

December 17, 2014

File No.:VA101-1/34-A.01
Cont. No.:VA14-01875



Mr. Harvey McLeod
Vice President, Strategic Marketing, Principal
Klohn Crippen Berger
500-2955 Virtual Way
Vancouver, BC V5M 4X6

Dear Harvey,

Re: MPMC Information Request

Please find attached the additional information that was previously requested, to assist you in your inquiry.

The information included herein consists of:

- 1.) Data plots for the laboratory direct shear testing carried out on the glaciolacustrine unit carried out in 2007.
- 2.) Slope/W analysis output prints to support the following documents:
 - a.) June 2008 – Stage 6 Design Report
 - 3 stability plots under static conditions for the following cases:
 - Main Embankment with 958 m crest and 925 m buttress
 - Perimeter Embankment with 958 m crest
 - South Embankment with 958 m crest
 - b.) December 2008 – Letter to Ron Martell regarding the “Buttress Requirements for the Main Embankment”
 - 1 stability plot for the Main Embankment at 954 m crest and current buttress (917 m) under static conditions
 - 1 stability plot for the Main Embankment at 958 m crest and raised buttress (919 m) under static conditions
 - c.) July 2009 – Letter to Ron Martell regarding the “Buttress Requirements for the Main Embankment”
 - 4 stability plots for the following cases:
 - Model Calibration with 954 m crest and 918 m buttress
 - Stage 6a Embankment with 954 m crest and 920 m buttress
 - Stage 6b Embankment with 958 m crest and 923 m buttress
 - Ultimate Embankment with 970 m crest and 940 m buttress


Knigh Piésold is pleased to assist with this investigation in any way possible and we trust that this information will satisfy your current requirements.

Please do not hesitate to contact us if we can be of further assistance.

Yours truly,

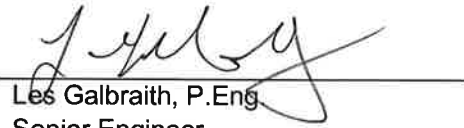
KNIGHT PIESOLD LTD.

Signed:




Jesse Collison, GIT
Staff Engineer

Reviewed:



Les Galbraith, P.Eng.
Senior Engineer

Approved:



For: Ken Brouwer, P.Eng.
President

Attachments:

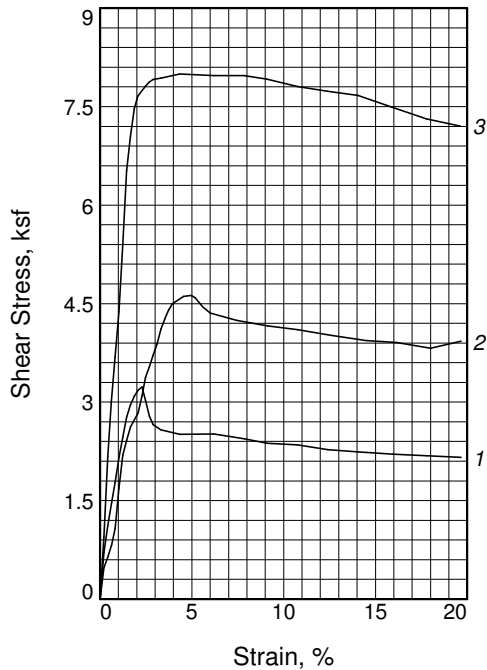
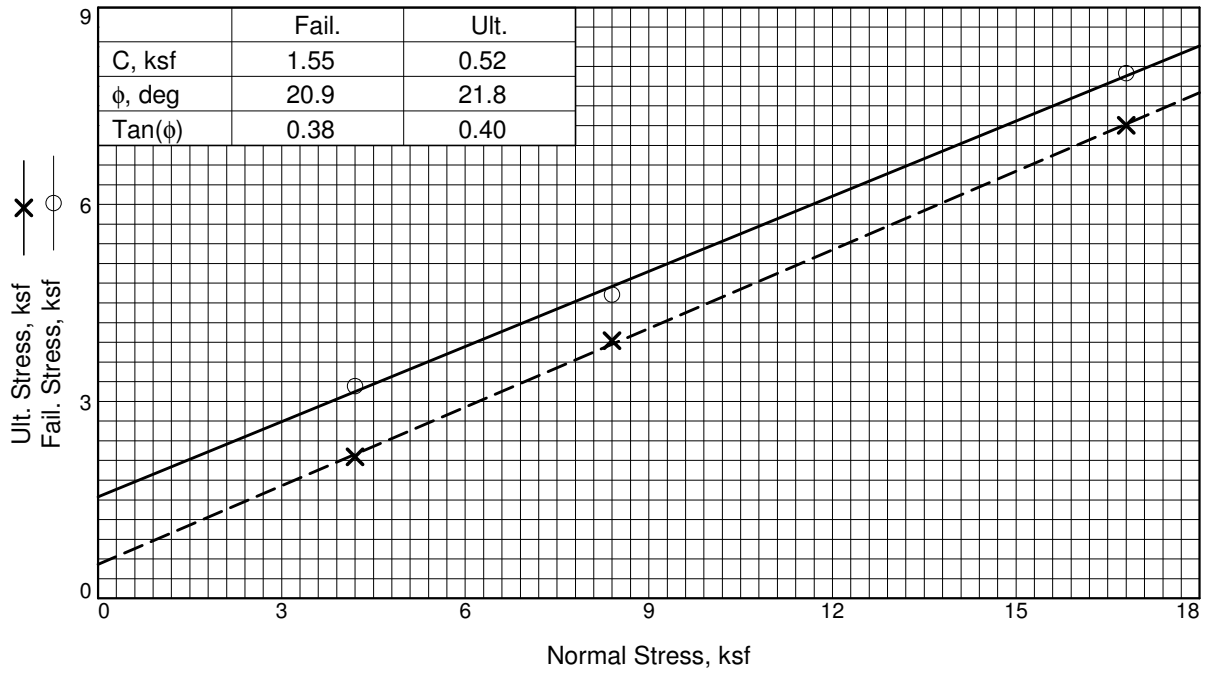
- 1.) Data plots for direct shear testing of glaciolacustrine sediment (July 2007)
- 2.) Slope/W Analysis Output
 - a.) June 2008 – Slope/W output plots to support Stage 6 Design Report
 - b.) December 2008 – Slope/W output plots to support letter to Ron Martell Re: Buttress Requirements for Main Embankment
 - c.) July 2009 – Slope/W output plots to support letter to Ron Martell Re: Buttress Requirements for Main Embankment

/jdc

ATTACHMENT 1

DATA PLOTS FOR DIRECT SHEAR TESTING OF GLACIOLACUSTRINE SEDIMENT (JULY 2007)

Cursory interpretations provided require review by a professional engineer. Knight Piesold accepts no responsibility in subsequent analyses.



Sample No.		1	2	3
Initial	Water Content, %	20.9	20.9	20.9
	Dry Density, pcf	106.9	105.3	104.7
	Saturation, %	92.3	88.8	87.6
	Void Ratio	0.6351	0.6598	0.6694
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.10
At Test	Water Content, %	18.4	14.0	20.8
	Dry Density, pcf	109.5	109.6	110.5
	Saturation, %	86.2	65.7	100.0
	Void Ratio	0.5958	0.5951	0.5814
	Diameter, in.	2.42	2.42	2.42
	Height, in.	0.98	0.96	1.04
Normal Stress, ksf		4.20	8.40	16.80
Fail. Stress, ksf		3.23	4.63	8.00
Strain, %		2.3	5.0	4.3
Ult. Stress, ksf		2.16	3.93	7.21
Strain, %		19.7	19.7	19.6
Strain rate, %/min.		0.08	0.08	0.08

Sample Type: Liner

Description:

Assumed Specific Gravity= 2.8

Remarks: Failure tangents drawn at peak shear stress and approximately 20% strain. Specimens were not inundated.

Fig. _____

Client: Knight Piesold Ltd.

Project: Mt. Polley

Location: TP-07

Sample Number: 03-1

Proj. No.: DV108-77.8

Date Sampled: 7/2/07

Knight Piesold
CONSULTING

Tested By: jdb _____

Checked By: spb _____

DIRECT SHEAR TEST

7/9/2007

Date: 7/2/07
Client: Knight Piesold Ltd.
Project: Mt. Polley
Project No.: DV108-77.8
Location: TP-07
Sample Number: 03-1
Description:
Remarks: Failure tangents drawn at peak shear stress and approximately 20% strain. Specimens were not inundated.
Type of Sample: Liner
Assumed Specific Gravity=2.8 **LL=** **PL=** **PI=**

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	411.920		261.250
Moisture content: Dry soil+tare, gms.	360.290		238.380
Moisture content: Tare, gms.	113.640		113.750
Moisture, %	20.9	18.4	18.4
Moist specimen weight, gms.	155.6		
Diameter, in.	2.42	2.42	
Area, in. ²	4.58	4.58	
Height, in.	1.00	0.98	
Net decrease in height, in.		0.02	
Wet Density, pcf	129.3	129.6	
Dry density, pcf	106.9	109.5	
Void ratio	0.6351	0.5958	
Saturation, %	92.3	86.2	

Test Readings for Specimen No. 1

Load ring constant = 31.4108 lbs. per input unit
Normal stress = 4.2 ksf
Strain rate, %/min. = 0.08
Fail. Stress = 3.23 ksf at reading no. 11
Ult. Stress = 2.16 ksf at reading no. 25

