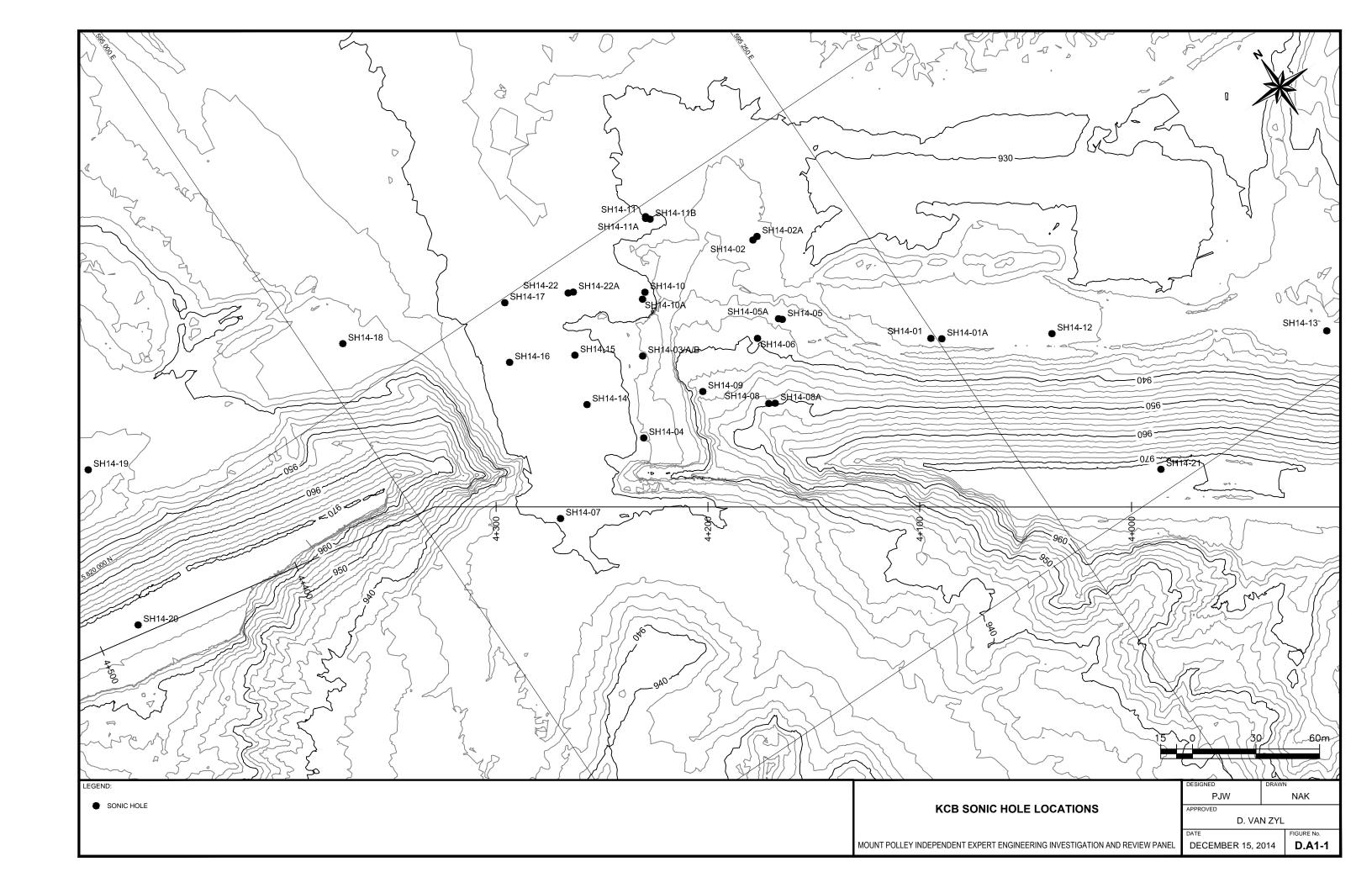
### **Independent Expert Engineering Investigation and Review Panel**

## Report on Mount Polley Tailings Storage Facility Breach

## Appendix D: ATTACHMENT D1

**Attachment D1:** Thurber Logs of KCB Sonic Holes

# Appendix D Attachment 1 Thurber Logs of KCB Sonic Holes



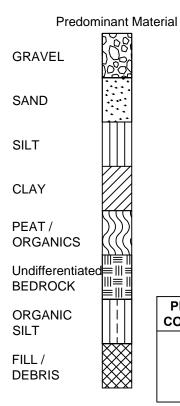
#### **Hole Location Summary**

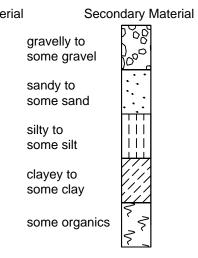
Hole Number	Northing (m)	Easting (m)	Elevation (m)
SH14-01	5819872	595248	931.3
SH14-01A	5819869	595252	931.2
SH14-02	5819957	595204	932.9
SH14-02A	5819957	595207	932.9
SH14-03	5819941	595130	932.5
SH14-04	5819908	595109	932.2
SH14-05	5819918	595195	937.1
SH14-05A	5819920	595193	937.2
SH14-06	5819917	595180	937.5
SH14-07	5819899 595055		931.7
SH14-08	5819889 595167		947.6
SH14-08A	5819887	595170	947.6
SH14-09	5819911	595145	938.0
SH14-10	5819965	595148	932.2
SH14-11	5819995	595168	931.0
SH14-11B	5819992	595169	931.2
SH14-12	5819842 595297		930.8
SH14-13	5819770	595405	933.1
SH14-14	5819936	595096	930.1
SH14-15	5819959	595104	930.2
SH14-16	5819973	595076	930.2
SH14-17	5819998	595090	929.6
SH14-18	5820025	595016	934.8
SH14-19	5820042	594883	942.8
SH14-20	5819968	594862	969.9
SH14-21	5819760	595304	968.9
SH14-22	5819985	595118	929.9
SH14-22A	5819984	595120	930.0

#### **SYMBOLS AND TERMS**

#### FOR SOIL DESCRIPTION SHOWN ON LOGS

#### **BASIC SOIL SYMBOLS**





PROPORTION OF MINOR COMPONENTS BY WEIGHT $^{(2)}$				
and	35 - 50%			
y / ey	20 - 35%			
some	10 - 20%			
trace	0 - 10%			

## SYMBOL VARIATIONS - EXAMPLES<sup>(1)</sup>

SAND and GRAVEL
SAND, silty
SILT with some clay

DENSITY OF GRANULAR SOILS			
Description	SPT N <sup>(4)</sup>		
Very Loose Loose Compact Dense Very Dense	0 - 4 4 - 10 10 - 30 30 - 50 > 50		

CONSISTENCY OF COHESIVE SOILS				
Description	Undrained Shear Strength (kPa) <sup>(4)</sup>			
Very Soft	< 12			
Soft	12 - 25			
Firm	25 - 50			
Stiff	50 - 100			
Very Stiff	100 - 200			
Hard	> 200			

PENETRATION TESTS			
Dynamic Cone Penetration			
Standard Penetration			
Becker Closed Casing			
Becker Open Casing			
Bounce Chamber Pressure			

CLASSIFICATION BY PARTICLE SIZE					
		Size Range (4)			
		(mm) <sup>(3)</sup>	U.S. Standard Sieve Size		
Name		(11111)	Retained	Passing	
Boulders		> 200	8 inch	-	
Cobbles		75 - 200	3 inch	8 inch	
Gravel:	coarse	19 - 75	0.75 inch	3 inch	
	fine	5 - 19	No. 4	0.75 inch	
Sand:	coarse	2 - 5	No. 10	No. 4	
	medium	0.4 - 2	No. 40	No. 10	
	fine	0.075 - 0.4	No. 200	No. 40	
Fines:	silt	0.002 - 0.075	-	No. 200	
	clay	< 0.002	-	-	

- 1. Only selected examples of the possible variations or combinations of the basic symbols are illustrated.
- 2. USCS refers to group symbols as defined by the Unified Soil Classification System. Soil descriptions related to fines and secondary materials are based on particle size where lab testing was completed by Thurber and visual and tactile field behaviour of samples where lab testing was not compled by Thurber.
- 3. Approximate metric conversion.
- 4. Reference Canadian Foundation Engineering Manual 4th Edition, 2006.



HOLE NO. Sheet 1 of 9 SH14-01 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595248, N 5819872 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 931.3 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 25, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Note: Field log of 0 Grey, moist, angular GRAVEL with some sand and test hole based on a trace of silt. (Fill) visual observation during drilling completed by KCB. -931 No samples were obtained by Thurber for confirmatory laboratory testing.
Density/consistency/strength
descriptions are based on field observations of highly disturbed samples. Refer to RSCPT14-01 and **KCB** laboratory 930 testing for further information. Nominal sonic core diameter 100 mm Top of UPPER TILL Firm to stiff, grey-brown, moist, sandy SILT with some gravel and traces of clay, wood fragments -2 and organics. (Possible weathered Refer to SH14-01A ablation/moraine till) preferentially for redrill of interval 0 to 12.5 m. 929 Very stiff to hard, brown, moist, sandy SILT with some gravel and a trace of clay. (Possible ablation/moraine till) Start of RSCPT14-01 at approx. 2.8 m -928 927

1/7/15- THURBER BC.GLB

15-3-280 KCB.GPJ THURBER BC.GDT

TEST HOLE - MT POLLEY

HOLE NO. Sheet 2 of 9 SH14-01 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595248, N 5819872 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 931.3 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 25, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 80 100 120 140 160 180 200 SOIL DESCRIPTION 5 Very stiff to hard, brown, moist, sandy SILT with some gravel and a trace of clay. (Possible ablation/moraine till) -926 6 925 No structure evident Firm to stiff, grey, moist, sandy SILT with some in disturbed sample clay and trace to some gravel and trace cobbles to from 6.4 to 11.3 m. 125 mm diameter. (Possible ablation/moraine till) See SH14-01A for - some zones with some sand and clayey (possible disturbed glaciolacustrine) more detailed soil description. -924 1/7/15- THURBER BC.GLB 15-3-280 KCB.GPJ THURBER BC.GDT -923 OG OF TEST HOLE - MT POLLEY -922 Vibrating Wire Tip C at 9.4 m.

HOLE NO. Sheet 3 of 9 SH14-01 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595248, N 5819872 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 931.3 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 25, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 10 Firm to stiff, grey, moist, sandy SILT with some No structure evident clay and trace to some gravel and trace cobbles to 125 mm diameter. (Possible ablation/moraine till) in disturbed sample from 6.4 to 11.3 m. - some zones with some sand and clayey See SH14-01A for (possible disturbed glaciolacustrine) -921 more detailed soil description. Possible Top of LOWER TILLS Very stiff to hard, grey, moist, sandy SILT with 920 some gravel and a trace of clay. (Basal till) (Lower Basal Till) Refusal of RSCPT14-01 at 12 approx. 12.0 m -919 1/7/15- THURBER BC.GLB >> 13 15-3-280 KCB.GPJ THURBER BC.GDT -918 OG OF TEST HOLE - MT POLLEY -917

HOLE NO. Sheet 4 of 9 SH14-01 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595248, N 5819872 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 931.3 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 25, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 15 Very stiff to hard, grey, moist, sandy SILT with some gravel and a trace of clay. (Basal till) -916 :>>⊕ (Top of Glaciofluvial) Dense, grey, moist, silty, fine SAND. (Possible glaciofluvial) Dense (inferred), brown, wet, sub-angular to angular GRAVEL and SAND with a trace to some 16 silt. (Possible glaciofluvial) Very dense (friable), brown, moist, silty fine SAND to SILT and fine SAND. (Possible glaciofluvial) 915 Vibrating Wire Tip B at 16.5 m. Very dense / hard, brown, moist, sandy SILT to (Top of Lower Basal silty SAND mixtures with some gravel and a trace ⊕Till) of clay. (Basal till) -914 - grey below 17.4 m 1/7/15- THURBER BC.GLB 18 15-3-280 KCB.GPJ THURBER BC.GDT -913 Top of WEAK Hard, dark grey, dry to moist, angular gravelly BEDROCK sandy SILT with a trace of clay. (Possible brecciated basalt bedrock)
- gravel and sand are sub-angular to angular basalt like fragments in hard silt supported matrix 19 of same colour TEST HOLE - MT POLLEY 912

HOLE NO. Sheet 5 of 9 SH14-01 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595248, N 5819872 **TOP OF HOLE ELEV:** 931.3 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 25, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS PENETRATION ▼ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) WATER CONTENT (%) (blows/300 mm) USCS **□** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 20 Hard, dark grey, dry to moist, angular gravelly sandy SILT with a trace of clay. (Possible brecciated basalt bedrock) -911 21 910 22 -909 1/7/15- THURBER BC.GLB :>>◆ 23 15-3-280 KCB.GPJ THURBER BC.GDT -908 -24 JOG OF TEST HOLE - MT POLLEY -907

HOLE NO. Sheet 6 of 9 SH14-01 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595248, N 5819872 **TOP OF HOLE ELEV:** 931.3 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 25, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) PENETRATION GRAIN SIZE (%) WATER CONTENT (%) (blows/300 mm) USCS **□** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 40 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 25 Hard, dark grey, dry to moist, angular gravelly sandy SILT with a trace of clay. (Possible brecciated basalt bedrock) -906 -26 :>> 905 27 - angular gravel (probable basalt boulder) from 27.1 to 27.7  $\mbox{\ensuremath{m}}$ -904 1/7/15- THURBER BC.GLB 28 15-3-280 KCB.GPJ THURBER BC.GDT -903 29 JOG OF TEST HOLE - MT POLLEY -902

HOLE NO. Sheet 7 of 9 SH14-01 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595248, N 5819872 **TOP OF HOLE ELEV:** 931.3 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 25, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) PENETRATION GRAIN SIZE (%) WATER CONTENT (%) (blows/300 mm) USCS **□** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 40 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 30 Hard, dark grey, dry to moist, angular gravelly sandy SILT with a trace of clay. (Possible brecciated basalt bedrock) -901 31 900 32 -899 1/7/15- THURBER BC.GLB 33 15-3-280 KCB.GPJ THURBER BC.GDT -898 - some clay to clayey from 33.8 to 35.3 m -34 JOG OF TEST HOLE - MT POLLEY -897

HOLE NO. Sheet 8 of 9 SH14-01 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595248, N 5819872 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 931.3 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 25, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 35 Hard, dark grey, dry to moist, angular gravelly sandy SILT with a trace of clay. (Possible brecciated basalt bedrock) 896 Very dense/hard, dark grey, dry to moist, angular GRAVEL, SAND and SILT. (Possible brecciated basalt bedrock) -36 -895 -37 -894 1/7/15- THURBER BC.GLB 38 15-3-280 KCB.GPJ THURBER BC.GDT -893 Very dense (inferred), friable, dark grey, dry to moist, silty, sandy, angular GRAVEL. (Possible brecciated basalt bedrock)
- silt, sand and gravel of basalt-like origin with occasional white vein-like streaks of quartz or plagioclase feldspar 39 TEST HOLE - MT POLLEY -892

HOLE NO. Sheet 9 of 9 SH14-01 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595248, N 5819872 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 931.3 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 25, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Very dense (inferred), friable, dark grey, dry to moist, silty, sandy, angular GRAVEL. (Possible brecciated basalt bedrock) 40 - silt, sand and gravel of basalt-like origin with occasional white vein-like streaks of quartz or -891 plagioclase feldspar -890 42 -889 43 15-3-280 KCB.GPJ THURBER BC.GDT -888 Vibrating Wire Tip A at 43.9 m. -887 End of hole at KCB instruction. Test hole left cased pending instrumentation installation completed September 27. Vibrating wire piezometers installed September 27 at 9.4 m (Tip C), 16.5 m (Tip B) and 43.9 m (Tip A) and test hole grouted.

