00	7.00	39.32				
0.00174	0.0442	4.50	325	6.92	6.92	46.24				
0.00146	0.0372	4.75	400	6.41	6.41	52.65				
0.00123	0.0313	5.00	450	5.75	5.75	58.40				
0.000986	0.0250	5.32	500	6.37	6.37	64.77				
0.000790	0.0201	5.64	635	5.34	5.34	70.11				
0.000615	0.0156	6.00		4.99	4.99	75.10				
0.000435	0.0110	6.50		5.73	5.73	80.83				
0.000308	0.00781	7.00		4.62	4.62	85.45				
0.000197	0.00500	7.65		4.60	4.60	90.05				
0.000077	0.00195	9.00		6.31	6.31	96.36				
0.000038	0.000977	10.00		2.56	2.56	98.92				
0.000019	0.000488	11.00		1.00	1.00	99.92				
0.000015	0.000375	11.38		0.08	0.08	100.00				
TOTALS				100.00	100.00	100.00				

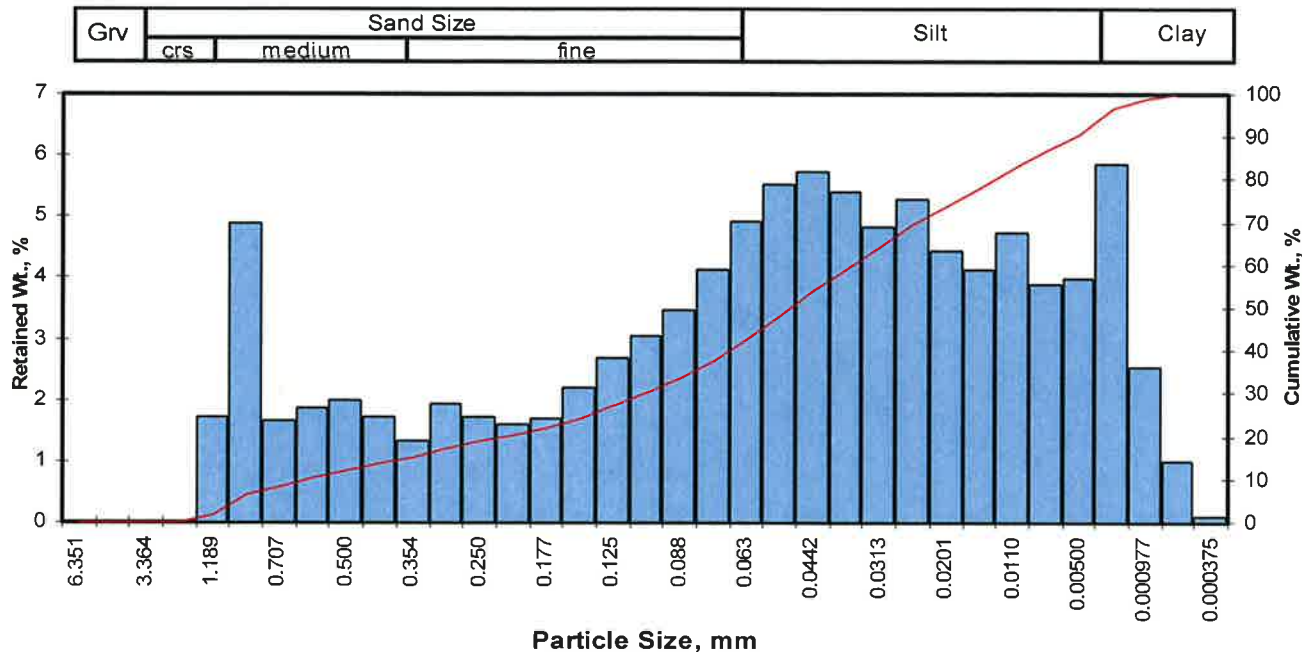
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.44	0.0072	0.184
10	2.89	0.0053	0.135
16	3.29	0.0040	0.102
25	3.72	0.0030	0.076
40	4.27	0.0020	0.052
50	4.65	0.0016	0.040
60	5.08	0.0012	0.030
75	5.99	0.0006	0.016
84	6.84	0.0003	0.009
90	7.64	0.0002	0.005
95	8.71	0.0001	0.002

Measure	Trask	Inman	Folk-Ward
Median, phi	4.65	4.65	4.65
Median, in.	0.0016	0.0016	0.0016
Median, mm	0.040	0.040	0.040
Mean, phi	4.45	5.07	4.93
Mean, in.	0.0018	0.0012	0.0013
Mean, mm	0.046	0.030	0.033
Sorting	2.200	1.778	1.838
Skewness	0.865	0.235	0.266
Kurtosis	0.232	0.762	1.129

Grain Size Description		Silt	
(ASTM-USCS Scale)		(based on Mean from Trask)	
Description	Retained on Sieve #	Weight Percent	
Gravel	4	0.00	
Coarse Sand	10	0.00	
Medium Sand	40	1.05	
Fine Sand	200	24.67	
Silt	>0.005 mm	64.33	
Clay	<0.005 mm	9.95	
Total		100	

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-2169C Run 5, Sample 1
Depth, ft: 608.9-609.5