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.0000	0.0	0.0	0.00
1	0.0050	0.7163	22.5	0.2	0.71
2	0.0100	1.1302	35.5	0.4	1.12
3	0.0150	1.4868	46.7	0.6	1.47
4	0.0200	1.8051	56.7	0.8	1.78
5	0.0250	2.1808	68.5	1.0	2.15
6	0.0300	2.4991	78.5	1.2	2.47
7	0.0350	2.8080	88.2	1.4	2.77
8	0.0400	2.9958	94.1	1.7	2.96
9	0.0450	3.1295	98.3	1.9	3.09
10	0.0500	3.2250	101.3	2.1	3.18
11	0.0550	3.2759	102.9	2.3	3.23

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
12	0.0600	3.0658	96.3	2.5	3.02
13	0.0650	2.8271	88.8	2.7	2.79
14	0.0700	2.6902	84.5	2.9	2.65
15	0.0800	2.6138	82.1	3.3	2.58
16	0.1050	2.5437	79.9	4.3	2.51
17	0.1500	2.5469	80.0	6.2	2.51
18	0.1900	2.4737	77.7	7.9	2.44
19	0.2200	2.4036	75.5	9.1	2.37
20	0.2600	2.3782	74.7	10.8	2.35
21	0.3000	2.3081	72.5	12.4	2.28
22	0.3400	2.2699	71.3	14.1	2.24
23	0.3850	2.2381	70.3	15.9	2.21
24	0.4300	2.2126	69.5	17.8	2.18
25	0.4750	2.1871	68.7	19.7	2.16

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	411.920		270.940
Moisture content: Dry soil+tare, gms.	360.290		251.610
Moisture content: Tare, gms.	113.640		113.080
Moisture, %	20.9	14.0	14.0
Moist specimen weight, gms.	153.3		
Diameter, in.	2.42	2.42	
Area, in. ²	4.58	4.58	
Height, in.	1.00	0.96	
Net decrease in height, in.		0.04	
Wet Density, pcf	127.4	124.9	
Dry density, pcf	105.3	109.6	
Void ratio	0.6598	0.5951	
Saturation, %	88.8	65.7	

Test Readings for Specimen No. 2

Load ring constant = 31.4108 lbs. per input unit

Normal stress = 8.4 ksf

Strain rate, %/min. = 0.08

Fail. Stress = 4.63 ksf at reading no. 20

Ult. Stress = 3.93 ksf at reading no. 31

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.0000	0.0	0.0	0.00
1	0.0050	0.4839	15.2	0.2	0.48
2	0.0100	0.6463	20.3	0.4	0.64
3	0.0150	0.8341	26.2	0.6	0.82
4	0.0200	1.0856	34.1	0.8	1.07
5	0.0250	1.7160	53.9	1.0	1.69
6	0.0300	2.2220	69.8	1.2	2.19
7	0.0350	2.4512	77.0	1.4	2.42
8	0.0400	2.6551	83.4	1.7	2.62

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
9	0.0500	2.8764	90.4	2.1	2.84
10	0.0550	3.1340	98.4	2.3	3.09
11	0.0600	3.4224	107.5	2.5	3.38
12	0.0650	3.5879	112.7	2.7	3.54
13	0.0700	3.7662	118.3	2.9	3.72
14	0.0750	3.9381	123.7	3.1	3.89
15	0.0800	4.1642	130.8	3.3	4.11
16	0.0850	4.3202	135.7	3.5	4.26
17	0.0900	4.4603	140.1	3.7	4.40
18	0.0950	4.5589	143.2	3.9	4.50
19	0.1100	4.6736	146.8	4.6	4.61
20	0.1200	4.6895	147.3	5.0	4.63
21	0.1250	4.6513	146.1	5.2	4.59
22	0.1350	4.5112	141.7	5.6	4.45
23	0.1450	4.4157	138.7	6.0	4.36
24	0.1800	4.3011	135.1	7.5	4.24
25	0.2200	4.2183	132.5	9.1	4.16
26	0.2600	4.1610	130.7	10.8	4.11
27	0.3050	4.0719	127.9	12.6	4.02
28	0.3500	3.9891	125.3	14.5	3.94
29	0.3900	3.9604	124.4	16.1	3.91
30	0.4350	3.8745	121.7	18.0	3.82
31	0.4750	3.9795	125.0	19.7	3.93

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	411.920		558.350
Moisture content: Dry soil+tare, gms.	360.290		530.350
Moisture content: Tare, gms.	113.640		395.540
Moisture, %	20.9	20.8	20.8
Moist specimen weight, gms.	168.2		
Diameter, in.	2.42	2.42	
Area, in. ²	4.60	4.60	
Height, in.	1.10	1.04	
Net decrease in height, in.		0.06	
Wet Density, pcf	126.6	133.5	
Dry density, pcf	104.7	110.5	
Void ratio	0.6694	0.5814	
Saturation, %	87.6	100.0	

Test Readings for Specimen No. 3

Normal stress = 16.8 ksf

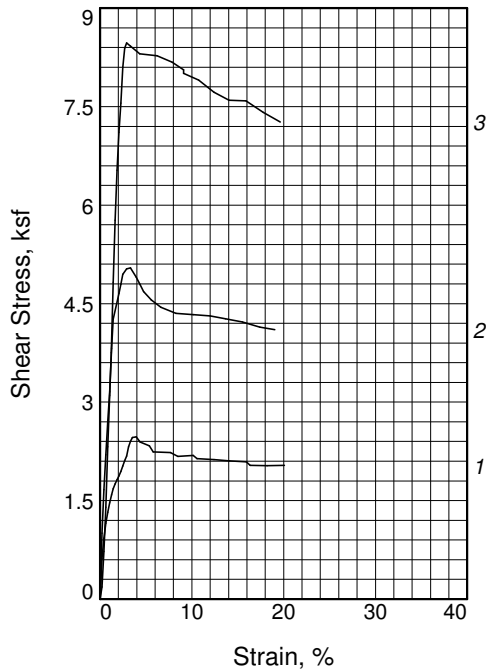
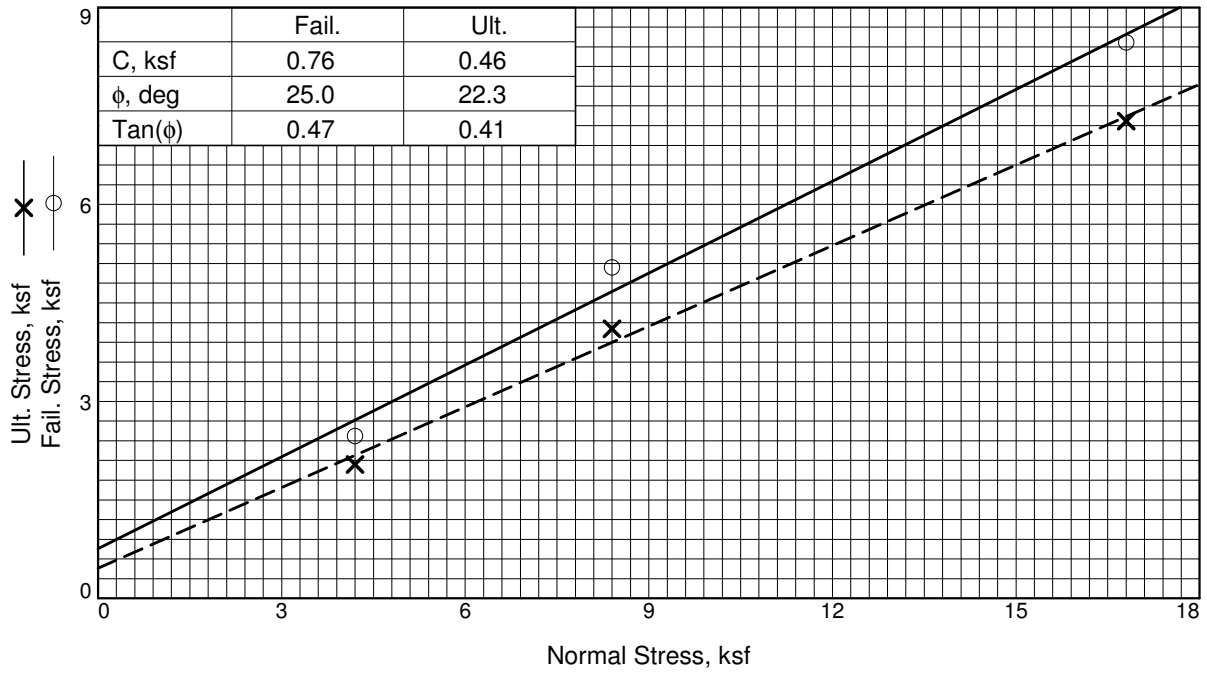
Strain rate, %/min. = 0.08

Fail. Stress = 8.00 ksf at reading no. 15

Ult. Stress = 7.21 ksf at reading no. 24

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	8.000	0.0	0.0	0.00
1	0.0050	38.200	30.2	0.2	0.95
2	0.0100	77.050	69.0	0.4	2.16
3	0.0150	103.800	95.8	0.6	3.00
4	0.0200	126.000	118.0	0.8	3.69
5	0.0250	147.800	139.8	1.0	4.38
6	0.0300	180.600	172.6	1.2	5.40
7	0.0350	216.600	208.6	1.4	6.53
8	0.0400	233.200	225.2	1.7	7.05
9	0.0450	246.700	238.7	1.9	7.47
10	0.0500	252.700	244.7	2.1	7.66
11	0.0600	257.600	249.6	2.5	7.81
12	0.0650	259.600	251.6	2.7	7.88
13	0.0700	260.800	252.8	2.9	7.91
14	0.0800	261.340	253.3	3.3	7.93
15	0.1050	263.500	255.5	4.3	8.00
16	0.1500	262.700	254.7	6.2	7.97
17	0.1900	262.600	254.6	7.9	7.97
18	0.2200	260.900	252.9	9.1	7.92
19	0.2600	257.300	249.3	10.7	7.80
20	0.3000	255.000	247.0	12.4	7.73
21	0.3400	253.040	245.0	14.0	7.67
22	0.3850	247.200	239.2	15.9	7.49
23	0.4300	241.620	233.6	17.8	7.31
24	0.4750	238.140	230.1	19.6	7.21

Cursory interpretations provided require review by a professional engineer. Knight Piésold accepts no responsibility in subsequent analyses.