1/7/15- THURBER BC.GLB

TEST HOLE - MT POLLEY

HOLE NO. Sheet 1 of 3 SH14-01A LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595252, N 5819869 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 931.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 25, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Note: Field log of 0 Grey, moist, angular GRAVEL with some sand and test hole based on a trace of silt. (Fill) 931 visual observation during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing.
Density/consistency/strength
descriptions are based on field observations of highly disturbed samples. Refer to 930 RSCPT14-01 and **KCB** laboratory testing for further information. Poor recovery for the first 1.8 m. Top of UPPER TILL Firm to stiff, grey-brown, moist, sandy SILT with some gravel and traces of clay and organics. -2 (Possible ablation/moraine till) Nominal sonic core  $\bigoplus$  $\oplus$ diameter 100 mm 929 Very stiff to hard, brown, moist, sandy SILT with some gravel and traces of clay and cobbles. (Possible ablation/moraine till)  $\bigoplus$ Start of RSCPT14-01 at approx. 2.8 m -928  $\Phi$ `>>**⊕** Re-drill to sample interval which with disturbed recovery at SH14-01. 927

1/7/15- THURBER BC.GLB

15-3-280 KCB.GPJ THURBER BC.GDT

TEST HOLE - MT POLLEY

HOLE NO. Sheet 2 of 3 SH14-01A LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595252, N 5819869 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 931.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 25, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery SOIL DESCRIPTION 80 100 120 140 160 180 200 **COMMENTS** 5 Very stiff to hard, brown, moist, sandy SILT with some gravel and traces of clay and cobbles. 926 (Possible ablation/moraine till) -6 - grey below 6.1 m 925  $\dot{\oplus}$ >> - firm to stiff below 6.4 m  $\oplus$  $\oplus$ 924  $\bigoplus$ 1/7/15- THURBER BC.GLB Top of UPPER GLU Firm to stiff, grey, moist to wet, sandy SILT with some clay to clayey and a trace of gravel. (Glaciolacustrine) THURBER BC.GDT 923 - 10 mm thick zone with thin clay laminations at 8.2 m  $\oplus$ - 100 mm thick gravelly zone (possible till fragment) at 8.7 m 15-3-280 KCB.GPJ Compact (inferred), grey, moist to wet, silty, clayey, fine to medium SAND interbedded with thin 9 Cvane at 9.0 m is 20 laminations of soft to firm clay. (Possible to 30 kPa glaciolacustrine) TEST HOLE - MT POLLEY (Cvane is Torvane) Soft to firm, grey, moist to wet CLAY with thin 922 laminations of fine sand. (Glaciolacustrine) Firm, grey, moist sandy SILT with some gravel and traces of clay and cobbles. (Basal till) Top of LOWER TILLS (Lower Basal - some clay from 9.5 to 9.6 m  $\bigoplus$  $\bigoplus$ 

HOLE NO. Sheet 3 of 3 SH14-01A LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595252, N 5819869 **TOP OF HOLE ELEV:** 931.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 25, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) USCS **□** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 60 80 100 120 140 160 180 200 SOIL DESCRIPTION Firm, grey, moist sandy SILT with some gravel and traces of clay and cobbles. (Basal till) 10 921 - very stiff to hard below 10.1 m  $\bigoplus$ :>>♠ - sandy silt to fine sand and silt from 11.0 to 12.5 m 920  $\stackrel{\dot{}}{\oplus}$ Refusal of RSCPT14-01 at 12 approx. 12.0 m -919  $\bigoplus$ `>>⊕ -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB End of hole at KCB instruction. Test hole backfilled with bentonite chips upon completion. 13 -918 -917

HOLE NO. Sheet 1 of 2 SH14-02 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595204, N 5819957 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 26, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Note: Field log of 0 Grey-brown, moist, sandy, sub-angular to angular GRAVEL to 75 mm diameter with a trace of silt. test hole based on visual observation (Rockfill debris) during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing.
Density/consistency/strength
descriptions are based on field -932 observations of highly disturbed samples. Refer to RSCPT14-02 and **KCB** laboratory testing for further information. Nominal sonic core -931 diameter 100 mm -2 1/7/15- THURBER BC.GLB Firm to stiff, grey-brown, moist SILT with some sand and fibrous organics, trace to some gravel 930 and clay and a trace of wood fragments. (Possible stripping material - till-like fill) Poor recovery from - 75 mm diameter wood fragment (possible small 3.4 to 4.9 m, drill bit log), crossing perpendicular to core axis blocked by wood. Refer to SH14-02A preferentially for redrill. 929 -928

15-3-280 KCB.GPJ THURBER BC.GDT

TEST HOLE - MT POLLEY

HOLE NO. Sheet 2 of 2 SH14-02 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595204, N 5819957 **TOP OF HOLE ELEV:** 932.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 26, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Firm to stiff, grey-brown, moist SILT with some sand and fibrous organics, trace to some gravel and clay and a trace of wood fragments. (Possible 5 stripping material - till-like fill) Top of UPPER TILL Very stiff to hard, grey-brown, moist, sandy SILT 927 with some gravel and trace to some clay. (Possible weathered ablation/moraine till) 6 No recovery. -926 1/7/15- THURBER BC.GLB 925 15-3-280 KCB.GPJ THURBER BC.GDT -924 JOG OF TEST HOLE - MT POLLEY End of hole due to poor recovery. Test hole grouted to base of fill upon completion. Moved to SH14-02A. -923

HOLE NO. Sheet 1 of 5 SH14-02A LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595207, N 5819957 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 26 and 27, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery SOIL DESCRIPTION 80 100 120 140 160 180 200 **COMMENTS** Red/grey/brown, moist, sandy, sub-angular to angular GRAVEL to 76 mm in diameter with a trace of silt. (Rockfill) 0 Note: Field log of test hole based on visual observation during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing. Density/consistency/strength descriptions are based on field 932 observations of highly disturbed samples. Refer to RSCPT14-02 and **KCB** laboratory testing for further information. Nominal sonic core -931 diameter 140 mm -2 Cvane is Torvane 1/7/15- THURBER BC.GLB -930 THURBER BC.GDT 15-3-280 KCB.GPJ 929 Dark brown, moist to wet, fibrous ORGANICS and WOOD fragments (sticks). (Possible stripping TEST HOLE - MT POLLEY waste - fill) Stiff to very stiff, grey-brown, moist SILT with some sand and a trace to some sub-rounded, gravel to  $\oplus$ 50 mm in diameter and clay. (Possible till-like fill)  $\bigoplus$ - firm to stiff below 4.6 m - 25 mm diameter pocket of clean medium sand at  $\bigoplus$ >> Top of UPPER TILL 928

HOLE NO. Sheet 2 of 5 SH14-02A LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595207, N 5819957 **TOP OF HOLE ELEV:** 932.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 26 and 27, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 80 100 120 140 160 180 200 SOIL DESCRIPTION Very stiff to hard, grey-brown, moist, sandy SILT with some gravel to gravelly and a trace of cobbles 5 to 100 mm diameter. (Possible ablation/moraine till)  $\oplus$ :>>⊕ 927 6  $\bigoplus$ - stiff to very stiff with cobbles to 125 mm in diameter below 6.4 m -926  $\bigoplus$  $\oplus$ 1/7/15- THURBER BC.GLB -925 - firm to stiff and grey below 7.9 m 15-3-280 KCB.GPJ THURBER BC.GDT  $\bigoplus$  $\bigoplus$ Sample fell out of core barrel during -924 retrieval from 9.4 to 11.0 m. Recovered during next run with TEST HOLE - MT POLLEY significant disturbance. Start of RSCPT14-02 at approx. 9.4 m Vibrating Wire Tip B at 9.4 m. -923

HOLE NO. Sheet 3 of 5 SH14-02A CLIENT: LOCATION: See Fig. 209 Mount Polley Independent Expert E 595207, N 5819957 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 26 and 27, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 10 Firm to stiff (highly disturbed), grey, moist, sandy Sample fell out of SILT with some gravel to gravelly and a trace of core barrel during cobbles to 100 mm diameter. retrieval from 9.4 to (Possible ablation/moraine till) 11.0 m. Recovered during next run with significant disturbance. Top of UPPER GLU Firm, grey, moist, clayey SILT with traces of sand and gravel. (Glaciolacustrine) - massive, no apparent structure 922  $\bigoplus$  $\oplus$ Firm, grey, moist to wet, thinly laminated clayey SILT to CLAY with partings of fine sand between laminations. (Glaciolacustrine) - two 10 mm thick laminations of lighter grey clay Cyane at 11.5 m is - laminations could be peeled apart on sandy 30 to 35 kPa partings Firm, grey, moist SILT with some clay to clayey and a trace to some gravel and a trace of sand. 921 (Glaciolacustrine) 12 - massive, no apparent structure Cvane at 12.5 m is Firm, grey, moist to wet, thinly laminated clayey 25 kPa SILT to CLAY with partings of fine sand between 1/7/15- THURBER BC.GLB laminations. (Glaciolacustrine) Top of LOWER Very dense, grey, moist SAND and SILT with TILLS (Lower Basal some sub-rounded to rounded gravel to 75 mm diameter and a trace of clay. (Basal till) -920 13 15-3-280 KCB.GPJ THURBER BC.GDT Initial refusal of RSCPT14-02 at approx. 13.7 m -919 (Top of Lower GLU) Very stiff to hard, grey, moist SILT with some clay and a trace to some sand and a trace of gravel to TEST HOLE - MT POLLEY 40 mm diameter. (Glaciolacustrine)  $\oplus$ :>> (Top of Glaciofluvial) Dense, brown, wet, silty, fine SAND with a trace of gravel to 75 mm diameter. (Possible glaciofluvial) 918

HOLE NO. Sheet 4 of 5 SH14-02A LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595207, N 5819957 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 26 and 27, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Dense, brown, wet, silty, fine SAND with a trace of 15 111 Restart of gravel to 75 mm diameter. (Possible glaciofluvial) 1:1:1 RSCPT14-02 at approx. 15.0 m - a 50 mm thick layer of wet SAND and GRAVEL 1.14 with a trace to some silt at 15.2 m 111 .111 Vibrating Wire Tip A Dense, brown, wet, fine to medium SAND with at 15.5 m. some silt. (Possible glaciofluvial) 1:11 Dense, brown, wet, silty, fine SAND to fine SAND 917 and SILT. (Possible glaciofluvial) 16 (Top of Lower Basal Very stiff to hard, brown/red/green SILT with some gravel and sand and a trace of clay. (Basal till)  $\bigoplus$ Refusal of RSCPT14-02 at approx. 16.6 m Top of WEAK Very dense (inferred), red/brown/orange, moist, BEDROCK silty sub-angular to angular SAND and GRAVEL 916 (Possible brecciated volcanic bedrock). - gravel to 13 mm diameter, very friable, weak to moderately strong of basalt like with oxidation staining 1/7/15- THURBER BC.GLB 915 18 15-3-280 KCB.GPJ THURBER BC.GDT - white vein-like structure perpendicular to core axis up to 10 mm thick Very dense (inferred), grey, dry to moist, silty, fine SAND with traces of medium to coarse sand and sub-rounded to sub-angular gravel to 13 mm diameter. (Possible poorly cemented sandstone 914 bedrock) .1.1.1. 19 - white vein-like structures TEST HOLE - MT POLLEY -913

HOLE NO. Sheet 5 of 5 SH14-02A LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595207, N 5819957 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 26 and 27, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ■ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 COMMENTS SOIL DESCRIPTION 20 Very dense (inferred), grey, dry to moist, silty, fine SAND with traces of medium to coarse sand and 111 sub-rounded to sub-angular gravel to 13 mm diameter. (Possible poorly cemented sandstone 1.11 Very dense (inferred), dark grey, dry to moist SAND and sub-angular to angular GRAVEL to 13 mm diameter with a trace to some silt. (Possible brecciated volcanic bedrock) Gravel fragments - sand and gravel particles of basalt-like origin are moderately - remnants of vein-like structure crosses at 20.7 m strong but friable. 912 -21 Very dense (inferred), light grey, dry to moist, silty, fine to medium SAND. (Possible poorly cemented 1: i 1 1: i 1 sandstone) Very dense / hard, dark grey, dry to moist, angular gravelly silty SAND. (Possible brecciated volcanic ); ;;; )@1.1, bedrock) - gravel, sand and silt matrix are sub-angular to 911 22 angular of basalt like origin 1/7/15- THURBER BC.GLB -910 23 909 24 End of hole at KCB instruction. Vibrating wire piezometers installed at 9.4 m (Tip B) and 15.5 m (Tip A) and test hole grouted. 908

15-3-280 KCB.GPJ THURBER BC.GDT

TEST HOLE - MT POLLEY

HOLE NO. Sheet 1 of 10 SH14-03 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595130, N 5819941 TOP OF HOLE ELEV: 932.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 29 and 30, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 80 100 120 140 160 180 200 SOIL DESCRIPTION Note: Field log of 0 Grey, moist to wet, angular GRAVEL with some sand and traces of silt and cobbles to 100 mm diameter. (Rockfill) test hole based on visual observation during drilling completed by KCB. No samples were obtained by Thurber 932 for confirmatory laboratory testing.
Density/consistency/strength
descriptions are based on field observations of highly disturbed samples. Refer to RSCPT14-03 and **KCB** laboratory testing for further information. -931 Nominal sonic core diameter 140 mm from 0 to 29.3 m -930 -929 928