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	1.72	1.72	1.72
0.0331	0.841	0.25	20	4.90	4.90	6.62
0.0278	0.707	0.50	25	1.67	1.67	8.29
0.0234	0.595	0.75	30	1.86	1.86	10.15
0.0197	0.500	1.00	35	1.99	1.99	12.14
0.0166	0.420	1.25	40	1.73	1.73	13.87
0.0139	0.354	1.50	45	1.32	1.32	15.19
0.0117	0.297	1.75	50	1.94	1.94	17.13
0.0098	0.250	2.00	60	1.71	1.71	18.84
0.0083	0.210	2.25	70	1.60	1.60	20.44
0.0070	0.177	2.50	80	1.70	1.70	22.14
0.0059	0.149	2.75	100	2.19	2.19	24.33
0.0049	0.125	3.00	120	2.70	2.70	27.03
0.0041	0.105	3.25	140	3.05	3.05	30.08
0.0035	0.088	3.50	170	3.46	3.46	33.54
0.0029	0.074	3.75	200	4.13	4.13	37.67
0.0025	0.063	4.00	230	4.92	4.92	42.59
0.0021	0.053	4.25	270	5.52	5.52	48.11
0.00174	0.0442	4.50	325	5.73	5.73	53.84
0.00146	0.0372	4.75	400	5.41	5.41	59.25
0.00123	0.0313	5.00	450	4.83	4.83	64.08
0.000986	0.0250	5.32	500	5.28	5.28	69.36
0.000790	0.0201	5.64	635	4.42	4.42	73.78
0.000615	0.0156	6.00		4.14	4.14	77.92
0.000435	0.0110	6.50		4.75	4.75	82.67
0.000308	0.00781	7.00		3.88	3.88	86.56
0.000197	0.00500	7.65		3.98	3.98	90.54
0.000077	0.00195	9.00		5.84	5.84	96.38
0.000038	0.000977	10.00		2.54	2.54	98.92
0.000019	0.000488	11.00		1.00	1.00	99.92
0.000015	0.000375	11.38		0.08	0.08	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	0.08	0.0371	0.943
10	0.73	0.0237	0.603
16	1.60	0.0129	0.329
25	2.81	0.0056	0.142
40	3.87	0.0027	0.068
50	4.33	0.0020	0.050
60	4.79	0.0014	0.036
75	5.75	0.0007	0.019
84	6.67	0.0004	0.010
90	7.56	0.0002	0.005
95	8.68	0.0001	0.002

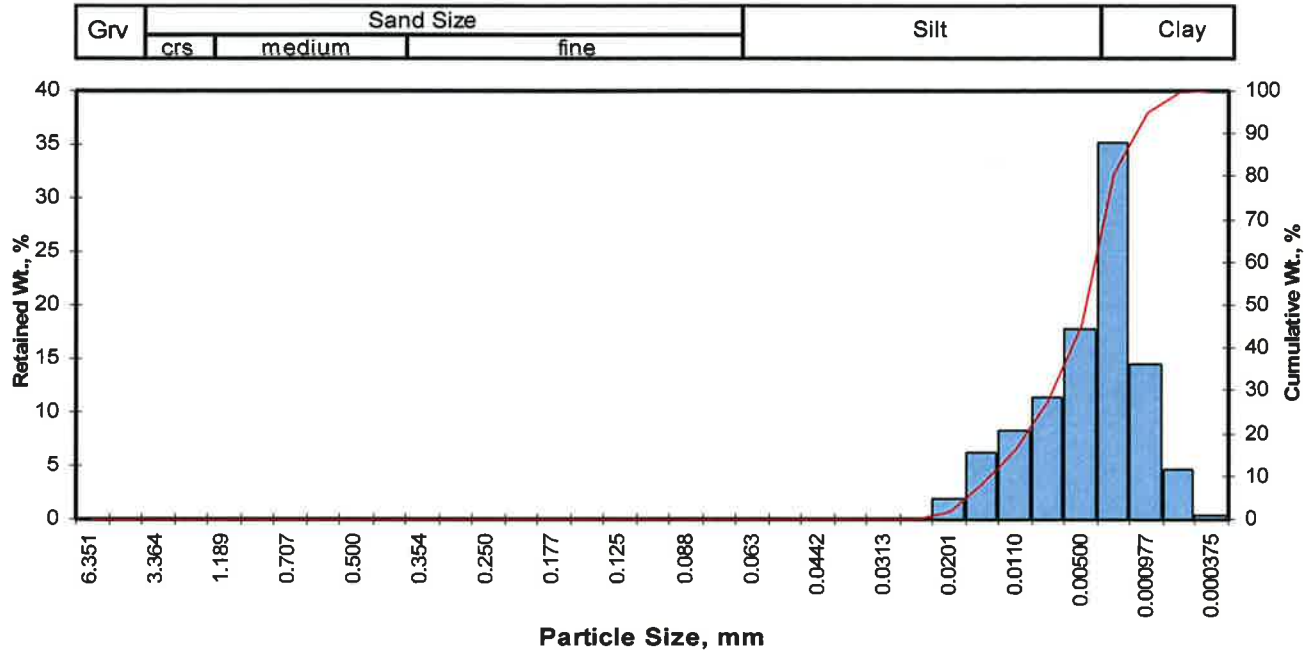
Measure	Trask	Inman	Folk-Ward
Median, phi	4.33	4.33	4.33
Median, in.	0.0020	0.0020	0.0020
Median, mm	0.050	0.050	0.050
Mean, phi	3.63	4.14	4.20
Mean, in.	0.0032	0.0022	0.0021
Mean, mm	0.081	0.057	0.054
Sorting	2.764	2.533	2.569
Skewness	1.038	-0.077	-0.033
Kurtosis	0.104	0.697	1.201

Grain Size Description	Fine sand
(ASTM-USCS Scale)	(based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	13.87
Fine Sand	200	23.80
Silt	>0.005 mm	52.86
Clay	<0.005 mm	9.46
Total		100