Sample No.	1	2	3	
Initial	Water Content, %	22.4	22.4	22.4
	Dry Density, pcf	103.7	105.9	102.9
	Saturation, %	91.3	96.3	89.6
	Void Ratio	0.6859	0.6501	0.6987
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.01	1.10
At Test	Water Content, %	23.6	21.8	22.4
	Dry Density, pcf	105.2	108.5	107.4
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.6621	0.6107	0.6278
	Diameter, in.	2.42	2.42	2.42
	Height, in.	0.98	0.98	1.06
Normal Stress, ksf	4.20	8.40	16.80	
Fail. Stress, ksf	2.47	5.04	8.47	
Strain, %	3.9	3.3	2.9	
Ult. Stress, ksf	2.04	4.11	7.27	
Strain, %	20.1	19.0	19.6	
Strain rate, %/min.	0.08	0.08	0.08	

Sample Type: Liner

Description:

Assumed Specific Gravity= 2.8

Remarks: Failure tangents drawn at peak shear stress and approximately 20% strain. Specimens were not inundated.

Fig. _____

Client: Knight Piésold Ltd.

Project: Mt. Polley

Location: TP-07

Sample Number: 03-2

Proj. No.: DV108-77.8

Date Sampled: 7/1/07

Knight Piésold
CONSULTING

Tested By: jdb

Checked By: spb

DIRECT SHEAR TEST

7/9/2007

Date: 7/1/07
Client: Knight Piésold Ltd.
Project: Mt. Polley
Project No.: DV108-77.8
Location: TP-07
Sample Number: 03-2
Description:
Remarks: Failure tangents drawn at peak shear stress and approximately 20% strain. Specimens were not inundated.
Type of Sample: Liner
Assumed Specific Gravity=2.8 **LL=** **PL=** **PI=**

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	232.190		268.370
Moisture content: Dry soil+tare, gms.	210.920		239.020
Moisture content: Tare, gms.	115.830		114.860
Moisture, %	22.4	23.6	23.6
Moist specimen weight, gms.	151.9		
Diameter, in.	2.42	2.42	
Area, in. ²	4.58	4.58	
Height, in.	0.99	0.98	
Net decrease in height, in.		0.01	
Wet Density, pcf	126.9	130.0	
Dry density, pcf	103.7	105.2	
Void ratio	0.6859	0.6621	
Saturation, %	91.3	100.0	

Test Readings for Specimen No. 1

Load ring constant = 31.4108 lbs. per input unit

Normal stress = 4.2 ksf

Strain rate, %/min. = 0.08

Fail. Stress = 2.47 ksf at reading no. 18

Ult. Stress = 2.04 ksf at reading no. 31

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.0000	0.0	0.0	0.00
1	0.0050	0.6272	19.7	0.2	0.62
2	0.0100	0.9392	29.5	0.4	0.93
3	0.0150	1.1684	36.7	0.6	1.15
4	0.0200	1.3403	42.1	0.8	1.32
5	0.0250	1.4868	46.7	1.0	1.47
6	0.0300	1.6077	50.5	1.2	1.59
7	0.0350	1.7032	53.5	1.4	1.68
8	0.0400	1.7796	55.9	1.7	1.76
9	0.0450	1.8433	57.9	1.9	1.82
10	0.0500	1.9038	59.8	2.1	1.88
11	0.0550	1.9707	61.9	2.3	1.94

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
12	0.0600	2.0534	64.5	2.5	2.03
13	0.0650	2.1362	67.1	2.7	2.11
14	0.0700	2.2062	69.3	2.9	2.18
15	0.0750	2.3527	73.9	3.1	2.32
16	0.0800	2.4355	76.5	3.3	2.40
17	0.0850	2.4928	78.3	3.5	2.46
18	0.0950	2.5055	78.7	3.9	2.47
19	0.1050	2.4227	76.1	4.3	2.39
20	0.1300	2.3654	74.3	5.4	2.33
21	0.1400	2.2699	71.3	5.8	2.24
22	0.1850	2.2636	71.1	7.7	2.23
23	0.2050	2.2031	69.2	8.5	2.17
24	0.2450	2.2190	69.7	10.1	2.19
25	0.2550	2.1680	68.1	10.6	2.14
26	0.3000	2.1521	67.6	12.4	2.12
27	0.3400	2.1330	67.0	14.1	2.10
28	0.3850	2.1171	66.5	15.9	2.09
29	0.3950	2.0662	64.9	16.3	2.04
30	0.4400	2.0598	64.7	18.2	2.03
31	0.4850	2.0662	64.9	20.1	2.04

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	232.190		247.060
Moisture content: Dry soil+tare, gms.	210.920		219.110
Moisture content: Tare, gms.	115.830		90.990
Moisture, %	22.4	21.8	21.8
Moist specimen weight, gms.	156.9		
Diameter, in.	2.42	2.42	
Area, in. ²	4.58	4.58	
Height, in.	1.01	0.98	
Net decrease in height, in.		0.02	
Wet Density, pcf	129.6	132.2	
Dry density, pcf	105.9	108.5	
Void ratio	0.6501	0.6107	
Saturation, %	96.3	100.0	

Test Readings for Specimen No. 2

Load ring constant = 31.4108 lbs. per input unit

Normal stress = 8.400 ksf

Strain rate, %/min. = 0.08

Fail. Stress = 5.04 ksf at reading no. 12

Ult. Stress = 4.11 ksf at reading no. 24

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.0000	0.0	0.0	0.00
1	0.0050	1.0156	31.9	0.2	1.00
2	0.0100	1.6905	53.1	0.4	1.67
3	0.0150	2.2254	69.9	0.6	2.20
4	0.0200	2.7411	86.1	0.8	2.70
5	0.0250	3.1995	100.5	1.0	3.16
6	0.0300	3.8681	121.5	1.2	3.82
7	0.0350	4.3202	135.7	1.4	4.26
8	0.0500	4.7147	148.1	2.1	4.65
9	0.0550	4.8614	152.7	2.3	4.80
10	0.0600	5.0110	157.4	2.5	4.94
11	0.0700	5.0970	160.1	2.9	5.03
12	0.0800	5.1097	160.5	3.3	5.04
13	0.0950	4.9696	156.1	3.9	4.90
14	0.1050	4.8550	152.5	4.3	4.79
15	0.1150	4.7468	149.1	4.8	4.68
16	0.1350	4.6194	145.1	5.6	4.56
17	0.1600	4.5048	141.5	6.6	4.44
18	0.2000	4.4093	138.5	8.3	4.35
19	0.2450	4.3902	137.9	10.1	4.33
20	0.2900	4.3711	137.3	12.0	4.31
21	0.3300	4.3265	135.9	13.7	4.27
22	0.3750	4.2756	134.3	15.5	4.22
23	0.4200	4.1992	131.9	17.4	4.14
24	0.4600	4.1610	130.7	19.0	4.11

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	232.190		278.370
Moisture content: Dry soil+tare, gms.	210.920		248.000
Moisture content: Tare, gms.	115.830		112.530
Moisture, %	22.4	22.4	22.4
Moist specimen weight, gms.	167.5		
Diameter, in.	2.42	2.42	
Area, in. ²	4.60	4.60	
Height, in.	1.10	1.06	
Net decrease in height, in.		0.05	
Wet Density, pcf	125.9	131.5	
Dry density, pcf	102.9	107.4	
Void ratio	0.6987	0.6278	
Saturation, %	89.6	100.0	