1/7/15- THURBER BC.GLB

15-3-280 KCB.GPJ THURBER BC.GDT

TEST HOLE - MT POLLEY

HOLE NO. Sheet 2 of 10 SH14-03 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595130, N 5819941 **TOP OF HOLE ELEV:** 932.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 29 and 30, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 5 Boundary between - fragments of non-woven geotextile at 5.0 m fill and foundation at Stiff to very stiff, grey/brown, moist, sandy SILT with some gravel to 50 mm diameter, and a trace of clay. (Possible ablation/moraine till) ⊕.  $\bigoplus$ 5.0 m. Top of UPPER TILL Start of 927 RSCPT14-03 at approx. 5.3 m 6 ∯:  $\oplus$ -926  $\bigoplus$  $\bigoplus$ - grey below 7.0 m - stiff below 7.3 m 1/7/15- THURBER BC.GLB 925  $\oplus$ - firm to stiff below 7.9 m 15-3-280 KCB.GPJ THURBER BC.GDT  $\bigoplus$  $\bigoplus$ -924  $\bigoplus$  $\bigoplus$ TEST HOLE - MT POLLEY 923

HOLE NO. Sheet 3 of 10 SH14-03 CLIENT: LOCATION: See Fig. 209 Mount Polley Independent Expert E 595130, N 5819941 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 29 and 30, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery COMMENTS SOIL DESCRIPTION 80 100 120 140 160 180 200 10 Firm to stiff, grey, moist, sandy SILT with some gravel to 50 mm diameter, and a trace of clay. (Possible ablation/moraine till) Soft (drill disturbed), grey, moist to wet, fine to medium SAND and SILT with a trace of gravel to 922 50 mm diameter. (Possible ablation/moraine till) Firm to stiff, grey, moist SILT with some sub-rounded to sub-angular gravel to gravelly to 50 mm in diameter, some sand and a trace to some clay. (Possible ablation/moraine till) Top of UPPER GLU Firm, grey, moist, thinly laminated, clayey SILT to  $\oplus$ CLAY interbedded with fine sand partings. Undrained shear (Glaciolacustrine) strenath from Torvane on Firm, grey, moist, sandy SILT with some gravel to disturbed samples 50 mm diameter and a trace of clay. (Possible till fragment) 921 Firm, grey, moist, thinly laminated, clayey SILT to CLAY interbedded with fine sand partings. (Glaciolacustrine) - laminations could be peeled apart 'booking' at sandy partings 12 bedding is tilted dipping at 30 to 50° from horizontal from 11.7 to 11.8 m - from 13.0 to 13.6 m, core perimeter shaved off during drilling/extrusion, resulting core diameter is 100 mm for 140 mm I.D. barrel 1/7/15- THURBER BC.GLB 920 13 - bedding folded downhole into parabolic structures with concave downward curvature, at steepest (50 mm form core axis) bedding is 15-3-280 KCB.GPJ THURBER BC.GDT approximately 60° to horizontal from 13.0 to 13.3 m (possible drill disturbance) 919 Top of LOWER Very Stiff to hard, grey, moist, sandy SILT with TILLS (Lower Basal some sub-rounded to sub-angular mixed origin gravel to 40 mm in diameter and a trace of clay. (Basal till) 14 - 50 mm thick layer of silty sand with some gravel at 14.0 m TEST HOLE - MT POLLEY (Top of Lower GLU) Very stiff, grey, friable, moist to wet SILT with some clay and fine sand and occasional fragments (less than 5 mm long) of compressed (coal-like) 918 organics. (Glaciolacustrine)  $\bigoplus$ - 100 mm thick layer with some sub-rounded to sub-angular mixed origin gravel to gravelly to 40 mm in diameter at 14.8 m

HOLE NO. Sheet 4 of 10 SH14-03 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595130, N 5819941 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 29 and 30, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ■ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** SOIL DESCRIPTION 80 100 120 140 160 180 200 15 Very stiff, grey, friable, moist to wet SILT with some clay and fine sand and occasional fragments (less than 5 mm long) of compressed (coal-like) organics. (Glaciolacustrine) 917  $\bigoplus$ :>>◆ 16  $\oplus$ -916  $\bigoplus$ Stiff to very stiff, grey, moist, thinly laminated, clayey SILT to CLAY interbedded with partings of 1/7/15- THURBER BC.GLB -915 fine sand. (Glaciolacustrine) - bedding is undulating amplitude approx. 25 mm 18 15-3-280 KCB.GPJ THURBER BC.GDT - alternating laminations are dark grey/black, organic odour, and a trace of organic silt below  $\bigoplus$ 18.4 m -914 - contact at 18.6 m is undulating (Top of Glaciofluvial) Compact to dense (inferred), grey, wet, fine SAND and SILT, coarsening downward. (Possible glaciofluvial) - grading to fine to medium sand with some silt at 18.7 m 19 TEST HOLE - MT POLLEY Compact to dense (inferred), grey, wet, silty, fine SAND to fine SAND and SILT, interbedded with black laminations with organic odour. (Possible glaciofluvial) 913 - bedding is deformed with concave upward curvature with peak slightly off centre of core axis from 19.4 to 20.0 m (possible drill disturbance)

HOLE NO. Sheet 5 of 10 SH14-03 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595130, N 5819941 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 29 and 30, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 COMMENTS SOIL DESCRIPTION 20 Compact to dense (inferred), grey, wet, silty, fine SAND to fine SAND and SILT, interbedded with black laminations with organic odour. (Possible glaciofluvial) 912 Compact to dense (inferred), grey, wet SAND with a trace of sub-rounded gravel to 13 mm diameter. Refusal of (Possible glaciofluvial) RSCPT14-03 at approx. 20.6 m Compact to dense (inferred), grey, wet, silty, fine :1.1.1 -21 SAND with a trace of organic silt and organic 1.11 odour. (Possible glaciofluvial) ŀij Compact to dense (inferred), grey, wet, gravelly SAND to SAND and GRAVEL with a trace of silt. <del>أ | [</del> || | | | (Possible glaciofluvial) Compact to dense (inferred), grey, wet, silty fine SAND with organic odour. (Possible glaciofluvial) | |-|-|-1 -911 - fine sand and silt below 21.6 m -22 Top of WEAK Very stiff to hard, grey with green, purple, orange, red staining/weathering, dry to moist, clayey SILT **BEDROCK** with traces of sand and gravel. (Possible fine volcanic ash tuff bedrock) - weathering horizons surrounding gravel particles  $\bigoplus$  $\bigoplus$ 1/7/15- THURBER BC.GLB 910 - trace white streaks (possible weathering by-product or weathered remnants of veins) 23 15-3-280 KCB.GPJ THURBER BC.GDT :>>**⊕** 909 - stiff to very stiff with some sand below 23.5 m  $\bigoplus$  $\oplus$ 24 TEST HOLE - MT POLLEY 908  $\bigoplus$ silty SAND to sandy SILT with a trace of quartz vein fragments below 24.7 m, with pockets of olive green and red staining

HOLE NO. Sheet 6 of 10 SH14-03 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595130, N 5819941 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 932.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 29 and 30, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 25 Very stiff to hard, grey with green, purple, orange, red staining/weathering, dry to moist, clayey SILT with traces of sand and gravel. (Possible fine volcanic ash tuff bedrock) - zone of purple SAND with a trace to some silt and a trace of white angular quartz vein fragments from 25.3 to 25.5 m 907 -26 -906 Very stiff to hard, grey-green, dry to moist, clayey SILT with traces of sand and sub-angular basalt gravel to 50 mm diameter. (Possible fine volcanic **⊕**:>>◆ ash tuff bedrock) 27 1/7/15- THURBER BC.GLB -905 **⊕**:>>**⊕** 28 15-3-280 KCB.GPJ THURBER BC.GDT -904 **⊕**>>**⊕** 29 OG OF TEST HOLE - MT POLLEY Nominal sonic core - hard below 29.3 m with no gravel diameter 100 mm below 29.3 m -903

HOLE NO. Sheet 7 of 10 SH14-03 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595130, N 5819941 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 29 and 30, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 COMMENTS SOIL DESCRIPTION 30 Very stiff to hard, grey-green, dry to moist, clayey SILT with traces of sand and sub-angular basalt gravel to 50 mm diameter. (Possible fine volcanic ash tuff bedrock) 902 Hard, grey with light green, rusty red, and white and black streaks, dry to moist SILT with some sand and sub-rounded to sub-angular gravel to 50 mm diameter of meta-basalt like origin and a trace of clay. (Possible fine volcanic ash tuff bedrock) -31 -901 Very dense (inferred), light grey, dry to moist, silty, fine to medium SAND to SILT and SAND with a trace to some sub-angular to sub-rounded coal fragments to 13 mm diameter and some red and 32 green alteration staining of matrix. (Possible poorly cemented sandstone bedrock) 1/7/15- THURBER BC.GLB 900 Very stiff, green with purple and white staining/streaking, dry to moist, fine sandy SILT with a trace to some sub-rounded to sub-angular gravel to 13 mm diameter and a trace of clay. (Possible fine volcanic ash tuff bedrock) 33 15-3-280 KCB.GPJ THURBER BC.GDT -899 Very stiff to hard, grey, dry to moist SILT with some clay with green and white streaks/fine mineralization. (Possible fine volcanic ash tuff -34 bedrock) **⊕**`>>� TEST HOLE - MT POLLEY -898

HOLE NO. Sheet 8 of 10 SH14-03 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595130, N 5819941 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 29 and 30, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ■ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery COMMENTS SOIL DESCRIPTION 80 100 120 140 160 180 200 35 Very stiff to hard, grey, dry to moist SILT with some clay with green and white streaks/fine mineralization. (Possible fine volcanic ash tuff bedrock) 897 ⊕>>--36 Hard with very stiff zones, dark grey-green, moist SILT with some angular to sub-rounded gravel to 25 mm diameter and a trace to some sand and a trace of clay. (Possible brecciated volcanic bedrock) - matrix is pervasively stained green - gravel is medium strong, reddish black -896 moderately strong basalt like -37 1/7/15- THURBER BC.GLB -895 -38 Hard (friable), light grey, dry to moist, fine sandy SILT with traces of fine gravel, medium to coarse sand with black vein-like streaks and red 15-3-280 KCB.GPJ THURBER BC.GDT secondary alteration colour. (Possible brecciated volcanic bedrock) -894 Hard, grey, moist SILT with some fine sand to sandy, some sub-angular to angular basalt gravel to 25 mm diameter and a trace of clay. (Possible brecciated volcanic bedrock) -39 TEST HOLE - MT POLLEY Very dense (inferred), grey, dry to moist, silty, fine SAND to fine SAND and SILT with some -893 sub-angular to angular basalt gravel and a trace to some medium to coarse sand. (Possible brecciated volcanic bedrock)

HOLE NO. Sheet 9 of 10 SH14-03 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595130, N 5819941 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 932.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 29 and 30, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Very dense (inferred), grey, dry to moist, silty, fine SAND to fine SAND and SILT with some sub-angular to angular basalt gravel and a trace to 40 some medium to coarse sand. (Possible brecciated volcanic bedrock) 892 -891 Very dense (inferred), friable, dark grey/black, dry to moist, silty, sandy, sub-angular to angular GRAVEL to 50 mm diameter. (Probable brecciated 42 volcanic bedrock) - gravel of moderately strong basalt like origin with no visible structure, alteration or veins. - localized zones of silt and sand with some gravel 1/7/15- THURBER BC.GLB 890 43 15-3-280 KCB.GPJ THURBER BC.GDT -889 TEST HOLE - MT POLLEY -888

HOLE NO. Sheet 10 of 10 SH14-03 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595130, N 5819941 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 932.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic September 29 and 30, 2014 DATE: **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 45 Very dense (inferred), friable, dark grey/black, dry to moist, silty, sandy, sub-angular to angular GRAVEL to 50 mm diameter. (Probable brecciated volcanic bedrock) - gravel of moderately strong basalt like origin with no visible structure, alteration or veins. - localized zones of silt and sand with some gravel 887 46 -886 1/7/15- THURBER BC.GLB -885 - a 100 mm intact basalt cobble at 47.7 m End of hole at KCB instruction. Test hole sounded through casing upon completion to 47.8 m. Slope 48 inclinometer installed and test hole grouted. 15-3-280 KCB.GPJ THURBER BC.GDT -884 49 TEST HOLE - MT POLLEY -883

HOLE NO. Sheet 1 of 6 SH14-04 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595109, N 5819908 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 30 and October 1, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Note: Field log of 0 Open HDPE pipe standing vertically installed through rockfill access road during construction to test hole based on 932 visual observation facilitate drilling. during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing.
Density/consistency/strength
descriptions are based on field observations of highly disturbed samples. Refer to RSCPT14-04 and -931 **KCB** laboratory testing for further information. Grey-brown, moist to wet, cobbly, sandy, angular Nominal sonic core to sub-angular GRAVEL to 100 mm diameter with diameter 140 mm some silt. (Rockfill) from 0 to 18.6 m -2 930 1/7/15- THURBER BC.GLB 15-3-280 KCB.GPJ THURBER BC.GDT -929 TEST HOLE - MT POLLEY 928

HOLE NO. Sheet 2 of 6 SH14-04 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595109, N 5819908 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 30 and October 1, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Grey-brown, moist to wet, cobbly, sandy, angular to sub-angular GRAVEL to 100 mm diameter with 5 927 Start of some silt. (Rockfill) - with some reddish grey silty sand (tailings debris) RSCPT14-04 at approx. 5.4 m present below 4.9 m Top of UPPER TILL Stiff, grey-brown, moist, sandy SILT with some sub-rounded to sub-angular gravel to 75 mm in diameter with a trace of clay. (Possible ablation/moraine till)  $\bigoplus$ - very stiff to hard below 5.8 m 6 >>**⊕** 926  $\bigoplus$ `>>**⊕** 925 >> 1/7/15- THURBER BC.GLB 15-3-280 KCB.GPJ THURBER BC.GDT 924  $\dot{\oplus}$ - very dense (inferred) silt and sand (brittle) from 8.4 to 9.5 m OG OF TEST HOLE - MT POLLEY 923 **⊕**`>>**⊕** 

HOLE NO. Sheet 3 of 6 SH14-04 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595109, N 5819908 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 30 and October 1, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ■ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 COMMENTS SOIL DESCRIPTION 10 Very stiff to hard, grey-brown, moist, sandy SILT with some sub-rounded to sub-angular gravel to 922 75 mm in diameter with a trace of clay. (Possible ablation/moraine till) **⊕**:>> 921  $\oplus$ - firm, grey, with trace to some clay below 11.3 m 12  $\bigoplus$ 920 1/7/15- THURBER BC.GLB  $\bigoplus$ 13 Compact (inferred), grey, moist to wet, silty SAND with some gravel and a trace of clay. (Possible ablation/moraine till) 15-3-280 KCB.GPJ THURBER BC.GDT 919 Top of UPPER GLU Firm (inferred), grey, moist to wet, clayey SILT to CLAY with traces of sand and fine gravel. Cvane ranges 15 to (Glaciolacustrine) 20 kPa with - no visible structure (thick bed or structure remolded 5 to destroyed) 10 kPa - recovered sample is soft (likely drill disturbed) 14 - 125 mm diameter cobble at 14.0 m TEST HOLE - MT POLLEY Top of LOWER -918 Dense/stiff to very stiff, grey, moist, sandy SILT to TILLS (Lower Basal SILT and SAND with some sub-rounded to Till) rounded gravel to 50 mm diameter and a trace of clay. (Basal till) Contact at 14.2 m dips at between 30 to 40° to horizontal.