Client: Crow Butte Resources, Inc.
Project: Marsland Core
Project No: N/A

PTS File No: 43570
Sample ID: M-2169C Run 7, Sample 1
Depth, ft: 1135.5-1136.0



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent	Cumulative Weight Percent greater than				
Inches	Millimeters						Weight percent	Phi Value	Particle Size		
							Inches	Millimeters			
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00	5	5.82	0.0007	0.018	
0.1873	4.757	-2.25	4	0.00	0.00	0.00	10	6.12	0.0006	0.014	
0.1324	3.364	-1.75	6	0.00	0.00	0.00	16	6.48	0.0004	0.011	
0.0787	2.000	-1.00	10	0.00	0.00	0.00	25	6.88	0.0003	0.008	
0.0468	1.189	-0.25	16	0.00	0.00	0.00	40	7.45	0.0002	0.006	
0.0331	0.841	0.25	20	0.00	0.00	0.00	50	7.82	0.0002	0.004	
0.0278	0.707	0.50	25	0.00	0.00	0.00	60	8.21	0.0001	0.003	
0.0234	0.595	0.75	30	0.00	0.00	0.00	75	8.79	0.0001	0.002	
0.0197	0.500	1.00	35	0.00	0.00	0.00	84	9.24	0.0001	0.002	
0.0166	0.420	1.25	40	0.00	0.00	0.00	90	9.66	0.0000	0.001	
0.0139	0.354	1.50	45	0.00	0.00	0.00	95	10.02	0.0000	0.001	
0.0117	0.297	1.75	50	0.00	0.00	0.00					
0.0098	0.250	2.00	60	0.00	0.00	0.00					
0.0083	0.210	2.25	70	0.00	0.00	0.00					
0.0070	0.177	2.50	80	0.00	0.00	0.00					
0.0059	0.149	2.75	100	0.00	0.00	0.00					
0.0049	0.125	3.00	120	0.00	0.00	0.00					
0.0041	0.105	3.25	140	0.00	0.00	0.00					
0.0035	0.088	3.50	170	0.00	0.00	0.00					
0.0029	0.074	3.75	200	0.00	0.00	0.00					
0.0025	0.063	4.00	230	0.00	0.00	0.00					
0.0021	0.053	4.25	270	0.00	0.00	0.00					
0.00174	0.0442	4.50	325	0.00	0.00	0.00					
0.00146	0.0372	4.75	400	0.00	0.00	0.00					
0.00123	0.0313	5.00	450	0.00	0.00	0.00					
0.000986	0.0250	5.32	500	0.02	0.02	0.02					
0.000790	0.0201	5.64	635	1.86	1.86	1.88					
0.000615	0.0156	6.00		6.16	6.16	8.05					
0.000435	0.0110	6.50		8.34	8.34	16.39					
0.000308	0.00781	7.00		11.30	11.30	27.69					
0.000197	0.00500	7.65		17.70	17.70	45.40					
0.000077	0.00195	9.00		35.10	35.11	80.50					
0.000038	0.000977	10.00		14.40	14.40	94.91					
0.000019	0.000488	11.00		4.73	4.73	99.64					
0.000015	0.000375	11.38		0.36	0.36	100.00					
TOTALS				100.00	100.00	100.00					


Measure	Trask	Inman	Folk-Ward
Median, phi	7.82	7.82	7.82
Median, in.	0.0002	0.0002	0.0002
Median, mm	0.004	0.004	0.004
Mean, phi	7.54	7.86	7.85
Mean, in.	0.0002	0.0002	0.0002
Mean, mm	0.005	0.004	0.004
Sorting	1.936	1.383	1.327
Skewness	0.992	0.027	0.037
Kurtosis	0.236	0.518	0.902
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	0.00
Silt	>0.005 mm	45.40
Clay	<0.005 mm	54.60
Total		100



Final Test Report

Client: PTS Laboratories, Inc. MI#: 13383
Project: Marsland Core / PTS# 43570 Sample Type: Conventional Core
PO#: 13-349 Date: 10.03.13

Contact	Rachel Spitz
Address	PTS Laboratories, Inc.
	8100 Secura Way
	Santa Fe Springs, CA 90670
E-mail	rspitz@ptslabs.com
Phone	562.347.2500
Project ID:	Marsland Core / PTS# 43570 / PO# 13-349
Test Methods	XRD (B&C) (x30)
Calibration Date	10.03.13
MI Lab Supervisor	
	Timothy B. Murphy

CONDITIONS AND QUALIFICATIONS

Mineralogy, Inc. will endeavor to provide accurate and reliable laboratory measurements of the samples provided by the client. The results of any x-ray diffraction, petrographic or core analysis test are necessarily influenced by the condition and selection of the samples to be analyzed. It should be recognized that geological samples are commonly heterogeneous and lack uniform properties. Mineralogical, geochemical and/or petrographic data obtained for a specific sample provides compositional data pertinent to that specific sampling location. Such "site-specific data" may fail to provide adequate characterization of the range of compositional variability possible within a given project area, thus the "projection" of these laboratory findings and values to adjoining, "untested" areas of the formation or project area is inherently risky, and exceeds the scope of the laboratory work request. Hence, Mineralogy, Inc. shall not assume any liability risk or responsibility for any loss or potential failure associated with the application of "site or sample-specific laboratory data" to "untested" areas of the formation or project area. Unless otherwise directed, the samples selected for analysis will be chosen to reflect a visually representative portion of the bulk sample submitted for analysis. Where provided, the interpretation of x-ray diffraction, petrographic or core analysis results constitutes the best geological judgment of Mineralogy, Inc., and is subject to the sampling limitations described above, and the detection limits inherent to semi-quantitative and/or qualitative mineralogical and microscopic analysis. Mineralogy, Inc. assumes no responsibility nor offers any guarantee of the productivity, suitability or performance of any oil or gas well, hydrocarbon recovery process, dimension stone, and/or ore material based upon the data or conclusions presented in this report.



TABLE I-1
X-RAY DIFFRACTION ANALYSIS

Client: PTS Laboratories, Inc. MI#: 13383
Project ID: Marsland Core / PTS# 43570 / PO# 13-349 Sample Type: Conventional Core