Test Readings for Specimen No. 3

Normal stress = 16.8 ksf

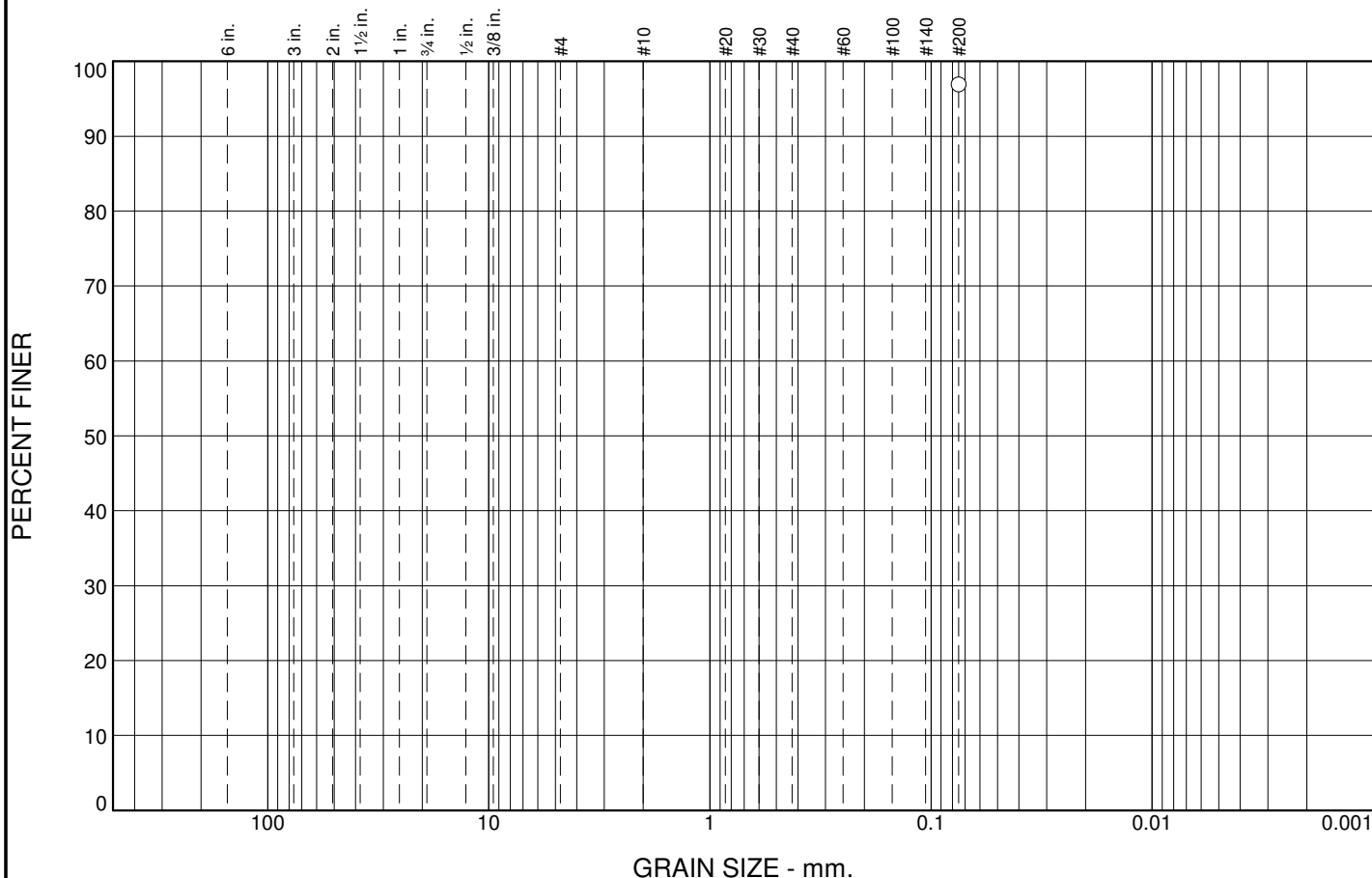
Strain rate, %/min. = 0.08

Fail. Stress = 8.47 ksf at reading no. 14

Ult. Stress = 7.27 ksf at reading no. 26

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.480	0.0	0.0	0.00
1	0.0050	6.330	5.8	0.2	0.18
2	0.0100	23.740	23.3	0.4	0.73
3	0.0150	45.110	44.6	0.6	1.40
4	0.0200	74.500	74.0	0.8	2.32
5	0.0250	99.570	99.1	1.0	3.10
6	0.0300	120.400	119.9	1.2	3.75
7	0.0350	154.640	154.2	1.4	4.83
8	0.0400	184.790	184.3	1.7	5.77
9	0.0450	208.990	208.5	1.9	6.53
10	0.0500	227.630	227.2	2.1	7.11
11	0.0550	241.740	241.3	2.3	7.55
12	0.0600	259.190	258.7	2.5	8.10
13	0.0650	268.560	268.1	2.7	8.39
14	0.0700	271.000	270.5	2.9	8.47
15	0.0800	269.440	269.0	3.3	8.42
16	0.1050	265.760	265.3	4.3	8.31
17	0.1500	264.870	264.4	6.2	8.28
18	0.1900	261.710	261.2	7.9	8.18
19	0.2200	257.880	257.4	9.1	8.06
20	0.2200	256.250	255.8	9.1	8.01
21	0.2600	253.030	252.6	10.7	7.91
22	0.3000	247.090	246.6	12.4	7.72
23	0.3400	243.180	242.7	14.0	7.60
24	0.3850	242.890	242.4	15.9	7.59
25	0.4300	237.230	236.8	17.8	7.41
26	0.4750	232.580	232.1	19.6	7.27

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
						96.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#200	96.9		

Soil Description

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₈₅= D₆₀= D₅₀=
 D₃₀= D₁₅= D₁₀=
 C_u= C_c=

Classification
 USCS= AASHTO=

Remarks

* (no specification provided)

Sample No.: 03-1
 Location: TP-07

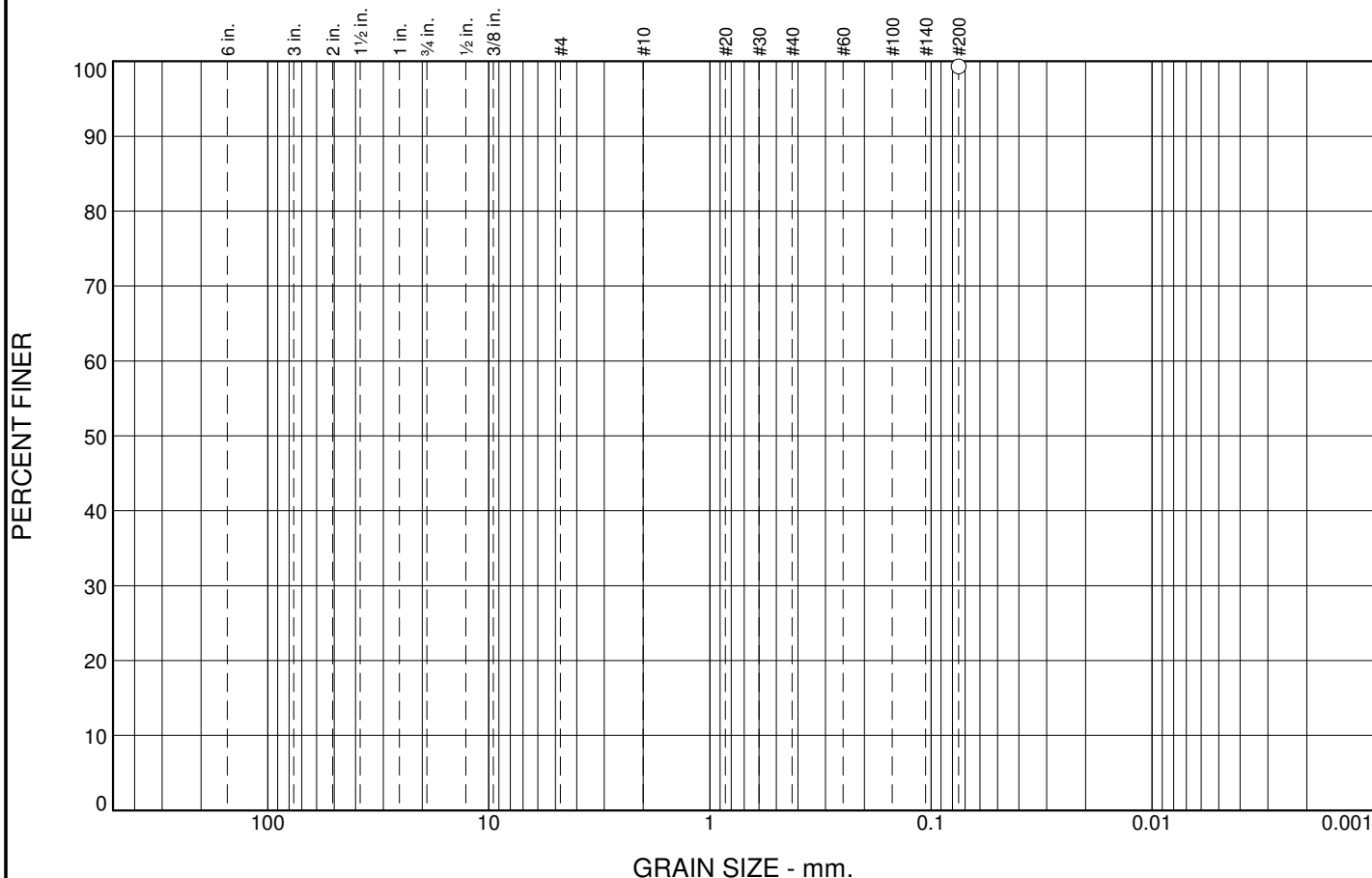
Source of Sample:

Date: 7/2/07
 Elev./Depth:

	<p>Client: Knight Piésold Ltd. Project: Mt. Polley Project No: DV108-77.8</p>
	<p>Fig.</p>

Tested By: _____ Checked By: _____

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
						99.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#200	99.3		

Soil Description

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₈₅= D₆₀= D₅₀=
 D₃₀= D₁₅= D₁₀=
 C_u= C_c=

Classification
 USCS= AASHTO=

Remarks

* (no specification provided)

Sample No.: 03-2
Location: TP-07

Source of Sample:

Date: 7/1/07
Elev./Depth:

	Client: Knight Piésold Ltd. Project: Mt. Polley Project No: DV108-77.8
	Fig.