HOLE NO. Sheet 4 of 6 SH14-04 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595109, N 5819908 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 30 and October 1, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery SOIL DESCRIPTION 80 100 120 140 160 180 200 **COMMENTS** 15 (Top of Lower GLU) Stiff to very stiff, grey, moist, thinly laminated, clayey SILT to CLAY interbedded with fine sand 917 partings. (Glaciolacustrine) - bedding dips at 35 to 45° to horizontal - zone about 50 mm thick where no bedding apparent at 15.4 m - below 15.4 m, bedding reverses to 20 to 30° from (Top of Glaciofluvial) horizontal in opposite orientation to that above Compact to dense (inferred), grey, wet, thinly laminated, silty, fine to medium SAND interbedded with firm to stiff silt. (Possible glaciofluvial) - bedding is deformed with peak near centre of core axis (possibly due to drill action) and limbs dipping at 20 to 30° to horizontal by core perimeter 16 | | | |-|-|-916 (concave downward) - loose (disturbed), grey, moist SAND with trace to some silt from 16.1 to 16.3 m ijH1 11: i.J.J. Refusal of RSCPT14-04 at 915 approx. 17.2 m 1/7/15- THURBER BC.GLB Compact to dense (inferred), brown, wet, sandy rounded to sub-angular GRAVEL to 75 mm diameter and a trace of silt. (Possible glaciofluvial) 18 15-3-280 KCB.GPJ THURBER BC.GDT Compact to dense (inferred), thickly laminated, 914 fine to medium SAND with trace silt interbedded with compact (brittle) fine SAND and SILT. (Possible glaciofluvial) - 15 mm average bed thickness Compact to dense (inferred), brown with reddish Nominal sonic core staining (possible oxidization), wet, sandy, diameter 100 mm sub-rounded to sub-angular GRAVEL to 50 mm below 18.6 m diameter with a trace of silt. (Possible glaciofluvial) Very dense (inferred), purple to pink, moist, sandy, sub-rounded to angular GRAVEL to 75 mm 19 1.1 diameter, with some silt. (Possible till fragment) - gravel is altered/weathered, mixed origins TEST HOLE - MT POLLEY 913 Compact to dense (inferred), brown, wet, fine to medium SAND with some silt to silty. (Possible glaciofluvial) j. j. j

HOLE NO. Sheet 5 of 6 SH14-04 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595109, N 5819908 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: September 30 and October 1, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Very dense, purple to pink, moist, sandy, sub-rounded GRAVEL to 100 mm diameter, with 20 (Top of Lower Basal 912 some silt. (Basal till) -21 911 Dense (inferred), brown, moist to wet, gravelly to 25 mm diameter SAND with a trace to some silt. Top of WEAK (Possible glaciofluvial) BEDROCK Very dense (inferred), purple to pink, dry to moist, SAND with some angular friable gravel to 25 mm Driller infers diameter. (Possible weathered igneous bedrock) weathered rock - texture suggests highly weathered, moderately below 21.3 m strong meta-igneous (monzonite) rock - no apparent structure or discontinuities visible 22 - sand grains may be phenocrysts with pervasive (potassic) alteration 910 - 75 mm diameter, very strong (R5) green meta-igneous xenolith, possible chloritic alteration at 22.0 m 1/7/15- THURBER BC.GLB 23 15-3-280 KCB.GPJ THURBER BC.GDT -909 24 TEST HOLE - MT POLLEY -908

HOLE NO. Sheet 6 of 6 SH14-04 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595109, N 5819908 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic September 30 and October 1, 2014 DATE: **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 25 Hard, greenish grey with dark red sub-vertical banding, dry to moist, sandy SILT with some gravel. (Possible weathered igneous bedrock) 907 - pervasive alteration - gravel particles are pinkish grey meta-igneous 200 - dark red bands are very stiff silt with some clay (possible shear indicator) -26 906 End of hole at KCB instruction. Test hole sounded through casing upon completion to 26.2 m. Slope inclinometer installed and test hole grouted. 27 905 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB 28 -904 29 903

HOLE NO. Sheet 1 of 1 SH14-05 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595195, N 5819918 TOP OF HOLE ELEV: 937.1 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 1, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ¥ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) PENETRATION WATER CONTENT (%) (blows/300 mm) USCS **□** Grab Sample Ξ ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Plastic Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 20 40 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 0 Drill casing and core -937 barrel became fused at 2 m. Test hole abandoned, moved to SH14-05A. -936 -2 -935 LOG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB -934 -933

HOLE NO. Sheet 1 of 6 SH14-05A LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595193, N 5819920 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 937.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 3, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ■ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Grey, moist, angular GRAVEL to 75 mm diameter 0 Note: Field log of test hole based on with some sand and a trace of silt. (Rockfill) visual observation 937 during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing. Density/consistency/strength descriptions are based on field observations of Firm, dark brown/grey, moist, organicy SILT with highly disturbed samples. some sand and traces of sub-rounded gravel to 25 mm diameter, clay and wood (sticks). (Possible Refer to weathered glaciolacustrine) 936 RSCPT14-05 and KCB laboratory testing for further information. RSCPT14-05 located approx. 7 m from SH14-05A SH14-05 was -2 abandoned at 2 m due to equipment malfunction. 935 Nominal sonic core diameter 140 mm 1/7/15- THURBER BC.GLB Top of UPPER TILL Firm, grey/brown, moist, sandy SILT with some sub-angular to rounded gravel to 75 mm diameter Cvane is Torvane and a trace to some clay. (Possible ablation/moraine till) -934 trace of organics and oxidation staining above 3.4 m - stiff to very stiff below 3.7 m -933

15-3-280 KCB.GPJ THURBER BC.GDT

TEST HOLE - MT POLLEY

HOLE NO. Sheet 2 of 6 SH14-05A LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595193, N 5819920 **TOP OF HOLE ELEV:** 937.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 3, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) ▲ Passing #200 sieve USCS ☐ Grab Sample ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 40 60 80 100 120 140 160 180 200 SOIL DESCRIPTION Stiff to very stiff, grey/brown, moist, sandy SILT with some sub-angular to rounded gravel to 75 mm diameter and a trace to some clay. (Possible 5 -932 ablation/moraine till) - firm to stiff below 5.5 m 6 -931 grey below 6.4 m -930 1/7/15- THURBER BC.GLB - firm below 7.9 m THURBER BC.GDT -929 15-3-280 KCB.GPJ TEST HOLE - MT POLLEY 928 - firm to stiff below 9.4 m - occasional sub-rounded cobbles to 150 mm in diameter

HOLE NO. Sheet 3 of 6 SH14-05A LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595193, N 5819920 **TOP OF HOLE ELEV:** 937.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 3, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) PENETRATION WATER CONTENT (%) (blows/300 mm) USCS **☐** Grab Sample ▲ Passing #200 sieve ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 60 80 100 120 140 160 180 200 SOIL DESCRIPTION Firm to stiff, grey, moist, sandy SILT with some sub-angular to rounded gravel to 75 mm diameter and a trace to some clay. (Possible 10 927 ablation/moraine till) 926 12 -925 1/7/15- THURBER BC.GLB 13 Start of 15-3-280 KCB.GPJ THURBER BC.GDT RSCPT14-05 at 924 approx. 13.2 m Vibrating Wire Tip C at 13.7 m JOG OF TEST HOLE - MT POLLEY 923

HOLE NO. Sheet 4 of 6 SH14-05A LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595193, N 5819920 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 937.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 3, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 15 Top of UPPER GLU Firm, grey, moist, clayey SILT with some sand and a trace to some gravel. (Glaciolacustrine) 922 - at 15.1 and 15.2 m layers of undulating thinly laminated CLAY interbedded with fine sand partings 25 and 75 mm thick respectively Cvane at 15.5 m is Firm, grey, moist, clayey SILT to CLAY 25 kPa across interbedded with occasional fine sand partings. bedding and 18 kPa (Glaciolacustrine) parallel to bedding Cvane at 15.7 m is Firm, grey, moist SILT with some sand gravel and 50 kPa across bedding, and 40 kPa clay. (Transition from glaciolacustrine to till) 16 peak / 10 kPa remolded parallel to 921 bedding Vibrating Wire Tip B at 15.8 m Top of LOWER Very dense, grey/brown, dry to moist, gravelly to TILLS (Lower Basal 75 mm diameter, silty SAND. (Basal till) Till) 920 1/7/15- THURBER BC.GLB Refusal of RSCPT14-05 at approx. 17.6 m 18 15-3-280 KCB.GPJ THURBER BC.GDT -919 (Top of Lower GLU) Very stiff to hard, grey, moist, thinly laminated clayey SILT to CLAY with occasional fine sand partings. (Glaciolacustrine) - bedding is irregular, sub-horizontal 19 TEST HOLE - MT POLLEY 918 (Top of Lower Basal Very dense, brown, dry to moist, sub-angular to Till) rounded gravelly to 50 mm diameter, silty SAND. (Basal till)

HOLE NO. Sheet 5 of 6 SH14-05A LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595193, N 5819920 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 937.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 3, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 20 Very dense, brown, dry to moist, sub-angular to rounded gravelly to 50 mm diameter, silty SAND. (Basal till) 917 Vibrating Wire Tip A at 20.7 m 21 916 - fine sand and silt below 21.3 m Very stiff, red/orange/purple/brown, moist, sandy SILT with some sub-rounded to sub-angular gravel, a trace of clay and pervasive oxidation staining. (Basal till) Top of WEAK 22 Very dense (inferred), dark grey-black, moist to BEDROCK dry, silty, angular SAND with some fine, angular )i. i⇔ )Φi.i, gravel and a trace of clay. (Possible brecciated 915 volcanic bedrock) - gravel particles friable down to 10 mm diameter - sand and gravel of basalt like origin 1/7/15- THURBER BC.GLB 23 15-3-280 KCB.GPJ THURBER BC.GDT -914 - dry and gravelly to 50 mm diameter below 23.2 m 24 TEST HOLE - MT POLLEY 913

HOLE NO. Sheet 6 of 6 SH14-05A LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595193, N 5819920 **TOP OF HOLE ELEV:** 937.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 3, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 25 Very dense (inferred), dark grey-black, moist to dry, silty, angular SAND with some fine, angular gravel and a trace of clay. (Possible brecciated -912 volcanic bedrock) - gravel particles friable down to 10 mm diameter - sand and gravel of basalt like origin -26 -911 27 -910 28 15-3-280 KCB.GPJ THURBER BC.GDT -909 29 908 End of hole at KCB instruction. Vibrating wire piezometers installed at 13.7 m (Tip C), 15.8 m (Tip B) and 20.7 m (Tip A) and test hole grouted.

1/7/15- THURBER BC.GLB

OG OF TEST HOLE - MT POLLEY

HOLE NO. Sheet 1 of 8 SH14-06 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595180, N 5819917 **TOP OF HOLE ELEV:** 937.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 4, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 80 100 120 140 160 180 200 SOIL DESCRIPTION Note: Field log of 0 Grey, moist GRAVEL with traces of sand, silt and angular cobbles to 150 mm diameter. (Rockfill) test hole based on visual observation during drilling completed by KCB. No samples were obtained by Thurber 937 for confirmatory laboratory testing.
Density/consistency/strength
descriptions are based on field observations of highly disturbed samples. Refer to RSCPT14-06 and KCB laboratory testing for further -936 information. Nominal sonic core diameter 140 mm from 0 to 20.1 m Cvane is Torvane -935 934 -933

1/7/15- THURBER BC.GLB

15-3-280 KCB.GPJ THURBER BC.GDT

TEST HOLE - MT POLLEY

HOLE NO. Sheet 2 of 8 SH14-06 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595180, N 5819917 **TOP OF HOLE ELEV:** 937.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 4, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 5 Grey, moist GRAVEL with traces of sand, silt and angular cobbles to 150 mm diameter. (Rockfill) 932 -6 some sand and silt below 6.4 m -931 -930 1/7/15- THURBER BC.GLB 15-3-280 KCB.GPJ THURBER BC.GDT Top of UPPER TILL Very stiff to hard, grey/brown, moist, sub-rounded (Unit No. 2) gravelly SILT with some sand, a trace of clay and cobbles to 150 mm diameter. (Possible 929 ablation/moraine till) - at 8.7 m, two horizontal discontinuities within the till about 75 mm apart along the core axis, smooth to rough-undulating-tight, subtle striations, anisotropic roughness TEST HOLE - MT POLLEY **\(\frac{1}{2}\)** `>>**⊕** -928 - stiff to very stiff below 9.4 m  $\bigoplus$  $\bigoplus$ Start of RSCPT14-06 at approx. 9.6 m

HOLE NO. Sheet 3 of 8 SH14-06 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 Engineering Investigation and Review Panel E 595180, N 5819917 TOP OF HOLE ELEV: 937.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 4, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Stiff to very stiff, grey/brown, moist, sub-rounded gravelly SILT with some sand, a trace of clay and occasional cobbles to 150 mm diameter. (Possible 10 ablation/moraine till) 927 - gradual transition to grey below 11.0 m 926  $\bigoplus$  $\oplus$ - firm below 11.9 m 12  $\bigoplus$  $\bigoplus$ 925 1/7/15- THURBER BC.GLB 13 THURBER BC.GDT 924 15-3-280 KCB.GPJ  $\bigoplus$  $\bigoplus$ - sandy below 13.9 m - at 14.2 m, 25 mm thick zone of thinly laminated clayey SILT to CLAY with fine sand partings, TEST HOLE - MT POLLEY bedding folded/undulating Top of UPPER GLU Firm, grey, moist, thinly laminated, clayey SILT to CLAY interbedded with fine sand partings and a 923 Cvane across trace of gravel. (Glaciolacustrine) bedding is 30 to 40 - beds typically curving concave upward with occasional horizontal beds (possible drill kPa and 15 to 20 kPa parallel to disturbance) bedding at 14.5 m Cvane across