X-Ray Diffraction Results						
Mineral Constituents	Sample ID	M-533C.Run 1.S1	M-533C.Run 1.S2	M-533C.Run 3.S1	M-533C.Run 3.S2	M-533C.Run 5.S1
	Lab ID	13383-01	13383-02	13383-03	13383-04	13383-05
Chemical Formula		Relative Abundance (%)				
Quartz	SiO ₂	63	17	4	9	29
Plagioclase Feldspar	(Na _{0.26} Ca _{0.24})Al _{0.735} Si _{1.265} O ₄	27	12	4	11	6
K-Feldspar - Microcline	KAlSi ₃ O ₈	7	5	1	2	4
Calcite	CaCO ₃				6	
Ferroan Dolomite	Ca(Mg _{0.67} Fe _{0.33})(CO ₃) ₂	trc				
Siderite	FeCO ₃					
Halite	NaCl			trc		
Fluorapatite	Ca ₅ F(PO ₄) ₃		1		1	1
Augite	Ca(Fe,Mg)Si ₂ O ₆	trc		trc		1
Hornblende	Ca ₂ (Mg,Fe) ₅ (Si,Al) ₈ O ₂₂ (OH) ₆	trc				trc
Gypsum	CaSO ₄ · 2H ₂ O					
Goethite	alpha-FeOOH	trc				
Clinoptilolite	(Na,K,Ca) ₆ (Si,Al) ₃₆ O ₇₂ · 20H ₂ O		trc			1
Kaolinite	Al ₂ Si ₂ O ₅ (OH) ₄					1
Chlorite	(Mg,Al) ₃ (Si,Al) ₄ O ₁₀ (OH) ₈	trc	trc			2
Illite/Mica	KAl ₂ (Si ₃ AlO ₁₀)(OH) ₂	trc	5	1	1	4
Montmorillonite	(Na,Ca) _{0.3} (Al,Mg) ₂ Si ₄ O ₁₀ (OH) ₂ · xH ₂ O				7	
Mixed-Layered Illite/Smectite	K _{0.5} Al ₂ (Si,Al) ₄ O ₁₀ (OH) ₂ · 2H ₂ O	3	30	8		33
Amorphous			30	82	63	18
TOTAL		100	100	100	100	100
% Illite Layers in ML Illite/Smectite		10%	10%	10%		10%



TABLE I-2
X-RAY DIFFRACTION ANALYSIS

Client: PTS Laboratories, Inc. MI#: 13383
Project ID: Marsland Core / PTS# 43570 / PO# 13-349 Sample Type: Conventional Core

X-Ray Diffraction Results		Sample ID	M-1635C.Run 1.S1	M-1635C.Run 1.S2	M-1635C.Run 2.S1	M-1635C.Run 2.S2	M-1635C.Run 3.S1
Mineral Constituents	Chemical Formula	Lab ID	13383-06	13383-07	13383-08	13383-09	13383-10
Quartz	SiO ₂		12	15	4	9	9
Plagioclase Feldspar	(Na _{0.28} Ca _{0.24})Al _{0.735} Si _{1.265} O ₄		9	13	3	11	9
K-Feldspar - Microcline	KAlSi ₃ O ₈		3	3	1	3	2
Calcite	CaCO ₃		50	46			15
Ferroan Dolomite	Ca(Mg _{0.67} Fe _{0.33})(CO ₃) ₂						trc
Siderite	FeCO ₃						
Halite	NaCl						
Fluorapatite	Ca ₅ F(PO ₄) ₃						
Augite	Ca(Fe,Mg)Si ₂ O ₆						
Hornblende	Ca ₂ (Mg,Fe) ₅ (Si,Al) ₈ O ₂₂ (OH) ₆						
Gypsum	CaSO ₄ · 2H ₂ O						
Goethite	alpha-FeOOH						
Clinoptilolite	(Na,K,Ca) ₆ (Si,Al) ₃₆ O ₇₂ · 20H ₂ O						
Kaolinite	Al ₂ Si ₂ O ₅ (OH) ₄						
Chlorite	(Mg,Al) ₆ (Si,Al) ₄ O ₁₀ (OH) ₈		1		1		trc
Illite/Mica	KAl ₂ (Si ₃ AlO ₁₀)(OH) ₂		1	1	1	1	3
Montmorillonite	(Na,Ca) _{0.3} (Al,Mg) ₂ Si ₄ O ₁₀ (OH) ₂ · xH ₂ O				6	9	34
Mixed-Layered Illite/Smectite	K _{0.5} Al ₂ (Si,Al) ₄ O ₁₀ (OH) ₂ · 2H ₂ O		8	5			
Amorphous			16	17	84	67	28
TOTAL			100	100	100	100	100
% Illite Layers in ML Illite/Smectite	+/- 5%		5%	10%			



TABLE I-3
X-RAY DIFFRACTION ANALYSIS

Client: PTS Laboratories, Inc. MI#: 13383
Project ID: Marsland Core / PTS# 43570 / PO# 13-349 Sample Type: Conventional Core

X-Ray Diffraction Results						
Mineral Constituents	Sample ID	M-1635C.Run 6.S1	M-1912C.Run 1.S1	M-1912C.Run 2.S1	M-1912C.Run 3.S1	M-1912C.Run 3.S2
	Lab ID	13383-11	13383-12	13383-13	13383-14	13383-15
Chemical Formula		Relative Abundance (%)				
Quartz	SiO ₂	21	50	40	17	16
Plagioclase Feldspar	(Na _{0.26} Ca _{0.24})Al _{0.735} Si _{1.265} O ₄	5	22	27	17	14
K-Feldspar - Microcline	KAlSi ₃ O ₈	2	9	7	5	5
Calcite	CaCO ₃					9
Ferroan Dolomite	Ca(Mg _{0.67} Fe _{0.33})(CO ₃) ₂	1	1			
Siderite	FeCO ₃					
Pyrite	FeS ₂					1
Fluorapatite	Ca ₅ F(PO ₄) ₃	trc				
Augite	Ca(Fe,Mg)Si ₂ O ₆					
Hornblende	Ca ₂ (Mg,Fe) ₅ (Si,Al) ₈ O ₂₂ (OH) ₆		1		1	
Gypsum	CaSO ₄ · 2H ₂ O					
Goethite	alpha-FeOOH					
Glinoptilolite	(Na,K,Ca) ₈ (Si,Al) ₃₅ O ₇₂ · 20H ₂ O					
Kaolinite	Al ₂ Si ₂ O ₅ (OH) ₄					
Chlorite	(Mg,Al) ₆ (Si,Al) ₄ O ₁₀ (OH) ₈	5			trc	
Illite/Mica	KAl ₂ (Si ₃ AlO ₁₀)(OH) ₂	4	trc	1	1	1
Montmorillonite	(Na,Ca) _{0.3} (Al,Mg) ₂ Si ₄ O ₁₀ (OH) ₂ · xH ₂ O					
Mixed-Layered Illite/Smectite	K _{0.5} Al ₂ (Si,Al) ₄ O ₁₀ (OH) ₂ · 2H ₂ O	42	5	7	27	20
Amorphous		20	12	18	32	34
		100	100	100	100	100
TOTAL		20%	20%	20%	20%	20%
% Illite Layers in ML Illite/Smectite						
+/- 5%						