Tested By: _____ Checked By: _____

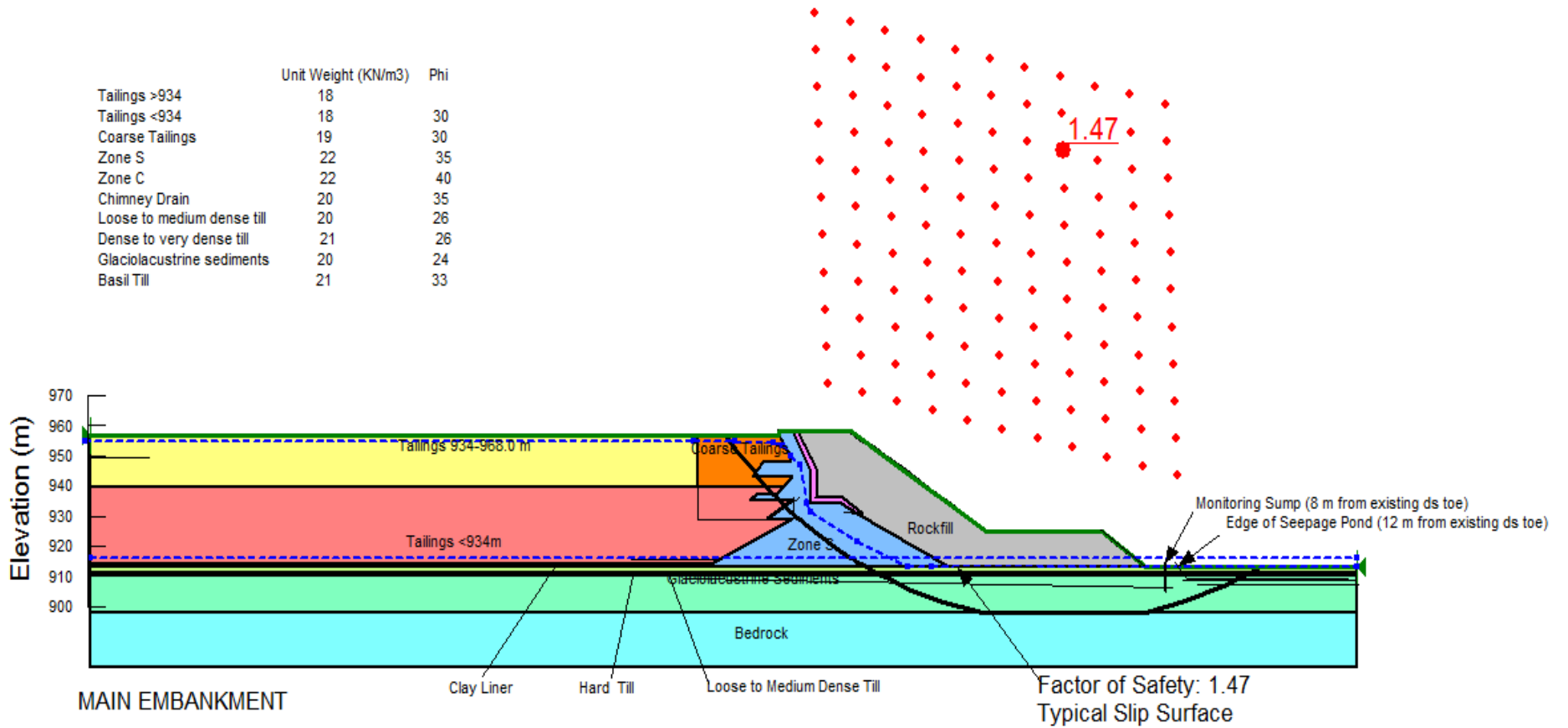
ATTACHMENT 2

SLOPE/W ANALYSIS OUTPUT

- a.) June 2008 – Slope/W output plots to support Stage 6 Design Report
- b.) December 2008 – Slope/W output plots to support letter to Ron Martell
Re: Buttress Requirements for Main Embankment
- c.) July 2009 – Slope/W output plots to support letter to Ron Martell
Re: Buttress Requirements for Main Embankment

ATTACHMENT 2A

JUNE 2008 – SLOPE/W OUTPUT PLOTS TO SUPPORT STAGE 6 DESIGN REPORT

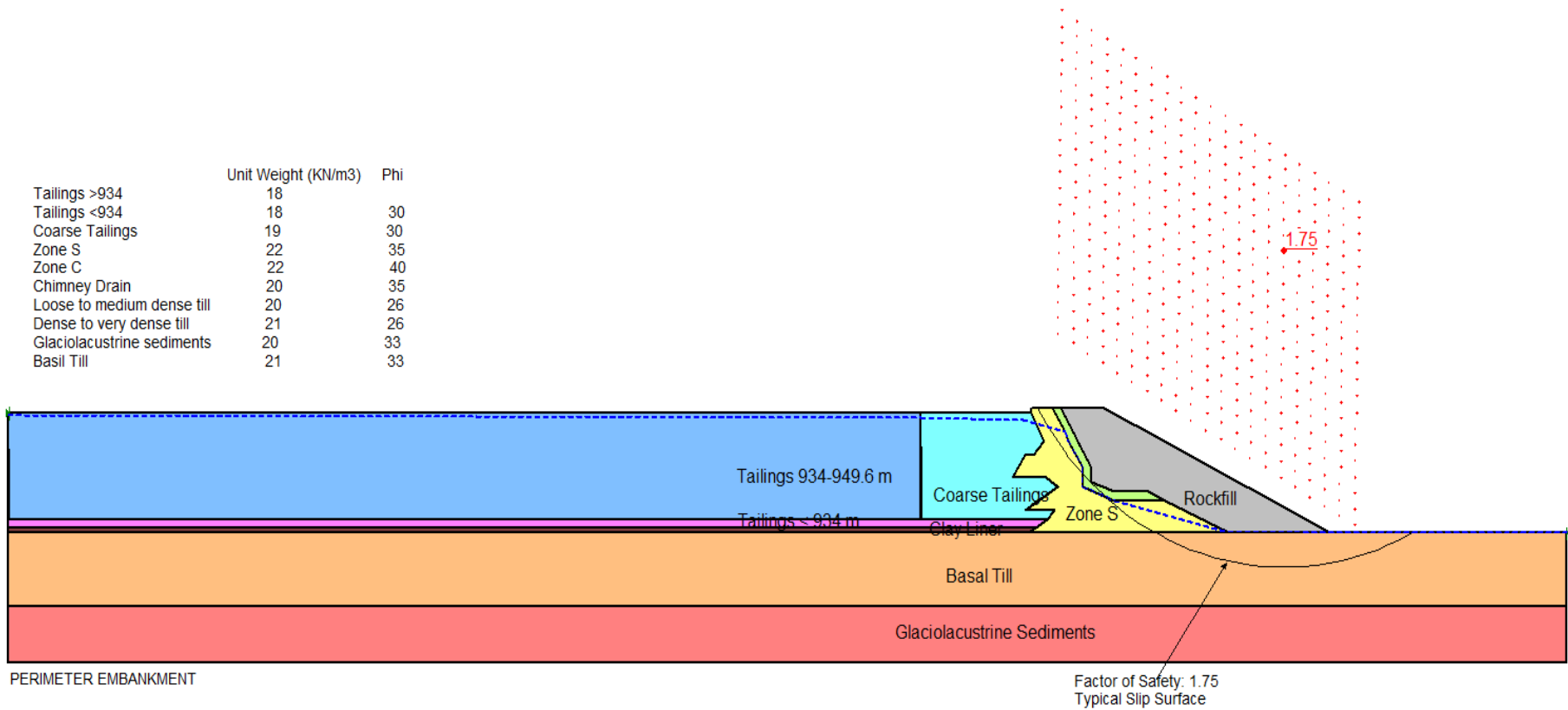


NOTE:
 1. STABILITY ANALYSIS OF MAIN EMBANKMENT UNDER STATIC CONDITIONS IN SUPPORT OF: STAGE 6 DESIGN OF THE TAILINGS STORAGE FACILITY REPORT - JUNE 2007 (VA101-01/18-1)

KNIGHT PIESOLD LTD	
MOUNT POLLEY MINE	
STAGE 6 DESIGN OF THE TSF MAIN EMBANKMENT - 925m EI BUTTRESS FoS: 1.4	
<i>Knight Piésold</i> CONSULTING	P/A NO. VA101-00001/34
	REF. NO. VA101-01/18-1
FIGURE 1	
REV A	

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
A	12DEC'14	ISSUED FOR INFORMATION	JDC	LJG	KJB

	Unit Weight (KN/m3)	Phi
Tailings >934	18	
Tailings <934	18	30
Coarse Tailings	19	30
Zone S	22	35
Zone C	22	40
Chimney Drain	20	35
Loose to medium dense till	20	26
Dense to very dense till	21	26
Glaciolacustrine sediments	20	33
Basil Till	21	33