HOLE NO. Sheet 4 of 8 SH14-06 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595180, N 5819917 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 937.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 4, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** SOIL DESCRIPTION 80 100 120 140 160 180 200 bedding in Firm, grey, moist, thinly laminated, clayey SILT to CLAY interbedded with fine sand partings and a 15 recumbent fold is 25 kPa at 15.2 m trace of gravel. (Glaciolacustrine) - 75 mm thick pocket of firm till like material at 14.6 m - bedding chaotic with open and tight folds of 922 varying width and positions relative to core axis, several recumbent folds with hinge line perpendicular to core axis from 14.6 to 15.8 m (possible shear zone) Cvane is 35 kPa - bedding curved and folded with overall concave across bedding at upward below 15.8 m 16 15.8 m Firm, grey, moist SILT with some sand, clay and rounded to sub-angular gravel to 50 mm diameter.  $\bigoplus$ 921 (Possible disturbed till) - 25 mm thick layer of thinly laminated clayey SILT interbedded with fine sand partings, curving asymmetrically upward at 16.8 m Top of LOWER Very dense/very stiff, grey, moist, sandy SILT to TILLS (Lower Basal fine SAND and SILT with some sub-rounded to '<del>∳i</del>ill) rounded gravel to gravelly to 75 mm diameter and 920 1/7/15- THURBER BC.GLB a trace of clay. (Basal till) 18 15-3-280 KCB.GPJ THURBER BC.GDT **⊕>>**◆ 919 (Top of Lower GLU) Very stiff to hard, grey, moist, thinly laminated clayey SILT interbedded with fine sand partings Initial refusal of and a trace of gravel. (Glaciolacustrine) RSCPT14-06 at - smooth to rough undulating beds approx. 18.6 m 19 TEST HOLE - MT POLLEY 918 (Top of Glaciofluvial) Very dense / very stiff, grey-brown, moist, gravelly SILT and SAND with traces of sub-angular to Restart of sub-rounded cobbles to 100 mm diameter and RSCPT14-06 at oxidation staining. (Possible glaciofluvial or till) approx. 19.8 m

HOLE NO. Sheet 5 of 8 SH14-06 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595180, N 5819917 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 937.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 4, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 20 Nominal sonic core Compact to dense (inferred), brown, moist, silty, fine SAND with some sub-angular to sub-rounded diameter 100 mm below 20.1 m gravel to 50 mm diameter and a trace of medium to coarse sand. (Possible glaciofluvial) Refusal of 41. 917 RSCPT14-06 at approx. 20.2 m 21 (Top of Lower Basal Hard, brown with weathering, dry to moist, SILT Ťill) 916 with some sand and a trace of angular to sub-rounded gravel to 6 mm diameter. (Basal till) :>>⊕ - gravel particles are weathered meta-basalt like ⊕. 22 0 - very stiff pocket at 21.8 m - sandy and a trace of clay from 21.9 to 22.6 m >>⊕ -915 1/7/15- THURBER BC.GLB - some gravel to gravelly to 50 mm diameter below 22.6 m 23 15-3-280 KCB.GPJ THURBER BC.GDT >> -914 24 TEST HOLE - MT POLLEY Very dense, dark grey, dry to moist, silty SAND with some gravel and white alteration speckled throughout. (Basal till) 913

HOLE NO. Sheet 6 of 8 SH14-06 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595180, N 5819917 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 937.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 4, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 25 Very dense, dark grey, dry to moist, silty SAND with some gravel and white alteration speckled throughout. (Basal till) - white and green alteration/weathering from 25.0 to 25.5 m 912 Top of WEAK Hard, grey with red and green streaks of -26 BEDROCK alteration/weathering, dry to moist, clayey SILT with traces of sand and sub-angular fine gravel. (Possible fine volcanic ash tuff bedrock) - with faint sub-horizontal lineations (possible bedding) 911 - green is primary colour below 26.5 m 27 910 1/7/15- THURBER BC.GLB 28 15-3-280 KCB.GPJ THURBER BC.GDT Hard, grey with green, red and yellow, dry to moist 909 SILT with some sand, sub-angular to angular gravel to 6 mm diameter and clay. (Possible brecciated volcanic bedrock) >> - gravel particles are of weathered basalt like origin, weathering/alteration in coloured bands and halos, no apparent structure - occasional discontinuous slickensided surfaces -29 TEST HOLE - MT POLLEY 908 :>>◆

HOLE NO. Sheet 7 of 8 SH14-06 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595180, N 5819917 **TOP OF HOLE ELEV:** 937.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 4, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) PENETRATION WATER CONTENT (%) (blows/300 mm) USCS **☐** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 40 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 30 Hard, grey with green, red and yellow, dry to moist SILT with some sand, sub-angular to angular gravel to 6 mm diameter and clay. (Possible brecciated volcanic bedrock) 907 31 :>>⊕ -906 32 :>>↔ 905 1/7/15- THURBER BC.GLB -33 15-3-280 KCB.GPJ THURBER BC.GDT 904 JOG OF TEST HOLE - MT POLLEY -903

HOLE NO. Sheet 8 of 8 SH14-06 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595180, N 5819917 **TOP OF HOLE ELEV:** 937.5 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 4, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) PENETRATION WATER CONTENT (%) (blows/300 mm) USCS **☐** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 40 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 35 Hard, grey with green, red and yellow, dry to moist SILT with some sand, sub-angular to angular gravel to 6 mm diameter and clay. (Possible brecciated volcanic bedrock) 902 End of hole at KCB instruction. Test hole sounded through casing upon completion to 35.7 m. Slope inclinometer installed and test hole grouted. 36 -901 -37 -900 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB -38 -899 39 -898

HOLE NO. Sheet 1 of 5 SH14-07 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595055, N 5819899 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 931.7 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Plastic Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 0 Note: Field log of (Open HDPE pipe installed vertical through rockfill test hole based on drill access road.) visual observation during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing. -931 Density/consistency/strength descriptions are based on field observations of highly disturbed samples. Refer to RSCPT14-07 and **KCB** laboratory testing for further information. Grey, wet, angular GRAVEL with some sand and silt. (Rockfill - drill access road) -930 Nominal sonic core Loose to compact (inferred), red/brown/grey, moist diameter 140 mm to wet, silty, fine SAND. (Tailings debris) -2 between 1.5 and 'ŀ j.1 17.1 m Top of UPPER TILL Very stiff, grey/brown, moist, sandy SILT to SAND and SILT with some clay and sub-rounded to rounded gravel to gravelly to 80 mm diameter. 1/7/15- THURBER BC.GLB (Possible weathered ablation/moraine till)  $\bigoplus$ ⊕. -929 - grey, wavy seam approximately parallel to core axis infilled with firm silt between 2.7 to 3.0 m - very stiff to hard below 3.0 m 15-3-280 KCB.GPJ THURBER BC.GDT 928 TEST HOLE - MT POLLEY 927

HOLE NO. Sheet 2 of 5 SH14-07 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595055, N 5819899 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 931.7 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Very stiff to hard, grey/brown, moist, sandy SILT to SAND and SILT with some clay and sub-rounded to rounded gravel to gravelly up to 80 mm 5 diameter. (Possible weathered ablation/moraine - grey, mottled brown with trace pockets which are **⊕**>>**⊕** oxidized/stained red brown below 5.3 m -926 - very stiff, trace cobbles below 5.8 m -6  $\oplus$ Start of RSCPT14-07 at approx. 6.1 m -925 - 50 mm thick zone with thin clayey silt laminations across half core diameter, undulating and dipping steeply at 6.8 m 1/7/15- THURBER BC.GLB  $\oplus$ 924 - stiff below 7.9 m 15-3-280 KCB.GPJ THURBER BC.GDT  $\oplus$  $\bigoplus$ 923 - 50 mm thick sub-horizontal layer of soft to firm, bluish grey, fine gravelly SILT with some clay and a trace of sand at 8.7 m Vibrating Wire Tip B TEST HOLE - MT POLLEY at 9.1 m. - 10 mm thick sub-horizontal layer of soft to firm, bluish grey, fine gravelly SILT with some clay and a trace of sand at 9.4 m 922

HOLE NO. Sheet 3 of 5 SH14-07 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595055, N 5819899 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 931.7 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS **☐** Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 COMMENTS SOIL DESCRIPTION Stiff, grey/brown, moist, sandy SILT to SAND and 10 SILT with some clay and sub-rounded to rounded gravel to gravelly to 80 mm diameter. (Possible ablation/moraine till)  $\oplus$  $\bigoplus$ -921 Top of LOWER Stiff, bluish grey, clayey SILT to CLAY with faint TILLS (Lower GLU) thinly laminated bedding undulating 40 to 60° from horizontal with a trace of fine sand partings. (Glaciolacustrine)  $\bigoplus$  $\oplus$ -920 12 (Top of Lower Basal Very dense, reddish brown, moist, silty SAND and GRAVEL with a trace of compressed partly decomposed organics and pervasive oxidation. Vibrating Wire Tip A (Possible weathered basal till or glaciofluvial) 1/7/15- THURBER BC.GLB at 12.2 m. 919 13 - 3 mm thick sub-horizontal layer of red/brown 15-3-280 KCB.GPJ THURBER BC.GDT (oxidized), wet SAND at 13.1 m 918 - 3 mm thick sub-horizontal layer of pinkish-brown (oxidized), wet SAND at 14.0 m Top of WEAK Very stiff to hard, pinkish dark grey, moist, sandy BEDROCK SILT and sub-angular to angular meta-igneous TEST HOLE - MT POLLEY GRAVEL with a trace of clay. (Possible weathered igneous bedrock) **⊕**:>>**⊕** Refusal of 917 RSCPT14-07 at approx. 14.2 m

HOLE NO. Sheet 4 of 5 SH14-07 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595055, N 5819899 **TOP OF HOLE ELEV:** 931.7 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 80 100 120 140 160 180 200 SOIL DESCRIPTION Very stiff to hard, pinkish dark grey, moist, sandy SILT and sub-angular to angular meta-igneous GRAVEL with a trace of clay. (Possible weathered 15 igneous bedrock) -916 **⊕**:>>**⊕** -16 -915 Nominal sonic core diameter 100 mm below 17.1 m ⊕:>>◆ - 5 mm thick layer of purplish grey, wet, fine to medium SAND layer at 17.4 m 1/7/15- THURBER BC.GLB 914 18 LOG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT - 5 mm thick layer of purplish grey, wet, fine to medium SAND layer at 18.3 m -913 **⊕**>>◆ 19 -912

HOLE NO. Sheet 5 of 5 SH14-07 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595055, N 5819899 **TOP OF HOLE ELEV:** 931.7 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) PENETRATION WATER CONTENT (%) (blows/300 mm) USCS **□** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Plastic Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 20 Very stiff to hard, pinkish dark grey, moist, sandy SILT and sub-angular to angular meta-igneous GRAVEL with a trace of clay. (Possible weathered igneous bedrock) End of hole at KCB instruction. Test hole sounded through casing upon completion to 20.3 m. Vibrating wire piezometers installed at 9.1 m (Tip B) and 12.2 m (Tip A) and test hole grouted. -911 21 -910 22 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB -909 23 -908 -24 -907

HOLE NO. Sheet 1 of 13 SH14-08 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595167, N 5819889 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6 and 7, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 80 100 120 140 160 180 200 SOIL DESCRIPTION Note: Field log of 0 Grey/brown, angular GRAVEL and COBBLES with some sand, a trace of silt and occasional boulders test hole based on visual observation to 1.0 m diameter. (Rockfill) during drilling completed by KCB. No samples were obtained by Thurber 947 for confirmatory laboratory testing.
Density/consistency/strength
descriptions are based on field observations of highly disturbed samples. Refer to RSCPT14-08 and KCB laboratory testing for further information. -946 Nominal sonic core diameter 140 mm between 1.5 and 29.3 m Cvane is Torvane 945 -944 943

1/7/15- THURBER BC.GLB

15-3-280 KCB.GPJ THURBER BC.GDT

TEST HOLE - MT POLLEY

HOLE NO. Sheet 2 of 13 SH14-08 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595167, N 5819889 **TOP OF HOLE ELEV:** 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6 and 7, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS PENETRATION ▼ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) WATER CONTENT (%) (blows/300 mm) USCS **☐** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 40 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 5 Grey/brown, angular GRAVEL and COBBLES with some sand, a trace of silt and occasional boulders to 1.0 m diameter. (Rockfill) 942 -941 1/7/15- THURBER BC.GLB -940 THURBER BC.GDT -939 15-3-280 KCB.GPJ OG OF TEST HOLE - MT POLLEY 938

HOLE NO. Sheet 3 of 13 SH14-08 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595167, N 5819889 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6 and 7, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) USCS **☐** Grab Sample ▲ Passing #200 sieve ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 10 Grey/brown, angular GRAVEL and COBBLES with some sand, a trace of silt and occasional boulders to 1.0 m diameter. (Rockfill) -937 -936 12 1/7/15- THURBER BC.GLB - sharp transition from brown to grey at 12.5 m (possible lift boundary)  $\,$ -935 13 15-3-280 KCB.GPJ THURBER BC.GDT -934 OG OF TEST HOLE - MT POLLEY 933

HOLE NO. Sheet 4 of 13 SH14-08 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595167, N 5819889 **TOP OF HOLE ELEV:** 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6 and 7, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 15 Grey/brown, angular GRAVEL and COBBLES with some sand, a trace of silt and occasional boulders to 1.0 m diameter. (Rockfill) - some clumps of stiff to very stiff, grey/brown SILT -932 with some sand and a trace of gravel (Possible rockfill and till fill mixture) from 15.5 to 17.0 m 16 -931 - possible boulder from 17.0 to 18.0 m -930 18 - some sand and a trace to some silt below 18.0 m -929 19 928