TABLE I-4
X-RAY DIFFRACTION ANALYSIS

Client: PTS Laboratories, Inc. MI#: 13383
Project ID: Marsland Core / PTS# 43570 / PO# 13-349 Sample Type: Conventional Core

X-Ray Diffraction Results						
Mineral Constituents	Sample ID	M-1912C.Run 4.S1	M-1912C.Run 4.S2	M-1956C.Run 1.S1	M-1956C.Run 3.S1	M-1956C.Run 4.S1
	Lab ID	13383-16	13383-17	13383-18	13383-19	13383-20
Chemical Formula		Relative Abundance (%)				
Quartz	SiO ₂	22	38	64	13	13
Plagioclase Feldspar	(Na _{0.26} Ca _{0.24})Al _{0.735} Si _{1.265} O ₄	4	8	22	13	14
K-Feldspar - Microcline	KAlSi ₃ O ₈	3	10	9	5	1
Calcite	CaCO ₃		1	1	1	9
Ferroan Dolomite	Ca(Mg _{0.67} Fe _{0.33})(CO ₃) ₂	1	trc	1		
Siderite	FeCO ₃					
Pyrite	FeS ₂					
Fluorapatite	Ca ₅ F(PO ₄) ₃					
Augite	Ca(Fe, Mg)Si ₂ O ₆			trc	trc	
Hornblende	Ca ₂ (Mg, Fe) ₅ (Si, Al) ₈ O ₂₂ (OH) ₂					
Gypsum	CaSO ₄ · 2H ₂ O					
Goethite	alpha-FeOOH			trc		
Clinoptilolite	(Na, K, Ca) ₃ (Si, Al) ₃ O ₇ · 2H ₂ O					
Kaolinite	Al ₂ Si ₂ O ₅ (OH) ₄					
Chlorite	(Mg, Al) ₃ (Si, Al) ₄ O ₁₀ (OH) ₂	1				
Illite/Mica	KAl ₂ (Si ₃ AlO ₁₀)(OH) ₂	4	3	trc	5	1
Montmorillonite	(Na, Ca) _{0.33} (Al, Mg) ₂ Si ₄ O ₁₀ (OH) ₂ · xH ₂ O					22
Mixed-Layered Illite/Smectite	K _{0.5} Al ₂ (Si, Al) ₄ O ₁₀ (OH) ₂ · 2H ₂ O	45	25	3	21	
Amorphous		20	15		42	40
TOTAL		100	100	100	100	100
% Illite Layers in ML Illite/Smectite		10%	10%	10%	15%	



TABLE I-5
X-RAY DIFFRACTION ANALYSIS

Client: PTS Laboratories, Inc. MI#: 13383
Project ID: Marsland Core / PTS# 43570 / PO# 13-349 Sample Type: Conventional Core


X-Ray Diffraction Results						
Mineral Constituents	Sample ID		Relative Abundance (%)			
	Lab ID	Chemical Formula	13383-21	13383-22	13383-23	13383-24
Quartz		SiO ₂	12	12	4	22
Plagioclase Feldspar		(Na _{0.26} Ca _{0.24})Al _{0.735} Si _{1.265} O ₄	15	12	5	4
K-Feldspar - Microcline		KAlSi ₃ O ₈	1	3	1	1
Calcite		CaCO ₃		10	58	trc
Ferroan Dolomite		Ca(Mg _{0.67} Fe _{0.33})(CO ₃) ₂				56
Siderite		FeCO ₃				1
Halite		NaCl				
Fluorapatite		Ca ₅ F(PO ₄) ₃				
Augite		Ca(Fe,Mg)Si ₂ O ₆				
Hornblende		Ca ₂ (Mg,Fe) ₅ (Si,Al) ₈ O ₂₂ (OH) ₆	1			
Gypsum		CaSO ₄ · 2H ₂ O				
Goethite		alpha-FeOOH				
Clinoptilolite		(Na,K,Ca) ₆ (Si,Al) ₃₆ O ₇₂ · 20H ₂ O				
Kaolinite		Al ₂ Si ₂ O ₅ (OH) ₄				2
Chlorite		(Mg,Al) ₆ (Si,Al) ₄ O ₁₀ (OH) ₈				2
Illite/Mica		KAl ₂ (Si ₃ AlO ₁₀)(OH) ₂	1	2	1	10
Montmorillonite		(Na,Ca) _{0.3} (Al,Mg) ₂ Si ₄ O ₁₀ (OH) ₂ · xH ₂ O		29		
Mixed-Layered Illite/Smectite		K _{0.5} Al ₂ (Si,Al) ₄ O ₁₀ (OH) ₂ · 2H ₂ O	25		9	37
Amorphous			45	32	22	22
						15
TOTAL			100	100	100	100
% Illite Layers in ML Illite/Smectite		+/- 5%	20%		10%	30%
						15%



TABLE I-6
X-RAY DIFFRACTION ANALYSIS

Client: PTS Laboratories, Inc. MI#: 13383
Project ID: Marsland Core / PTS# 43570 / PO# 13-349 Sample Type: Conventional Core