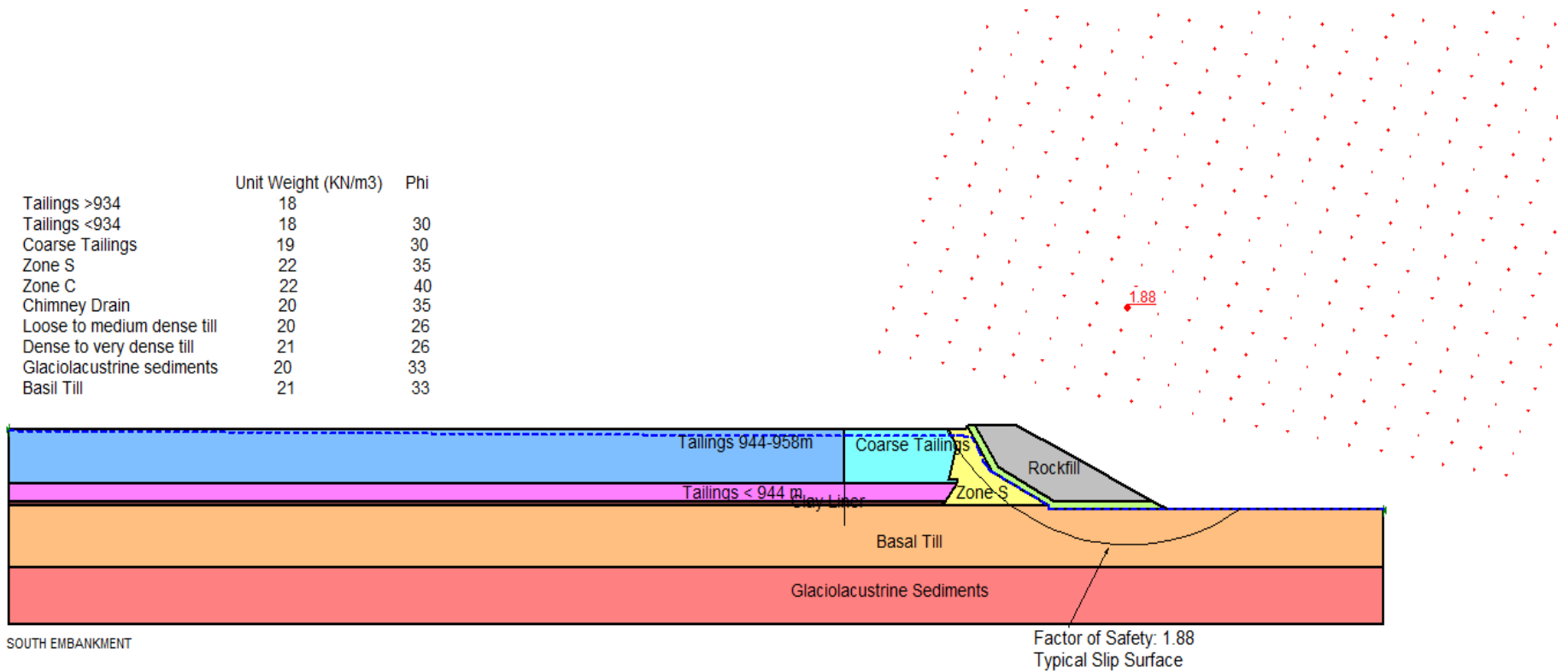


NOTE:
1. STABILITY ANALYSIS OF PERIMETER EMBANKMENT UNDER STATIC CONDITIONS IN SUPPORT OF: STAGE 6 DESIGN OF THE TAILINGS STORAGE FACILITY REPORT - JUNE 2007 (VA101-01/18-1)

KNIGHT PIESOLD LTD	
MOUNT POLLEY MINE	
STAGE 6 DESIGN OF THE TSF PERIMETER EMBANKMENT FoS: 1.7	
<i>Knight Piésold</i> CONSULTING	P/A NO. VA101-01/34
	REF. NO. VA101-01/18-1
FIGURE 2	
	REV A

A	12DEC'14	ISSUED FOR INFORMATION	JDC	LJG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

	Unit Weight (KN/m3)	Phi
Tailings >934	18	
Tailings <934	18	30
Coarse Tailings	19	30
Zone S	22	35
Zone C	22	40
Chimney Drain	20	35
Loose to medium dense till	20	26
Dense to very dense till	21	26
Glaciolacustrine sediments	20	33
Basal Till	21	33



NOTE:

1. STABILITY ANALYSIS OF SOUTH EMBANKMENT UNDER STATIC CONDITIONS IN SUPPORT OF: STAGE 6 DESIGN OF THE TAILINGS STORAGE FACILITY REPORT - JUNE 2007 (VA101-01/18-1)

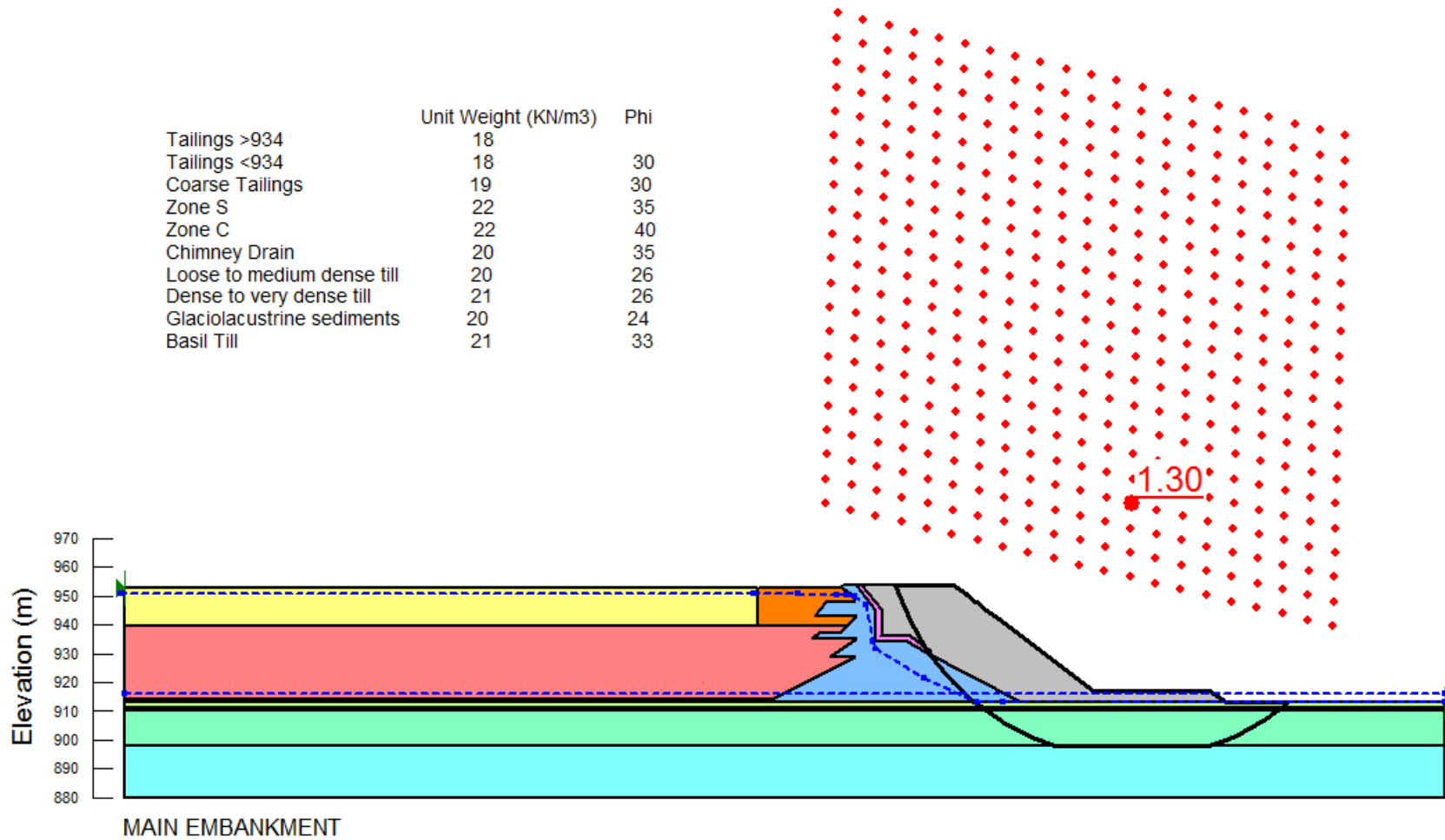
KNIGHT PIESOLD LTD	
MOUNT POLLEY MINE	
STAGE 6 DESIGN OF THE TSF SOUTH EMBANKMENT FoS: 1.8	
<i>Knight Piésold</i> CONSULTING	P/A NO. VA101-01/34
	REF. NO. VA101-01/18-1
FIGURE 3	
	REV A

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
A	12DEC'14	ISSUED FOR INFORMATION	JDC	LJG	KJB

ATTACHMENT 2B

**DECEMBER 2008 – SLOPE/W OUTPUT PLOTS TO SUPPORT LETTER TO RON MARTELL
RE: BUTTRESS REQUIREMENTS FOR MAIN EMBANKMENT**

	Unit Weight (KN/m3)	Phi
Tailings >934	18	
Tailings <934	18	30
Coarse Tailings	19	30
Zone S	22	35
Zone C	22	40
Chimney Drain	20	35
Loose to medium dense till	20	26
Dense to very dense till	21	26
Glaciolacustrine sediments	20	24
Basil Till	21	33

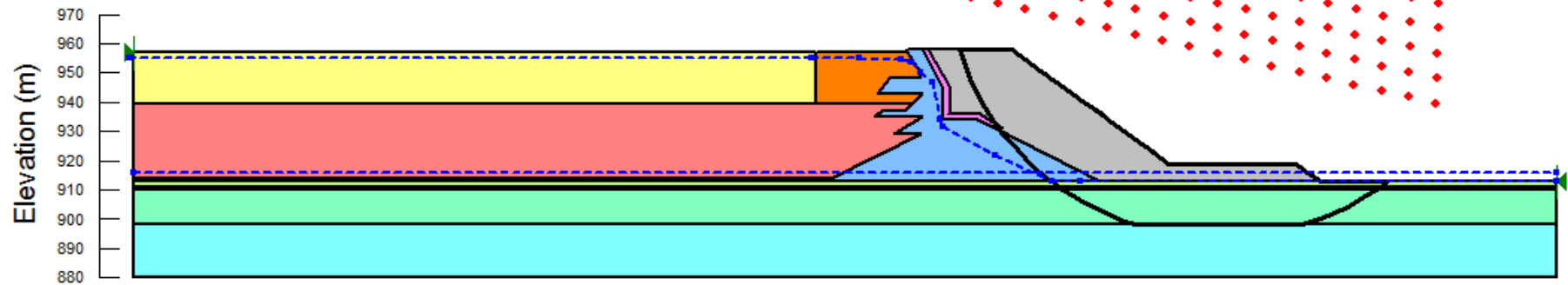
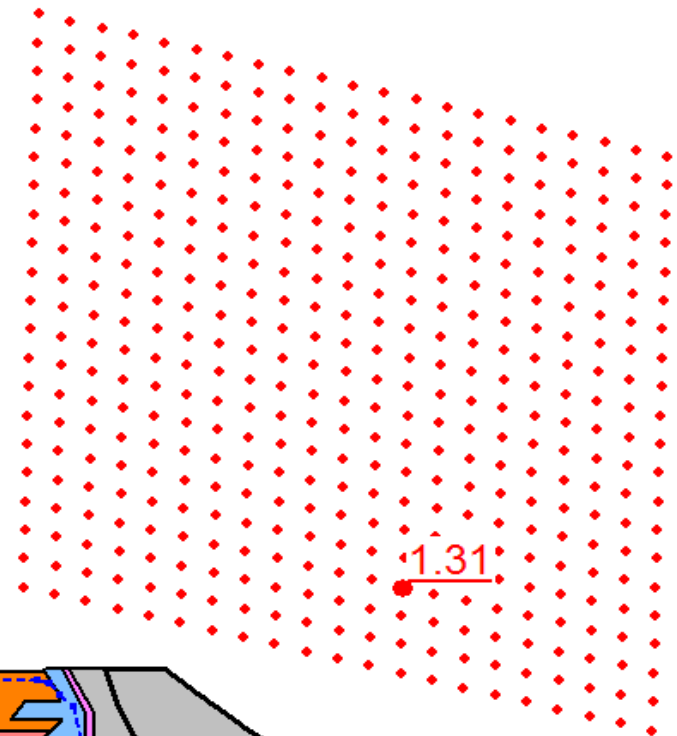