1/7/15- THURBER BC.GLB

THURBER BC.GDT

15-3-280 KCB.GPJ

TEST HOLE - MT POLLEY

HOLE NO. Sheet 5 of 13 SH14-08 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595167, N 5819889 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6 and 7, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Plastic Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** SOIL DESCRIPTION 80 100 120 140 160 180 200 20 Boundary between - fragment of non-woven geotextile at 20.1 m fill and foundation at Very stiff, grey/brown, moist SILT with some sand 20.1 m. to sandy, some sub-rounded gravel to 25 mm >> Top of UPPER TILL diameter and traces of roots and fine organics. (Possible weathered ablation/moraine till) Very stiff, grey/brown with speckled orange/red 927 **⊕**>>**⊕** mottling, moist, clayey SILT to CLAY with a trace to some fine sand. (Possible weathered glaciolacustrine)  $\bigoplus$ - stiff below 20.7 m 4 - firm with folded thin laminations interbedded with 21 fine sand partings and several apparently discontinuous slickensided clay surfaces below 20.9 m Stiff, grey/brown, moist, sandy SILT with some  $\bigoplus$ Start of sub-angular to rounded gravel to gravelly, trace to RSCPT14-08 at some clay, and traces of partially decomposed organics and cobbles to 100 mm diameter. approx. 21.2 m 926 (Possible weathered ablation/moraine till) - very stiff to hard with no organics below 21.3 m 0 -22 +1/7/15- THURBER BC.GLB 925 Vibrating Wire Tip C at 22.9 m. -23 15-3-280 KCB.GPJ THURBER BC.GDT Sample fell out of - stiff below 23.2 m core barrel during retrieval from 23.2 to 26.2 m. Recovered  $\bigoplus$  $\bigoplus$ during next run with -924 significant disturbance. Fragment of UPPER Firm to stiff, grey, moist, thinly laminated CLAY interbedded with fine sand partings. GLŪ Cvane at 23.8 m (Glaciolacustrine) -24 across bedding is 50 - bedding undulating to 60 kPa and  $\bigoplus$ Soft (disturbed), grey-brown, moist SILT with some TEST HOLE - MT POLLEY 25 kPa parallel to sand, clay and sub-rounded to rounded gravel to bedding. 75 mm diameter. (Possible ablation/moraine till) Vibrating Wire Tip B at 24.1 m. 923 Re-drilled between Stiff to very stiff, grey, moist, sandy SILT with 24.7 and 29.3 m some gravel. (Possible ablation/moraine till) (See SH14-08A)

HOLE NO. Sheet 6 of 13 SH14-08 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595167, N 5819889 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6 and 7, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 25 Stiff to very stiff, grey, moist, sandy SILT with some gravel. (Possible ablation/moraine till) Dense (inferred), grey, moist SAND and SILT with some gravel to gravelly and trace of clay. (Possible ablation/moraine till) 922 - very soft (disturbed) zone at 25.9 m Drill loss inferred (No recovery) -26 from 25.9 to 28.0 m (See SH14-08A) -921 27 -920 28 LOWER TILLS Very dense, grey, moist SAND and SILT with (Lower Basal Till) some gravel to gravelly and trace of clay. (Basal -919 Refusal of 29 RSCPT14-08 at approx. 28.9 m Nominal sonic core - cored a minimum 150 mm long green, diameter 100 mm meta-igneous cobble at 29.3 m below 29.3 m 918

1/7/15- THURBER BC.GLB

15-3-280 KCB.GPJ THURBER BC.GDT

OG OF TEST HOLE - MT POLLEY

HOLE NO. Sheet 7 of 13 SH14-08 CLIENT: LOCATION: See Fig. 209 Mount Polley Independent Expert E 595167, N 5819889 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6 and 7, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 COMMENTS SOIL DESCRIPTION 30 Very dense, grey, moist SAND and SILT with some gravel to gravelly and trace of clay. (Basal 917 Very dense (inferred), grey, moist SAND with some silt to silty and some sub-angular to rounded gravel to 50 mm diameter. (Basal till) -31 - a trace of gravel from 31.1 to 31.4 m -916 32 Hard, grey/brown, moist SILT with some sand and sub-rounded to rounded gravel to 75 mm diameter. (Basal till) 915 - 25 mm thick layer of wet, gravelly SAND at 32.6 m -33 - fine sandy SILT with a trace to some gravel below 33.4 m -914 - two 5 mm thick layers of silty, fine SAND :>> approximately 25 mm apart at 33.5 m (Top of Glaciofluvial) Dense (inferred), dark grey, moist to wet, silty, fine SAND with a trace of black organic staining and -34 1: [ ] |-|- |- |- |odour of decomposition. (Possible glaciofluvial) - very stiff to hard, dark grey, moist, thinly laminated SILT interbedded with fine sand partings including a trace of black organics from 34.6 to 34.75 m 111 Bedding overall curvature concave downward. 913 With a closed fold - almost chevron - about 10 mm wide limb to limb near one edge of core with peak  $||\cdot||$ of fold pointing downhole. Vibrating Wire Tip A i:i:i. at 34.7 m. 11:1

1/7/15- THURBER BC.GLB

15-3-280 KCB.GPJ THURBER BC.GDT

TEST HOLE - MT POLLEY

HOLE NO. Sheet 8 of 13 SH14-08 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595167, N 5819889 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6 and 7, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 35 Dense (inferred), dark grey, moist to wet, silty, fine 111 SAND with a trace of black organic staining and odour of decomposition. (Possible glaciofluvial) -912 (Top of Lower Basal Soft/loose (likely heavily drill disturbed), dark grey, moist to wet, fine SAND and SILT with some gravel to gravelly. (Till-like) -36 911 Very dense (inferred), purplish brown with oxidation, dry to moist, gravelly silty SAND. (Basal -37 1/7/15- THURBER BC.GLB - two 25 mm thick layers of brown, wet, gravelly -910 SAND and a trace to some silt at 37.5 and 37.6 m -38 15-3-280 KCB.GPJ THURBER BC.GDT -909 - cobble at least 125 mm diameter at 38.7 m Very stiff to hard, grey, moist, gravelly sandy SILT with a trace of clay. (Basal till) 39 TEST HOLE - MT POLLEY 908

HOLE NO. Sheet 9 of 13 SH14-08 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595167, N 5819889 **TOP OF HOLE ELEV:** 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6 and 7, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 80 100 120 140 160 180 200 SOIL DESCRIPTION 40 Very dense (inferred), grey, dry to moist, gravelly silty SAND. (Basal till) -907 Hard, greenish dark grey, dry to moist, gravelly, sandy SILT. (Basal till) `>>**⊕** -906 - hard SILT with traces of gravel, sand and clay below 41.7  $\mbox{m}$ 42 Top of WEAK Hard (brittle), grey-green, dry to moist clayey SILT BEDROCK to CLAY. -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB 905 (Possible fine volcanic ash tuff bedrock) 43 -904 903

HOLE NO. Sheet 10 of 13 SH14-08 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595167, N 5819889 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6 and 7, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 45 Hard (brittle), grey-green, dry to moist clayey SILT to CLÀY. (Possible fine volcanic ash tuff bedrock) - gradually grades to light greyish green by 45.4 m 902 `>>**⊕** 46 -901 - very stiff to hard, dark reddish brown, moist, clayey SILT with a trace to some sand and sub-rounded gravel from 46.9 to 47.1 m - light green, with occasional discontinuous OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB irregular smooth to polished surfaces (possible slickensides) below 47.4 m 900 48 :>>⊕ -899 - very stiff from 48.7 to 49.0 m ∯: 49 -898

HOLE NO. Sheet 11 of 13 SH14-08 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595167, N 5819889 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6 and 7, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Hard (brittle), greyish light green, dry to moist, clayey SILT to CLAY with occasional irregular 50 smooth to polished surfaces. (Possible fine volcanic ash tuff bedrock) 897 -51 >> - 100 mm thick gravelly zone, sub-angular to angular meta-volcanic particles (possibly chloritic basalt) at 51.2 m - some fine sand to fine sandy and trace of clay Sample fell out of 896 below 51.3 m core barrel during retrieval from 50.9 to 53.9 m. Recovered during next run with - trace to some fine sand below 51.8 m significant -52 disturbance. - 100 mm thick gravelly zone, sub-angular to angular meta-volcanic particles at 52.1 m - white vein or infilled crack like structures (possibly calcite) 1/7/15- THURBER BC.GLB -895 >> -53 15-3-280 KCB.GPJ THURBER BC.GDT - some fine sand to fine sandy from 53.5 to 53.9 m -894 (increased brittleness) - some clay to clayey and a trace fine sand below 53.9 m TEST HOLE - MT POLLEY 893 - stiff to very stiff from 54.6 to 55.2 m  $\oplus$ 

HOLE NO. Sheet 12 of 13 SH14-08 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595167, N 5819889 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6 and 7, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Hard (brittle), greyish light green, dry to moist, clayey SILT to CLAY with occasional irregular 55 smooth to polished surfaces. (Possible fine volcanic ash tuff bedrock) - 100 mm thick layer of very dense, green, olive, purple, brown, dry to moist, silty, fine SAND at -892 - reddish brown streaks of weathering/staining from 55.5 to 56.4 m -56 -891 - some sand to fine sandy and a trace of clay below 56.7 m -57 Hard (brittle), dark grey/black with greenish grey matrix and reddish brown streaks, dry to moist 1/7/15- THURBER BC.GLB SILT with some sub-angular to angular gravel of 890 meta-volcanic origin and a trace to some sand. (Possible brecciated volcanic bedrock) -58 15-3-280 KCB.GPJ THURBER BC.GDT -889 -59 TEST HOLE - MT POLLEY -888

HOLE NO. Sheet 13 of 13 SH14-08 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595167, N 5819889 **TOP OF HOLE ELEV:** 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 6 and 7, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) PENETRATION GRAIN SIZE (%) WATER CONTENT (%) (blows/300 mm) USCS **□** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 60 80 100 120 140 160 180 200 SOIL DESCRIPTION I KM K 60 End of hole at KCB instruction. Test hole sounded through casing upon completion to 60.0 m.
Vibrating wire piezometers installed at 22.9 m (Tip C), 24.1 m (Tip B) and 34.7 m (Tip A) and test hole grouted. -887 61 -886 62 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB -885 63 -884 64 -883

HOLE NO. Sheet 1 of 6 SH14-08A LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595170, N 5819887 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Plastic Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Note: Field log of 0 (No recovery) test hole based on visual observation during drilling completed by KCB. No samples were obtained by Thurber for confirmatory -947 laboratory testing.
Density/consistency/strength
descriptions are based on field observations of highly disturbed samples. Refer to RSCPT14-08 and KCB laboratory testing for further information. -946 Cvane is Torvane -2 KCB instructed driller to quickly drill to 24.7 m, discarding any heavily washed/disturbed -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB recovery. Re-drill to sample interval 24.7 945 to 29.3 m which was not recovered at SH14-08. 944 943

HOLE NO. Sheet 2 of 6 SH14-08A LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595170, N 5819887 **TOP OF HOLE ELEV:** 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL PENETRATION SAMPLES UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) WATER CONTENT (%) (blows/300 mm) USCS **□** Grab Sample Ξ ◆ Peak Remolded ▲ Passing #200 sieve Liquid O Disturbed ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** SOIL DESCRIPTION 20 40 60 80 100 120 140 160 180 200 5 (No recovery) -942 -6 -941 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB 940 -939 -938

HOLE NO. Sheet 3 of 6 SH14-08A LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595170, N 5819887 **TOP OF HOLE ELEV:** 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL PENETRATION SAMPLES UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) WATER CONTENT (%) (blows/300 mm) USCS **□** Grab Sample Ξ ◆ Peak Remolded ▲ Passing #200 sieve Liquid O Disturbed ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** SOIL DESCRIPTION 20 40 60 80 100 120 140 160 180 200 10 (No recovery) -937 -936 12 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB -935 13 -934 -933

HOLE NO. Sheet 4 of 6 SH14-08A LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595170, N 5819887 **TOP OF HOLE ELEV:** 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL PENETRATION SAMPLES UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) WATER CONTENT (%) (blows/300 mm) USCS **□** Grab Sample Ξ ◆ Peak Remolded ▲ Passing #200 sieve Liquid O Disturbed ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** SOIL DESCRIPTION 20 40 60 80 100 120 140 160 180 200 15 (No recovery) -932 16 -931 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB -930 18 -929 19 -928

HOLE NO. Sheet 5 of 6 SH14-08A LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595170, N 5819887 **TOP OF HOLE ELEV:** 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) PENETRATION WATER CONTENT (%) (blows/300 mm) USCS **□** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 40 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 20 (No recovery) -927 21 Start of RSCPT14-07 at approx. 21.2 m -926 22 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB -925 23 -924 -24 923 UPPER TILL Firm (likely drill disturbed), grey, moist, sandy, gravelly SILT with a trace to some clay. (Possible ablation/moraine till)

HOLE NO. Sheet 6 of 6 SH14-08A LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595170, N 5819887 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 947.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 25 Firm (likely drill disturbed), grey, moist, sandy, gravelly SILT with a trace to some clay. (Possible ablation/moraine till)  $\bigoplus$  $\bigoplus$ -922 -26 Top of UPPER GLU  $\bigoplus$ Stiff, grey-brown, moist, thinly laminated CLAY 921 Cvane at 26.5 m is interbedded with fine sandy partings with several 70 kPa across apparently discontinuous slickenside surfaces bedding and 50 kPa parallel and perpendicular to bedding. parallel to bedding. (Glaciolacustrine)  $\bigoplus$  $\bigoplus$ Soft to firm (likely drill disturbed), grey-brown, 27 moist, gravelly, sandy SILT with some clay and trace cobbles up to 100 mm diameter. (Till-like) Top of LOWER - stiff to very stiff/dense, SAND and SILT with a TILLS (Lower Basal trace to some clay below 27.3 m (Basal till) 1/7/15- THURBER BC.GLB 920 - hard/very dense below 27.9 m 28 15-3-280 KCB.GPJ THURBER BC.GDT -919 Refusal of -29 RSCPT14-08 at approx. 28.9 m TEST HOLE - MT POLLEY End of hole at KCB instruction. Test hole backfilled with bentonite chips up to 18.3 m with cuttings and slough above. 918

HOLE NO. Sheet 1 of 13 SH14-09 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595145, N 5819911 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 938.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8 and 9, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Note: Field log of 0 Grey/brown, angular GRAVEL and COBBLES with some sand, a trace of silt and occasional boulders test hole based on visual observation to 1.0 m in diameter. (Rockfill) during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing.
Density/consistency/strength
descriptions are based on field observations of -937 highly disturbed samples. Refer to KCB laboratory testing for further information. Nominal sonic core diameter 140 mm to 20.1 m Cvane is Torvane -936 -2 1/7/15- THURBER BC.GLB -935 15-3-280 KCB.GPJ THURBER BC.GDT - pockets of stiff, sandy SILT with some sub-rounded gravel (Till like fill) from 3.3 to 7.9 m -934 TEST HOLE - MT POLLEY - wet below 4.9 m