X-Ray Diffraction Results						
Mineral Constituents	Sample ID		M-2169C.Run 2.S3	M-2169C.Run 3.S1	M-2169C.Run 4.S1	M-2169C.Run 5.S1
	Lab ID	Chemical Formula	13383-26	13383-27	13383-28	13383-29
			Relative Abundance (%)			
Quartz		SiO ₂	21	5	12	13
Plagioclase Feldspar		(Na _{0.26} Ca _{0.24})Al _{0.75} Si _{1.25} O ₄	16	7	11	13
K-Feldspar - Microcline		KAlSi ₃ O ₈	3	1	2	2
Calcite		CaCO ₃	trc	2	6	11
Ferroan Dolomite		Ca(Mg _{0.67} Fe _{0.33})(CO ₃) ₂				trc
Siderite		FeCO ₃				2
Halite		NaCl		trc		
Fluorapatite		Ca ₅ F(PO ₄) ₃				
Augite		Ca(Fe,Mg)Si ₂ O ₆				
Hornblende		Ca ₂ (Mg,Fe) ₅ (Si,Al) ₈ O ₂₂ (OH) ₆	trc	trc		
Gypsum		CaSO ₄ · 2H ₂ O		trc		
Goethite		alpha-FeOOH				
Clinoptilolite		(Na,K,Ca) ₆ (Si,Al) ₃₅ O ₇₂ · 20H ₂ O				
Kaolinite		Al ₂ Si ₂ O ₅ (OH) ₄				2
Chlorite		(Mg,Al) ₃ (Si,Al) ₄ O ₁₀ (OH) ₂				2
Illite/Mica		KAl ₂ (Si ₃ AlO ₁₀)(OH) ₂	2	1	1	4
Montmorillonite		(Na,Ca) _{0.3} (Al,Mg) ₂ Si ₄ O ₁₀ (OH) ₂ · xH ₂ O		19	28	25
Mixed-Layered Illite/Smectite		K _{0.5} Al ₂ (Si,Al) ₄ O ₁₀ (OH) ₂ · 2H ₂ O	13			30
Amorphous			45	65	40	35
						28
TOTAL			100	100	100	100
% Illite Layers in ML Illite/Smectite		+/- 5%	10%			10%


COMPANY PTS Laboratories, Inc.				ANALYSIS REQUEST												PO# 13-349 TURNAROUND TIME 24 HOURS 5 DAYS 48 HOURS NORMAL 72 HOURS OTHER:	
ADDRESS CITY ZIP CODE 8100 Secura Way, Santa Fe Springs, CA 90670																	
PROJECT MANAGER Rachel Spitz																	
PROJECT NAME Marsland Core																SAMPLE INTEGRITY (CHECK): INTACT ON ICE	
PROJECT NUMBER N/A																PTS QUOTE NO.	
SITE LOCATION N/A																PTS FILE: 43570	
SAMPLER SIGNATURE 																COMMENTS	
SAMPLE ID NUMBER	DATE	TIME	DEPTH, FT	NUMBER OF SAMPLES													
M-1912C Run 1, Sample 1	20130814	N/A	63.0-64.0	1	X												
M-1912C Run 2, Sample 1	20130814	N/A	130.7-131.7	1	X												
M-1912C Run 3, Sample 1	20130814	N/A	255.0-255.5	1	X												
M-1912C Run 3, Sample 2	20130814	N/A	260.4-260.9	1	X												
M-1912C Run 4, Sample 1	20130814	N/A	974.5-975.0	1	X												
M-1912C Run 4, Sample 2	20130814	N/A	968.7-969.7	1	X												
M-1956C Run 1, Sample 1	20130819	N/A	42.0-43.0	1	X												
M-1956C Run 3, Sample 1	20130819	N/A	78.0-79.0	1	X												
M-1956C Run 4, Sample 1	20130819	N/A	196.5-197.1	1	X												
M-1956C Run 4, Sample 2	20130819	N/A	202.0-202.5	1	X												
M-1956C Run 5, Sample 1	20130819	N/A	425.6-426.2	1	X												
1. RELINQUISHED BY				2. RECEIVED BY				3. RELINQUISHED BY				4. RECEIVED BY					
COMPANY PTS LABS				COMPANY PTS LABS				COMPANY PTS LABS				COMPANY PTS LABS					
DATE TIME 9/9/13 16:30				DATE TIME				DATE TIME				DATE TIME					