NOTE:
 1. STABILITY ANALYSIS FOR MAIN EMBANKMENT CURRENT CONFIGURATION TO SUPPORT DECEMBER 2008 LETTER TO RON MARTELL (VA08-02223) - RE: BUTTRESS REQUIREMENTS FOR THE MAIN EMBANKMENT

KNIGHT PIESOLD LTD	
MOUNT POLLEY MINE	
ME BUTTRESS REQUIREMENTS 954m CREST - 917m Elev BUTTRESS CURRENT CONFIGURATION	
<i>Knight Piésold</i> CONSULTING	P/A NO. VA101-01/34
	REF. NO. VA08-02223
FIGURE 1	
	REV A

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
A	12DEC'14	ISSUED FOR INFORMATION	JDC	LJG	KJB

	Unit Weight (KN/m3)	Phi
Tailings >934	18	
Tailings <934	18	30
Coarse Tailings	19	30
Zone S	22	35
Zone C	22	40
Chimney Drain	20	35
Loose to medium dense till	20	26
Dense to very dense till	21	26
Glaciolacustrine sediments	20	24
Basil Till	21	33



MAIN EMBANKMENT

NOTE:

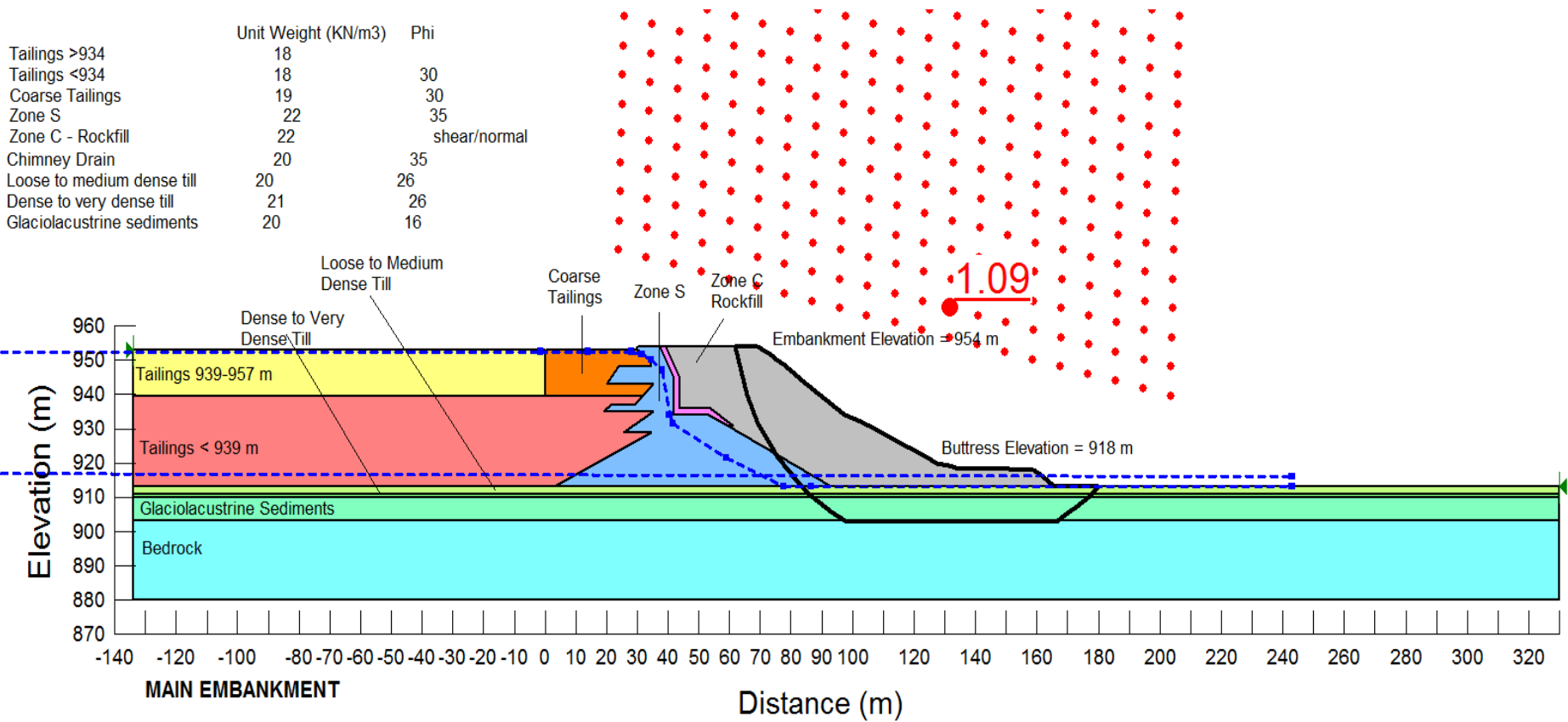
1. STABILITY ANALYSIS FOR MAIN EMBANKMENT END OF STAGE 6 CONSTRUCTION TO SUPPORT DECEMBER 2008 LETTER TO RON MARTELL (VA08-02223) - RE: BUTTRESS REQUIREMENTS FOR THE MAIN EMBANKMENT

KNIGHT PIESOLD LTD	
MOUNT POLLEY MINE	
ME BUTTRESS REQUIREMENTS 958m CREST- 919m Elev BUTTRESS END OF STAGE 6 CONSTRUCTION	
<i>Knight Piesold</i> CONSULTING	P/A NO. VA101-01/34
	REF. NO. VA08-02223
FIGURE 2	
REV A	

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
A	12DEC'14	ISSUED FOR INFORMATION	JDC	LJG	KJB

ATTACHMENT 2C

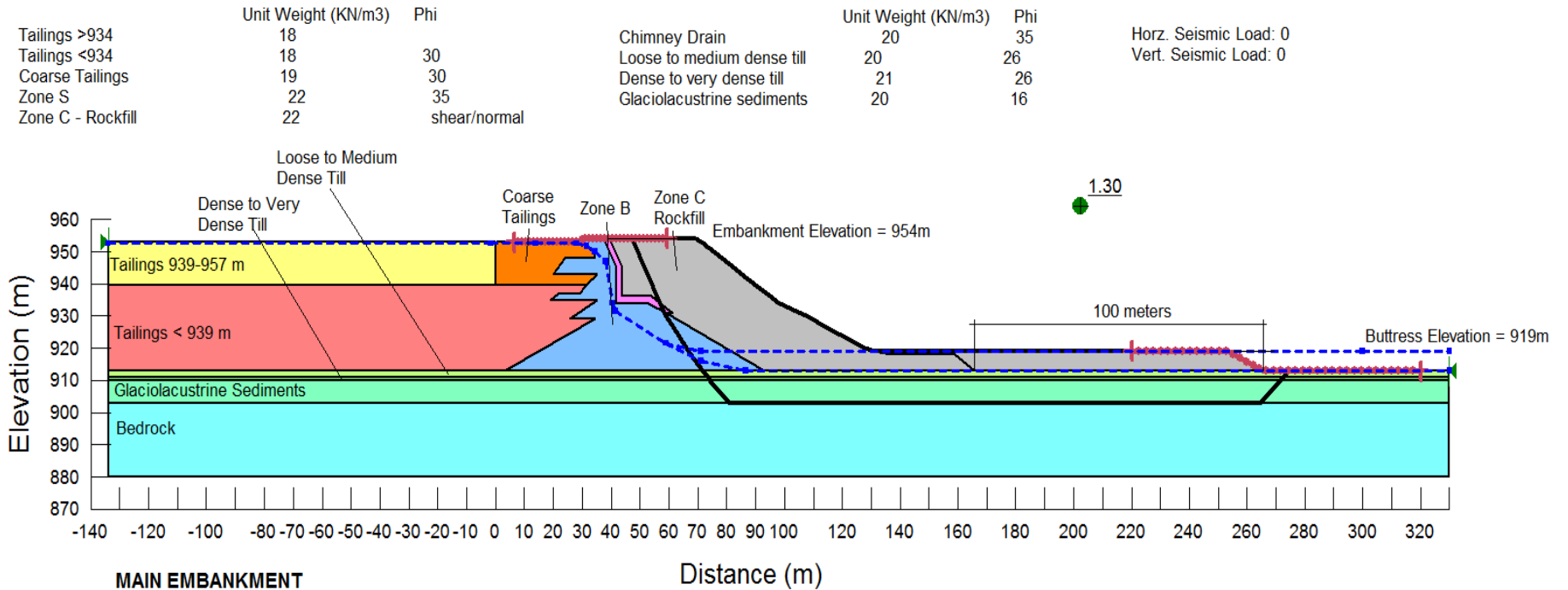
**JULY 2009 – SLOPE/W OUTPUT PLOTS TO SUPPORT LETTER TO RON MARTELL
RE: BUTTRESS REQUIREMENTS FOR MAIN EMBANKMENT**