HOLE NO. Sheet 2 of 13 SH14-09 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595145, N 5819911 TOP OF HOLE ELEV: 938.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8 and 9, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) ▲ Passing #200 sieve Ξ USCS **□** Grab Sample ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 60 80 100 120 140 160 180 200 SOIL DESCRIPTION Grey/brown, angular GRAVEL and COBBLES with some sand and silt and occasional boulders to 1.0 5 m in diameter including pockets of stiff, sandy silt. (Rockfill) -932 6 -931 1/7/15- THURBER BC.GLB -930 THURBER BC.GDT 15-3-280 KCB.GPJ -929 OG OF TEST HOLE - MT POLLEY - fragment of non-woven geotextile at 9.8 m Boundary between fill and foundation at 9.8 m

HOLE NO. Sheet 3 of 13 SH14-09 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595145, N 5819911 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 938.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8 and 9, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Stiff to very stiff, grey/brown with orange/red mottling and black streaks, moist, laminated SILT 10  $\bigoplus$ with some fine sand and a trace of organics. (Possible weathered glaciolacustrine) - 75 mm thick layer of soft, wet SILT and fine SAND at 10.3 m - stiff below 10.4 m Top of UPPER TILL Firm to very stiff (variable), grey-brown, moist, sandy SILT to SAND and SILT with some sub-rounded gravel to 50 mm in diameter and a trace to some clay. (Possible weathered ablation/moraine till) 927 -926 12 1/7/15- THURBER BC.GLB  $\oplus$ 925 13 15-3-280 KCB.GPJ THURBER BC.GDT - gradual transition to grey at 13.7 m (not weathered) 924 - firm to stiff, gravelly SAND and SILT below 14.0 m TEST HOLE - MT POLLEY

HOLE NO. Sheet 4 of 13 SH14-09 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595145, N 5819911 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 938.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8 and 9, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 COMMENTS SOIL DESCRIPTION 15 Firm to stiff, grey, moist, gravelly SAND and SILT with trace to some clay. (Possible ablation/moraine till)  $\bigoplus$  $\oplus$ -922 16 - from 16.6 to 17.1 m moist, with trace to some gravel and 3 fractures on smooth fine sandy surfaces with thin clayey silt lamination below the sandy surface. Fractures shaped as parabaloids, concave upward with peak near parallel with core -921 axis (possibly drill induced) - firm below 17.1 m  $\bigoplus$ Top of UPPER GLU Firm to stiff, grey, moist, thinly laminated silty CLAY interbedded with fine to medium sand 1/7/15- THURBER BC.GLB laminations and partings. (Glaciolacustrine) - bedding curved or folded in varying degrees from  $\bigoplus$  $\bigoplus$ 30 to 60° from horizontal, concave upward. -920 18 Cvane at 18.0 m is 40 to 50 kPa both 15-3-280 KCB.GPJ THURBER BC.GDT parallel and across bedding. - 50 to 75 mm thick layer (disturbed) of silty SAND and CLAY at 18.3 m Top of LOWER Very stiff to hard, grey, moist, sandy SILT with TILLS (Lower Basal some clay and sub-angular to rounded gravel to Till) gravelly. (Basal till) -919 19 TEST HOLE - MT POLLEY . (1) ⊕: - hard below 19.7 m

HOLE NO. Sheet 5 of 13 SH14-09 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595145, N 5819911 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 938.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8 and 9, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 20 Very stiff to hard, grey, moist, sandy SILT with some clay and sub-angular to rounded gravel to Nominal sonic core gravelly. (Basal till) diameter 100 mm from 20.1 to 61.6 m >> - fine sandy SILT to fine SAND and SILT with 917 -21 some gravel and a trace to some medium to coarse sand from 20.9 to 21.5 m - trace to some gravel below 21.5 m (Top of Lower GLU) Hard, grey, dry to moist, thinly laminated CLAY with occasional fine sand laminations and -916 22 partings. (Glaciolacustrine) - laminations are undulating, sub-horizontal - occasional discontinuous slickensided surfaces 1/7/15- THURBER BC.GLB -915 23 15-3-280 KCB.GPJ THURBER BC.GDT - very stiff to hard, clayey silt to clay with more regular interbedding with fine sand partings below 23.5 m - 50 mm thick layer of dense (inferred), wet, fine **⊕**:>>◆ sand and silt at 23.7 m 914 24 - occasional black laminations containing partially decomposed fine organics below 24.0 m TEST HOLE - MT POLLEY (Top of Glaciofluvial) Dense (inferred), dark grey, wet, fine to coarse SAND with a trace to some silt. (Possible glaciofluvial) Compact to dense (inferred), dark grey, wet, silty, 1: i 1 1: i 1 fine SAND with a trace of fine organics, organic decomposition odour. (Possible glaciofluvial)

HOLE NO. Sheet 6 of 13 SH14-09 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595145, N 5819911 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 938.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8 and 9, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 25 Compact to dense (inferred), dark grey, wet, silty, :111 fine SAND with a trace of fine organics, organic 1:11 decomposition odour. (Possible glaciofluvial) - soft, black, thin laminations of fine sandy SILT with traces of organics and clay interbedded with fine sand laminations, between 25 and 25.6 m depth. Bedding folded concave upward reversing to concave downward with axis near core perimeter, with sand layer between reversal of apparent folding. -912 26 Dark grey, wet, sub-rounded to rounded gravelly to 25 mm in diameter SAND with a trace to some silt. (Possible glaciofluvial) -911 27 Dense (inferred), dark grey, wet, fine SAND with 1111 1111 1111 some silt to silty and a trace of black fine organic streaks, organic decomposition odour. (Possible 1/7/15- THURBER BC.GLB glaciofluvial) -910 -28 (Top of Lower Basal Stiff to very stiff, yellowish brown with black and 15-3-280 KCB.GPJ THURBER BC.GDT pink/purple streaks, moist, sandy SILT with a trace to some sub-rounded to rounded fine gravel and a trace of clay. (Till)  $\oplus$ Top of WEAK Very stiff to hard, purplish grey, dry to moist SILT BEDROCK with a trace to some clay. (Possible fine volcanic 909 -29 ash tuff bedrock) - sporadic faint undulating sub-horizontal planar features (possible bedding or laminations or a TEST HOLE - MT POLLEY function of core breaking) - greenish grey below 29.1 m

HOLE NO. Sheet 7 of 13 SH14-09 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595145, N 5819911 TOP OF HOLE ELEV: 938.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8 and 9, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 30 Very stiff to hard, greenish grey, dry to moist SILT with a trace to some clay. (Possible fine volcanic ash tuff bedrock) - white, irregular vein-like structures, possible calcite infilled at 30.5 m - 2 mm thick layer of glossy black coal like seam at 30.8 m 907 -31 - 150 mm thick layer of black, angular gravel to 40 mm in diameter of basalt like origin (possible drill crushed cobble) at 31.1 m - 100 mm thick zone of white, irregular vein-like structures, possible calcite infilled at 31.2 m `>>**⊕** -906 32 1/7/15- THURBER BC.GLB -905 33 15-3-280 KCB.GPJ THURBER BC.GDT 904 -34 JOG OF TEST HOLE - MT POLLEY

HOLE NO. Sheet 8 of 13 SH14-09 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595145, N 5819911 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 938.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8 and 9, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 35 Very stiff to hard, greenish grey, dry to moist SILT with a trace to some clay. (Possible fine volcanic ash tuff bedrock) <del>\*</del> :>><del>(</del> 902 -36 -901 -37 - firm, moist with some clay to clayey from 37.2 to 37.5 m (possibly drill disturbed) 4 1/7/15- THURBER BC.GLB - 175 mm of angular basalt fragments up to 60 mm in diameter (possible drill broken weathered cobble) at 37.5 m - light grey with black sub-horizontal streaks (possible bedding marker or weathering), dry to moist, with a trace of clay below 37.6 m -900 38 15-3-280 KCB.GPJ THURBER BC.GDT - greenish grey, with a trace to some clay below 38.7 m -899 39 TEST HOLE - MT POLLEY approximately 300 mm of sub-angular to angular GRAVEL friable to 40 mm maximum diameter, basalt-like origin at 39.3 m (possible drill broken weathered boulder)

HOLE NO. Sheet 9 of 13 SH14-09 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595145, N 5819911 TOP OF HOLE ELEV: 938.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8 and 9, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) ▲ Passing #200 sieve Ξ USCS **□** Grab Sample ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 80 100 120 140 160 180 200 SOIL DESCRIPTION Very stiff to hard, greenish grey, dry to moist SILT with a trace to some clay. (Possible fine volcanic 40 ash tuff bedrock) 897 - 150 mm thick zone with diffuse white powdery speckling and some coarse crystals (possible calcite) at 41.0 m - hard, fractures along horizontal curvilinear planes - blocky, a trace of clay from 41.1 to 41.5 m  $\oplus$ -896 42 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB -895 43 894

HOLE NO. Sheet 10 of 13 SH14-09 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595145, N 5819911 TOP OF HOLE ELEV: 938.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8 and 9, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 45 Very stiff to hard, greenish grey, dry to moist SILT with a trace to some clay. (Possible fine volcanic ash tuff bedrock) **⊕**:>>**⊕** -892 46 -891 - approximately 200 mm of angular gravel sized basalt fragments at 46.9 m (possible drill broken weathered boulder) 1/7/15- THURBER BC.GLB -890 48 LOG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT - frequent discontinuous slickensided surfaces in opposing planes, ranging from 40 to 60° from horizontal, noted from 48.2 to 49.7 m -889 49 - slickenside undulating at about 60° to horizontal at 49.7 m 888

HOLE NO. Sheet 11 of 13 SH14-09 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595145, N 5819911 TOP OF HOLE ELEV: 938.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8 and 9, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) PENETRATION GRAIN SIZE (%) WATER CONTENT (%) (blows/300 mm) USCS **□** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 40 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 50 Very stiff to hard, greenish grey, dry to moist SILT with a trace to some clay. (Possible fine volcanic ash tuff bedrock) **⊕**>>**⊕** -887 -51 -886 -52 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB -885 -53 -884  $\bigoplus$ 

HOLE NO. Sheet 12 of 13 SH14-09 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595145, N 5819911 TOP OF HOLE ELEV: 938.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8 and 9, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 55 Very stiff to hard, greenish grey, dry to moist SILT with a trace to some clay. (Possible fine volcanic ash tuff bedrock) - 450 mm thick zone with diffuse white powdery speckling (possible calcite) at 55.5 to 56.0 m 882 -56 - dark grey below 56.0 m -881 -57 1/7/15- THURBER BC.GLB dark grey, angular SAND and GRAVEL of basalt-like origin from 57.8 to 58.2 m (possible drill -880 broken boulder) -58 15-3-280 KCB.GPJ THURBER BC.GDT - greenish dark grey, with some sub-rounded to angular gravel to 25 mm diameter of basalt-like origin below 58.2 m 879 -59 TEST HOLE - MT POLLEY :>>⊕

HOLE NO. Sheet 13 of 13 SH14-09 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595145, N 5819911 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 938.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 8 and 9, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 60 Hard (brittle-blocky), greenish dark grey, dry to moist, SILT with some clay and sub-rounded to rounded basalt gravel up to 25 mm diameter. (Possible Fine Ash Tuff - Very Weak Bedrock) - occasional discontinuous slickensided surfaces in opposing planes ranging 40 to 60° from horizontal from 59.9 to 60.5 m Hard, greenish dark grey, dry to damp (drill disturbed), sub-rounded to sub-angular GRAVEL friable to 25 mm maximum diameter and SILT with some sand. 877 -61 (Possible brecciated volcanic bedrock) - gravel particles of basalt-like and coarse :>><del>(</del> sandstone origin. End of hole at KCB instruction. Test hole sounded through casing upon completion to 61.7 m. Slope inclinometer installed to bottom of hole and test hole grouted. -876 62 1/7/15- THURBER BC.GLB 875 63 15-3-280 KCB.GPJ THURBER BC.GDT 874 64 TEST HOLE - MT POLLEY

HOLE NO. Sheet 1 of 6 SH14-10 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595148, N 5819965 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 9 and 10, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 0 Note: Field log of Grey/brown, angular GRAVEL and COBBLES with some sand, a trace of silt and occasional boulders test hole based on 932 visual observation to 0.5 m in diameter. (Rockfill debris) during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing.
Density/consistency/strength
descriptions are based on field observations of highly disturbed samples. -931 Refer to RSCPT14-10 and **KCB** laboratory testing for further information. Nominal sonic core diameter 140 mm -2 between 0 and 17.1 m 930 Cvane is Torvane Grey, angular GRAVEL and red/brown, fine SAND and SILT. (Mixture of rockfill and tailings debris) Poor recovery in tailings debris. 929 928 Top of UPPER TILL

1/7/15- THURBER BC.GLB

15-3-280 KCB.GPJ THURBER BC.GDT

TEST HOLE - MT POLLEY

HOLE NO. Sheet 2 of 6 SH14-10 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595148, N 5819965 **TOP OF HOLE ELEV:** 932.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 9 and 10, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) USCS **■** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 80 100 120 140 160 180 200 SOIL DESCRIPTION Very stiff, grey-brown speckled with orange/red (oxidation), moist SILT with some sand to sandy, a 5 927 trace to some sub-rounded to rounded gravel to 25 mm in diameter and a trace of clay. (Possible weathered ablation/moraine till)  $\oplus$ >><del>(</del> 6 926 - firm to stiff without oxidation below 6.7 m 925  $\bigoplus$ -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB Start of RSCPT14-10 at approx. 7.6 m -924 923  $\bigoplus$  $\bigoplus$ 

HOLE NO. Sheet 3 of 6 SH14-10 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595148, N 5819965 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 9 and 10, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS **☐** Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 COMMENTS SOIL DESCRIPTION Firm to stiff, grey-brown, moist SILT with some 10 sand to sandy, a trace to some sub-rounded to 922 rounded gravel to 25 mm in diameter and a trace of clay. (Possible ablation/moraine till) Top of UPPER GLU Firm to stiff, grey, moist, thinly laminated CLAY interbedded with fine sand partings. -921 (Glaciolacustrine) - occasional beds of clay up to 60 mm thick Cvane is 45 to 60 - bedding shallowly undulating, approximately kPa, parallel and horizontal perpendicular to bedding respectively.  $\oplus$ 12 920 - 20 mm thick bed of silty clay with some fine sand at 12.2 m 1/7/15- THURBER BC.GLB Initial refusal of RSCPT14-10 at 12.5 m Dense (inferred), grey, moist, silty SAND and GRAVEL with a trace of cobbles to 125 mm in Top of LOWER diameter. (Basal till) TILLS (Lower Basal Till) 13 919 15-3-280 KCB.GPJ THURBER BC.GDT - very stiff SILT with some sand and gravel and a trace of clay from 13.4 to 13.7 m  $\oplus$  $\bigoplus$ - silty SAND with some gravel to gravelly from 13.7 to 14.0 m - dense (inferred), purplish/orange brown, moist SAND and SILT with some sub-angular to 918 TEST HOLE - MT POLLEY rounded gravel to gravelly (weathered/oxidized) from 14.0 to 14.6 m - very stiff, reddish brown SILT with some sand and gravel and a trace to some clay 14.6 to 15.4 m