CHAIN OF CUSTODY RECORD PAGE 3 OF 3

PTS Laboratories, Inc. • 8100 Secura Way • Santa Fe Sp

COMPANY Crow Butte Resources, ADDRESS 86 Crow Butte Rd Crawford, NE 69339 PROJECT MANAGER Wade Beins PROJECT NAME Marsland PROJECT NUMBER (308)665-2341 PHONE NUMBER (308)665-2215x113 FAX NUMBER				ANALYSIS REQUEST TURNAROUND TIME 24 HOURS <input type="checkbox"/> 48 HOURS <input type="checkbox"/> 72 HOURS <input checked="" type="checkbox"/> 5 DAYS <input type="checkbox"/> NORMAL <input checked="" type="checkbox"/> OTHER: _____ SAMPLE INTEGRITY (CHECK): INTACT <input checked="" type="checkbox"/> ON IOE _____ PTS QUOTE NO. _____ PTS FILE: 43570 COMMENTS													
SITE LOCATION M-1912C SAMPLER SIGNATURE <i>Wade Beins</i>				PO# _____ TOC: WALKLEY-BLACK GRAIN SIZE DISTRIBUTION, ASTM D 422/425/426/427/428/429/430/431/432/433/434/435/436/437/438/439/440/441/442/443/444/445/446/447/448/449/450/451/452/453/454/455/456/457/458/459/460/461/462/463/464/465/466/467/468/469/470/471/472/473/474/475/476/477/478/479/480/481/482/483/484/485/486/487/488/489/490/491/492/493/494/495/496/497/498/499/500/501/502/503/504/505/506/507/508/509/510/511/512/513/514/515/516/517/518/519/520/521/522/523/524/525/526/527/528/529/530/531/532/533/534/535/536/537/538/539/540/541/542/543/544/545/546/547/548/549/550/551/552/553/554/555/556/557/558/559/560/561/562/563/564/565/566/567/568/569/570/571/572/573/574/575/576/577/578/579/580/581/582/583/584/585/586/587/588/589/590/591/592/593/594/595/596/597/598/599/600/601/602/603/604/605/606/607/608/609/610/611/612/613/614/615/616/617/618/619/620/621/622/623/624/625/626/627/628/629/630/631/632/633/634/635/636/637/638/639/640/641/642/643/644/645/646/647/648/649/650/651/652/653/654/655/656/657/658/659/660/661/662/663/664/665/666/667/668/669/670/671/672/673/674/675/676/677/678/679/680/681/682/683/684/685/686/687/688/689/690/691/692/693/694/695/696/697/698/699/700/701/702/703/704/705/706/707/708/709/710/711/712/713/714/715/716/717/718/719/720/721/722/723/724/725/726/727/728/729/730/731/732/733/734/735/736/737/738/739/740/741/742/743/744/745/746/747/748/749/750/751/752/753/754/755/756/757/758/759/760/761/762/763/764/765/766/767/768/769/770/771/772/773/774/775/776/777/778/779/780/781/782/783/784/785/786/787/788/789/790/791/792/793/794/795/796/797/798/799/800/801/802/803/804/805/806/807/808/809/810/811/812/813/814/815/816/817/818/819/820/821/822/823/824/825/826/827/828/829/830/831/832/833/834/835/836/837/838/839/840/841/842/843/844/845/846/847/848/849/850/851/852/853/854/855/856/857/858/859/860/861/862/863/864/865/866/867/868/869/870/871/872/873/874/875/876/877/878/879/880/881/882/883/884/885/886/887/888/889/890/891/892/893/894/895/896/897/898/899/900/901/902/903/904/905/906/907/908/909/910/911/912/913/914/915/916/917/918/919/920/921/922/923/924/925/926/927/928/929/930/931/932/933/934/935/936/937/938/939/940/941/942/943/944/945/946/947/948/949/950/951/952/953/954/955/956/957/958/959/960/961/962/963/964/965/966/967/968/969/970/971/972/973/974/975/976/977/978/979/980/981/982/983/984/985/986/987/988/989/990/991/992/993/994/995/996/997/998/999/1000/1001/1002/1003/1004/1005/1006/1007/1008/1009/1010/1011/1012/1013/1014/1015/1016/1017/1018/1019/1020/1021/1022/1023/1024/1025/1026/1027/1028/1029/1030/1031/1032/1033/1034/1035/1036/1037/1038/1039/1040/1041/1042/1043/1044/1045/1046/1047/1048/1049/1050/1051/1052/1053/1054/1055/1056/1057/1058/1059/1060/1061/1062/1063/1064/1065/1066/1067/1068/1069/1070/1071/1072/1073/1074/1075/1076/1077/1078/1079/1080/1081/1082/1083/1084/1085/1086/1087/1088/1089/1090/1091/1092/1093/1094/1095/1096/1097/1098/1099/1100/1101/1102/1103/1104/1105/1106/1107/1108/1109/1110/1111/1112/1113/1114/1115/1116/1117/1118/1119/1120/1121/1122/1123/1124/1125/1126/1127/1128/1129/1130/1131/1132/1133/1134/1135/1136/1137/1138/1139/1140/1141/1142/1143/1144/1145/1146/1147/1148/1149/1150/1151/1152/1153/1154/1155/1156/1157/1158/1159/1160/1161/1162/1163/1164/1165/1166/1167/1168/1169/1170/1171/1172/1173/1174/1175/1176/1177/1178/1179/1180/1181/1182/1183/1184/1185/1186/1187/1188/1189/1190/1191/1192/1193/1194/1195/1196/1197/1198/1199/1200/1201/1202/1203/1204/1205/1206/1207/1208/1209/1210/1211/1212/1213/1214/1215/1216/1217/1218/1219/1220/1221/1222/1223/1224/1225/1226/1227/1228/1229/1230/1231/1232/1233/1234/1235/1236/1237/1238/1239/1240/1241/1242/1243/1244/1245/1246/1247/1248/1249/1250/1251/1252/1253/1254/1255/1256/1257/1258/1259/1260/1261/1262/1263/1264/1265/1266/1267/1268/1269/1270/1271/1272/1273/1274/1275/1276/1277/1278/1279/1280/1281/1282/1283/1284/1285/1286/1287/1288/1289/1290/1291/1292/1293/1294/1295/1296/1297/1298/1299/1300/1301/1302/1303/1304/1305/1306/1307/1308/1309/1310/1311/1312/1313/1314/1315/1316/1317/1318/1319/1320/1321/1322/1323/1324/1325/1326/1327/1328/1329/1330/1331/1332/1333/1334/1335/1336/1337/1338/1339/1340/1341/1342/1343/1344/1345/1346/1347/1348/1349/1350/1351/1352/1353/1354/1355/1356/1357/1358/1359/1360/1361/1362/1363/1364/1365/1366/1367/1368/1369/1370/1371/1372/1373/1374/1375/1376/1377/1378/1379/1380/1381/1382/1383/1384/1385/1386/1387/1388/1389/1390/1391/1392/1393/1394/1395/1396/1397/1398/1399/1400/1401/1402/1403/1404/1405/1406/1407/1408/1409/1410/1411/1412/1413/1414/1415/1416/1417/1418/1419/1420/1421/1422/1423/1424/1425/1426/1427/1428/1429/1430/1431/1432/1433/1434/1435/1436/1437/1438/1439/1440/1441/1442/1443/1444/1445/1446/1447/1448/1449/1450/1451/1452/1453/1454/1455/1456/1457/1458/1459/1460/1461/1462/1463/1464/1465/1466/1467/1468/1469/1470/1471/1472/1473/1474/1475/1476/1477/1478/1479/1480/1481/1482/1483/1484/1485/1486/1487/1488/1489/1490/1491/1492/1493/1494/1495/1496/1497/1498/1499/1500/1501/1502/1503/1504/1505/1506/1507/1508/1509/1510/1511/1512/1513/1514/1515/1516/1517/1518/1519/1520/1521/1522/1523/1524/1525/1526/1527/1528/1529/1530/1531/1532/1533/1534/1535/1536/1537/1538/1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COMPANY Crow Butte Resources, ADDRESS 86 Crow Butte Rd Crawford, NE 69339 CITY PROJECT MANAGER Wade Beins PROJECT NAME Marsland PROJECT NUMBER (308) 665-2215x113 PHONE NUMBER (308) 665-2341 FAX NUMBER				ANALYSIS REQUEST TURNAROUND TIME 24 HOURS <input type="checkbox"/> 5 DAYS <input type="checkbox"/> 48 HOURS <input type="checkbox"/> NORMAL <input checked="" type="checkbox"/> 72 HOURS <input type="checkbox"/> OTHER: _____ SAMPLE INTEGRITY (CHECK): INTACT <input checked="" type="checkbox"/> ON ICE _____ PTS QUOTE NO. _____ PTS FILE: 43570 COMMENTS													
SITE LOCATION M-1956C SAMPLER SIGNATURE <i>Wade Beins</i>				PO#													
NUMBER OF SAMPLES				SOIL PROPERTIES PACKAGE HYDRAULIC CONDUCTIVITY PACKAGE PORE FLUID SATURATIONS PACKAGE TCE/INRGC PROPERTIES PACKAGE CAPILLARITY PACKAGE FLUID PROPERTIES PACKAGE PHOTOLOG: CORE PHOTOGRAPHY MOISTURE CONTENT, ASTM D2216 POROSITY: TOTAL, API RP40 POROSITY: EFFECTIVE, ASTM D425M SPECIFIC GRAVITY, ASTM D854 BULK DENSITY (DRY), API RP40 or ASTM D2937 AIR PERMEABILITY, API RP40 HYDRAULIC CONDUCTIVITY, EPA9100, API RP40, D5084 GRAIN SIZE DISTRIBUTION, ASTM D422/464M TOC: WALKLEY-BLACK ATTERBERG LIMITS, ASTM D4318													
SAMPLE ID NUMBER DATE TIME DEPTH, FT				COMMENTS													
M-1956C Run 1, Sample 1 8-19-13 - 42.0' - 43.0'				✓													
M-1956C Run 3, Sample 1 8-19-13 - 78.0' - 79.0'				✓													
M-1956C Run 4, Sample 1 8-19-13 - 196.5' - 197.1'				✓													
M-1956C Run 4, Sample 2 8-19-13 - 202.0' - 202.5'				✓													
M-1956C Run 5, Sample 1 8-19-13 - 425.6' - 426.2'				✓													
M-1956C Run 5, Sample 2 8-19-13 - 431.0' - 431.6'				✓													
M-1956C Run 6, Sample 1 8-19-13 - 1011.8' - 1012.4'				✓													
1. RELINQUISHED BY <i>Wade Beins</i>				2. RECEIVED BY <i>[Signature]</i>													
COMPANY Crow Butte Resources				COMPANY PTS LABS													
DATE 8/23/13				DATE 8/23/13													
TIME 11:30 AM				TIME 16:35													
3. RELINQUISHED BY				4. RECEIVED BY													
COMPANY				COMPANY													
DATE				DATE													
TIME				TIME													