NOTE:
 1. MODEL CALIBRATION FOR STABILITY ANALYSIS TO SUPPORT JULY 2009 LETTER TO RON MARTELL (VA09-00838) - RE: BUTTRESS REQUIREMENT FOR MAIN EMBANKMENT

KNIGHT PIESOLD LTD	
MOUNT POLLEY MINE	
REVISED ME BUTTRESS REQUIREMENTS 954m CREST - 918m Elev BUTTRESS MODEL CALIBRATION	
<i>Knight Piésold</i> CONSULTING	P/A NO. VA101-00001/34
	REF. NO. VA09-00838
FIGURE 1	
	REV A

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
A	17DEC'14	ISSUED FOR INFORMATION	JDC	LJG	KJB



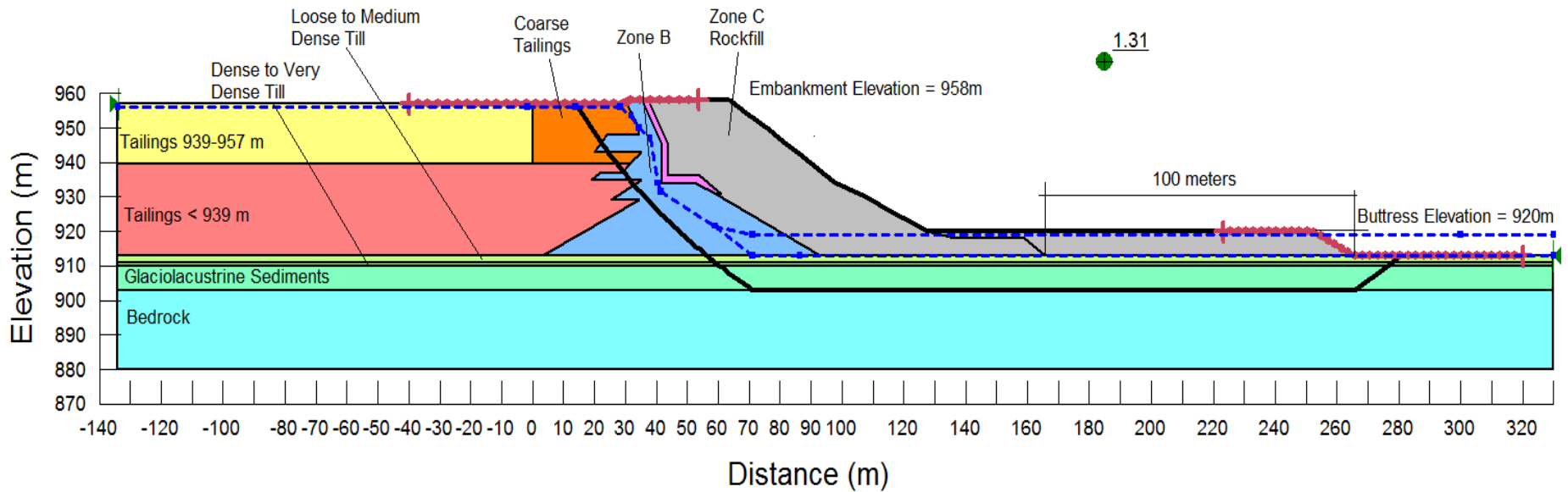
NOTE:

1. STABILITY ANALYSIS FOR STAGE 6a TO SUPPORT JULY 2009 LETTER TO RON MARTELL (VA09-00838) - RE: BUTTRESS REQUIREMENT FOR MAIN EMBANKMENT

KNIGHT PIESOLD LTD	
MOUNT POLLEY MINE	
REVISED ME BUTTRESS REQUIREMENTS 954m CREST - 920m Elev BUTTRESS STAGE 6a	
<i>Knight Piésold</i> CONSULTING	P/A NO. VA101-00001/34
REF. NO. VA09-00838	
FIGURE 2	
REV A	

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
A	17DEC'14	ISSUED FOR INFORMATION	JDC	LJG	KJB

	Unit Weight (KN/m3)	Phi		Unit Weight (KN/m3)	Phi	
Tailings >934	18		Chimney Drain	20	35	Seismic
Tailings <934	18	30	Loose to medium dense till	20	26	Horz Seismic Load: 0
Coarse Tailings	19	30	Dense to very dense till	21	26	Vert Seismic Load: 0
Zone S	22	35	Glaciolacustrine sediments	20	17	
Zone C - Rockfill	22	shear/normal				

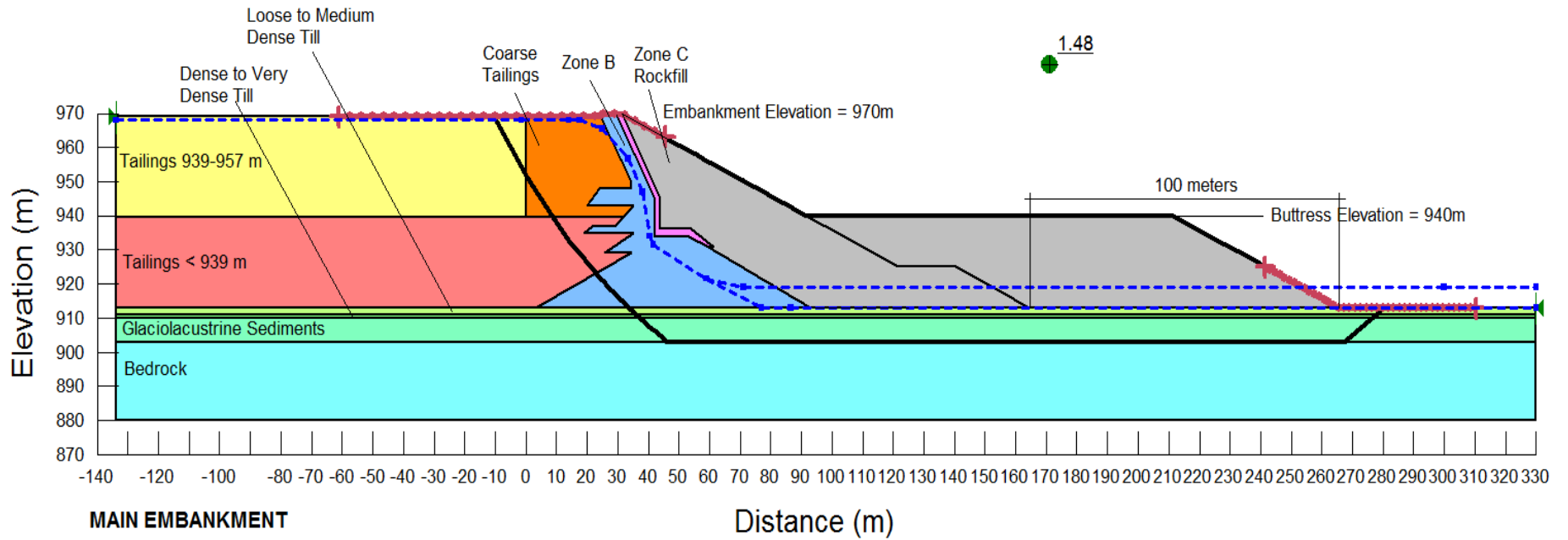


NOTE:
 1. STABILITY ANALYSIS FOR STAGE 6b TO SUPPORT JULY 2009 LETTER TO RON MARTELL (VA09-00838) - RE: BUTTRESS REQUIREMENT FOR MAIN EMBANKMENT

KNIGHT PIESOLD LTD	
MOUNT POLLEY MINE	
REVISED ME BUTTRESS REQUIREMENTS 958m CREST - 920m Elev BUTTRESS STAGE 6b	
<i>Knight Piésold</i> CONSULTING	P/A NO. VA101-00001/34
	REF. NO. VA09-00838
FIGURE 3	
	REV A

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
A	17DEC'14	ISSUED FOR INFORMATION	JDC	LJG	KJB

	Unit Weight (KN/m3)	Phi		Unit Weight (KN/m3)	Phi	
Tailings >934	18					Horz Seismic Load: 0 Vert Seismic Load: 0
Tailings <934	18	30	Chimney Drain	20	35	
Coarse Tailings	19	30	Loose to medium dense till	20	26	
Zone S	22	35	Dense to very dense till	21	26	
Zone C - Rockfill	22	shear/normal	Glaciolacustrine sediments	20	16	



NOTE:
1. STABILITY ANALYSIS FOR CLOSURE TO SUPPORT JULY 2009 LETTER TO RON MARTELL (VA09-00838) - RE: BUTTRESS REQUIREMENT FOR MAIN EMBANKMENT

KNIGHT PIESOLD LTD	
MOUNT POLLEY MINE	
REVISED ME BUTTRESS REQUIREMENTS 970m CREST - 940m Elev BUTTRESS ULTIMATE CREST (CLOSURE)	
<i>Knight Piésold</i> CONSULTING	P/A NO. VA101-00001/34
	REF. NO. VA09-00838
FIGURE 4	
	REV A

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
A	17DEC'14	ISSUED FOR INFORMATION	JDC	LJG	KJB