COMPANY Crow Butte Resources, ADDRESS 86 Crow Butte Rd Crawford, NE 69339 PROJECT MANAGER Wade Beins PROJECT NAME Marsland PROJECT NUMBER (308) 665-2215x113 PHONE NUMBER (308) 665-2341 FAX NUMBER				PO#
SITE LOCATION M-2169C				TURNAROUND TIME 24 HOURS <input type="checkbox"/> 5 DAYS <input type="checkbox"/> 48 HOURS <input type="checkbox"/> NORMAL <input checked="" type="checkbox"/> 72 HOURS <input type="checkbox"/> OTHER:
SAMPLER SIGNATURE Wade Beins				SAMPLE INTEGRITY (CHECK): INTACT <input checked="" type="checkbox"/> ON ICE <input type="checkbox"/>
PTS QUOTE NO.				PTS FILE: 43570
COMMENTS				
ANALYSIS REQUEST				
NUMBER OF SAMPLES				
SOIL PROPERTIES PACKAGE				
HYDRAULIC CONDUCTIVITY PACKAGE				
PORE FLUID SATURATIONS PACKAGE				
TCEQ/TNRCC PROPERTIES PACKAGE				
CAPILLARITY PACKAGE				
FLUID PROPERTIES PACKAGE				
PHOTOLOG: CORE PHOTOGRAPHY				
MOISTURE CONTENT, ASTM D2216				
POROSITY: TOTAL, API RP40				
POROSITY: EFFECTIVE, ASTM D425M				
SPECIFIC GRAVITY, ASTM D854				
BULK DENSITY (DRY), API RP40 or ASTM D2937				
AIR PERMEABILITY, API RP40				
HYDRAULIC CONDUCTIVITY, EPA9100, API RP40, D5084				
GRAIN SIZE DISTRIBUTION, ASTM D4211				
TOC: WALKLEY-BLACK				
ATTERBERG LIMITS, ASTM D4318				
XRD				
SAMPLE ID NUMBER DATE TIME DEPTH, FT				
Run #1, Sample 1 8/6/13 - 110.0' - 110.5' 1				
Run #2, Sample 3 8/6/13 - 156.5' - 157.2' 1				
Run #3, Sample 1 8/6/13 - 355.0' - 356.0' 1				
Run #4, Sample 1 8/6/13 - 470.0' - 470.5' 1				
Run #5, Sample 1 8/6/13 - 608.9' - 609.5' 1				
Run #7, Sample 1 8/6/13 - 1135.5' - 1136.0' 1				
1. RELINQUISHED BY Wade Beins				2. RECEIVED BY 
COMPANY Crow Butte Resources				COMPANY PTS LABS
DATE 8/23/13 11:30 AM				DATE 8/29/13 16:35
TIME				TIME
3. RELINQUISHED BY				4. RECEIVED BY
COMPANY				COMPANY
DATE				DATE
TIME				TIME