HOLE NO. Sheet 4 of 6 SH14-10 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595148, N 5819965 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 9 and 10, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery SOIL DESCRIPTION **COMMENTS** 140 160 180 15 Very stiff, reddish brown, moist SILT with some RSCPT14-10 sand and gravel, trace to some clay and a trace of cobbles to 125 mm in diameter. (Basal till) 917 restarted at approx. 15.2 m (Top of Lower GLU) Very stiff, grey, moist, thinly laminated clayey silt to CLAY interbedded with fine sand partings with a Cvane is 125 to 150 trace of fine organics with decomposed organic odour. (Glaciolacustrine) kPa, parallel and **⊕**:>> perpendicular to - bedding appears sinusoidally folded, overall bedding sub-horizontal with two upward peaks and one respectively. downward peak within 140 mm sonic core - about 20% of laminations are black with fine 16 (Top of Glaciofluvial) organics Dense (inferred), grey, moist to wet, silty, fine 916 (Top of Lower Basal Till) SAND (Possible glaciofluvial). Very stiff, orange-brown, moist SILT with some Refusal of sand and a trace of sub-rounded gravel. (Basal till) RSCPT14-10 at approx. 16.3 m - zone of silty, fine sand from 16.5 to 16.6 m <u>.</u>  $\oplus$ - variable mixtures of fine sandy SILT to silty fine Nominal sonic core SAND with seams of stiff, orange-brown, clayey 915 diameter 100 mm silt to clay 2 to 5mm thick below 17.0 m from 17.1 to 26.5 m 1/7/15- THURBER BC.GLB - very stiff to hard below 17.7 m 18 >><del>(</del> 914 15-3-280 KCB.GPJ THURBER BC.GDT Driller notes Hard, light grey with dark grey streaks and white relatively hard calcite like alteration, dry to moist, fine sandy SILT drilling below 18.6 m to fine SAND and SILT with a trace of sub-angular gravel. (Basal till) 19 913 TEST HOLE - MT POLLEY

HOLE NO. Sheet 5 of 6 SH14-10 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595148, N 5819965 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 9 and 10, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS **☐** Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 20 Hard, light grey with dark grey streaks and white calcite like alteration, dry to moist, fine sandy SILT to fine SAND and SILT with a trace of sub-angular 912 gravel. (Basal till) Hard, dark grey, dry to moist, fine sandy SILT with some sub-rounded to rounded basalt-like gravel and a trace of clay and possible calcite alteration. (Basal till) -21 -911 >> Top of WEAK 22 Very dense (inferred), dark greenish grey, dry to BEDROCK moist, sub-angular to angular SAND and fine GRAVEL with frequent bands/layers 1 to 4 mm 910 thick of very stiff, dark red-brown silt with a trace of clay. (Possible brecciated volcanic bedrock) 1/7/15- THURBER BC.GLB 23 909 15-3-280 KCB.GPJ THURBER BC.GDT Hard, dark grey, dry to moist with black and green highlights SILT with some sub-angular to angular basalt-like gravel. (Possible brecciated volcanic bedrock) :>>⊕ - 150 mm thick layer of very dense (inferred), silty, 24 fine SAND at 24.1 m 908 TEST HOLE - MT POLLEY Hard, dark red/purple/brown, dry to moist SILT with some angular gravel (basalt and altered/metamorphic) and a trace to some clay. (Possible brecciated volcanic bedrock)

HOLE NO. Sheet 6 of 6 SH14-10 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595148, N 5819965 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 932.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 9 and 10, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 25 Hard, dark red/purple/brown, dry to moist SILT with some angular gravel (basalt and 907 altered/metamorphic) and a trace to some clay. (Possible brecciated volcanic bedrock) Very dense (inferred), dark grey with purplish weathering, interlocking angular GRAVEL (moderately strong meta-basalt like) to 50 mm -26 diameter with traces of silt and clay between stones. (Possible brecciated volcanic bedrock) 906 - heavily disturbed by drill action End of hole at KCB instruction. Test hole sounded through casing upon completion to 26.5 m. Test hole grouted to base of fill with bentonite chips and cuttings above. 27 905 1/7/15- THURBER BC.GLB 28 904 15-3-280 KCB.GPJ THURBER BC.GDT 29 -903 OF TEST HOLE - MT POLLEY

HOLE NO. Sheet 1 of 5 SH14-11 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595168, N 5819995 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 931.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 14, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS **☐** Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Grey/brown, angular GRAVEL and COBBLES with 0 Note: Field log of test hole based on some sand and boulders to 0.5 m in diameter and visual observation a trace of silt. (Rockfill debris) during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing. Density/consistency/strength descriptions are based on field observations of -930 highly disturbed samples. Refer to RSCPT14-11 and **KCB** laboratory Loose red/brown angular, gravelly, fine SAND and SILT. (Mixture of rockfill and tailings debris) testing for further information. Cvane is Torvane See also SH14-11B for 0 to 14 m. Loose to compact, grey, angular GRAVEL and COBBLES with some sand, silt, and boulders to -929 -2 0.5 m in diameter. (Rockfill) Top of UPPER TILL Stiff to very stiff, brown mottled grey SILT with some sand, gravel and clay. (Possible weathered ablation/moraine till) - some gravel fragments friable and weathered - 100 mm thick layer of brown, moist organic SILT with some fibrous organics at 2.1 m - sandy below 2.6 m Very stiff, grey mottled brown, moist, sandy, rounded gravelly to 60 mm in diameter SILT with a 928 trace of clay. (Possible ablation/moraine till) 15-3-280 KCB.GPJ -927

1/7/15- THURBER BC.GLB

THURBER BC.GDT

TEST HOLE - MT POLLEY

HOLE NO. Sheet 2 of 5 SH14-11 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595168, N 5819995 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 931.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 14, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Very stiff, grey mottled brown, moist, sandy, rounded gravelly to 60 mm in diameter SILT with a trace of clay. (Possible ablation/moraine till) 5 Start of RSCPT14-11 at approx. 5.6 m 925 -6  $\bigoplus$  $\bigoplus$ No recovery. Drill (No recovery) action suggests relatively soft conditions. -924 Following completion moved and attempted to redrill interval (SH14-11A) - also with no recovery due to cobble blocking 1/7/15- THURBER BC.GLB Refer to SH14-11B for 0 to 14 m. Firm to stiff, grey, moist to wet, sandy, rounded gravelly SILT with a trace of tan to red particles 3 923 to 4 mm diameter and clay (Possible 15-3-280 KCB.GPJ THURBER BC.GDT ablation/moraine till). Cvane at 8.8 m is 52 kPa -922 TEST HOLE - MT POLLEY Top of LOWER Very dense/hard, grey, moist to wet, fine SAND and SILT with some gravel to gravelly and traces of clay and tan to red particles 3 to 4 mm diameter. (Possible glaciofluvial or till)

HOLE NO. Sheet 3 of 5 SH14-11 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595168, N 5819995 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 931.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 14, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR: BSP** ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Very dense/hard, grey, moist to wet, fine SAND and SILT with some gravel to gravelly and traces of clay and tan to red particles 3 to 4 mm diameter. 10 (Possible glaciofluvial or till) - 140 mm diameter cobble at 10.4 m Refusal of RSCPT14-11 at approx. 10.6 m 920 -919 12 1/7/15- THURBER BC.GLB Top of WEAK Very dense, tan to brown, silty, angular gravelly to BEDROCK 20 mm in diameter SAND with some 1 to 2 mm thick banding/bedding and a trace of mica (biotite and muscovite). (Possible brecciated volcanic 918 13 bedrock) 15-3-280 KCB.GPJ THURBER BC.GDT -917 TEST HOLE - MT POLLEY - dark grey to grey below 14.3 m - some clay from 14.9 to 15.5 m

HOLE NO. Sheet 4 of 5 SH14-11 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595168, N 5819995 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 931.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 14, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Very dense, dark grey to grey, silty, angular gravelly to 20 mm in diameter SAND with some 1 to 2 mm thick banding/bedding and a trace of mica 15 (biotite and muscovite). (Possible brecciated volcanic bedrock) 915 16 - dark grey to black, folded band comprised of silt and clay 5 to 7 mm thick at 16.1 m -914 Very dense, dark grey to black, angular gravelly SAND with some silt to silty and some clay. 1/7/15- THURBER BC.GLB (Possible brecciated volcanic bedrock) - rock fragments generally appear to be meta-sedimentary or basalt 913 18 Light grey, moist, angular granitic SAND and GRAVEL. (Possible weathered igneous bedrock 15-3-280 KCB.GPJ THURBER BC.GDT intrusion) Very dense, dark grey to black, angular gravelly SAND with some silt to silty and some clay. (Possible brecciated volcanic bedrock) - sand and gravel consist of meta-sedimentary or basalt origin 912 19 TEST HOLE - MT POLLEY

HOLE NO. Sheet 5 of 5 SH14-11 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595168, N 5819995 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 931.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 14, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Very dense, dark grey to black, angular gravelly SAND with some silt to silty and some clay. 20 (Possible brecciated volcanic bedrock) - sand and gravel consist of meta-sedimentary or basalt origin End of hole at KCB instruction. Test hole grouted upon completion to 2.1 m depth with cuttings backfill from 0 to 2.1 m. Following completion, SH14-11A drilled about 2 m away in attempt to recover lost interval at 7 m. Core barrel bit blocked with cobble, no recovery. 910 21 Refer to SH14-11B. -909 22 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB 908 23 -907 -24

HOLE NO. Sheet 1 of 3 SH14-11B LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595169, N 5819992 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 931.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 22, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Plastic Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 0 Grev-brown, moist, angular GRAVEL with some Note: Field log of test hole based on sand to sandy and trace to some silt and trace 931 visual observation cobbles up to 100 mm in diameter. (Rockfill during drilling completed by KCB. debris) No samples were obtained by Thurber for confirmatory laboratory testing. Density/consistency/strength descriptions are based on field observations of highly disturbed samples. -930 Refer to RSCPT14-11 and **KCB** laboratory testing for further information. Very stiff, grey, moist, gravelly SILT with some See also SH14-11B sand and trace of clay. (Till-like debris) ₩.  $\oplus$ for 0 to 14 m. Nominal sonic core Grey, wet, silty angular GRAVEL with some sand diameter 140 mm and lumps of stiff silt. (Rockfill/till mixture --2 between 0 and possible debris) 14.0 m Soft, dark brown, moist to wet, fibrous PEAT and 929 WOOD. Wood fragments up to 25 mm diameter Cvane is Torvane and 150 mm long. (Possible debris) Soft to firm, grey-brown - mottled orange (oxidized), moist SILT with trace to some clay and 1/7/15- THURBER BC.GLB traces of sand, gravel, and organics. (Weathered till-like - possible debris) Soft, reddish brown with grey, moist to wet, fine sandy SILT with some sub-angular gravel to gravelly. (Possible tailings and rockfill mixture -Soft, grey-brown, moist to wet, SILT with some sand and gravel to gravelly (sub-rounded) and 928 THURBER BC.GDT trace of clay. (Disturbed till) Top of UPPER TILL Very stiff to hard, grey-brown, moist, sandy SILT with some gravel to gravelly and trace of clay. (Possible ablation/moraine till) 15-3-280 KCB.GPJ TEST HOLE - MT POLLEY 927

HOLE NO. Sheet 2 of 3 SH14-11B LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595169, N 5819992 **TOP OF HOLE ELEV:** 931.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 22, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 60 80 100 120 140 160 180 200 SOIL DESCRIPTION Very stiff to hard, grey-brown, moist, sandy SILT with some gravel to gravelly and trace of clay. (Possible ablation/moraine till) 5 926 Start of RSCPT14-11 at - stiff below 5.6 m with gradual softening downwards to stiff to firm by 7 m  $\,$ approx. 5.6 m  $\bigoplus_{i}$ - gradual transition to grey downwards Cvane decreases 6 gradually from 150 kPa to 70 kPa 925 from 5.6 to 7.0 m 924 1/7/15- THURBER BC.GLB  $\bigoplus$ 15-3-280 KCB.GPJ THURBER BC.GDT -923 OG OF TEST HOLE - MT POLLEY 922  $\bigoplus$ - bluish-grey-brown and trace to some clay below 9.6 m Top of LOWER TILLS (Glaciofluvial)

HOLE NO. Sheet 3 of 3 SH14-11B LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595169, N 5819992 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 931.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 22, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery COMMENTS SOIL DESCRIPTION 60 80 100 120 140 160 180 200 10 Dense (inferred), brown, wet, silty SAND to SILT and SAND with trace to some gravel (sub-rounded 921 to rounded, to 50 mm diameter), with some rounded pockets of sandy silt (till-like fragments) to 50 mm diameter. (Possible glaciofluvial) (Top of Lower Basal Hard, grey-brown, dry to moist, sandy SILT with some gravel to gravelly (sub-rounded to rounded) and traces of clay and cobbles to 125 mm :>><del>(</del>) diameter. (Basal till) Refusal of - with some sub-horizontal, smooth, irregular RSCPT14-11 at surfaces with faint striations approx. 10.6 m Very dense (inferred), grey-brown, dry to moist, silty SAND to SAND and SILT with some 920 sub-rounded to rounded gravel to gravelly. (Basal Dense (inferred), brown, wet, silty fine SAND with a trace to some medium to coarse sand and 1: [ gravel. (Possible glaciofluvial) Very stiff, reddish brown, moist, gravelly sandy 12 SILT with a trace of clay. (Basal till) - gravel particles are sub-rounded to rounded, to 50 mm diameter 919 Top of WEAK COBBLE, 150 mm diameter, sub-rounded. **BEDROCK** Orange-brown (oxidized throughout), moist, angular SAND and GRAVEL with some silt. 1/7/15- THURBER BC.GLB (Possible brecciated volcanic bedrock) - gravel particles are up to 40 mm diameter (medium strong to strong) basalt-like origin, with pervasive weathering 13 Hard, reddish brown, dry to moist, fine sandy SILT with some weathered gravel and clay and some thin bands of hard silt. (Possible brecciated 15-3-280 KCB.GPJ THURBER BC.GDT -918 volcanic bedrock) - sand and gravel particles are angular to sub-rounded, up to 50 mm in diameter, partly friable (weathered), with frequent biotite mineralization - grey zones of silty fine to medium sand with trace of clay (possible partially to completely weathered stones) below 13.7 m End of hole at KCB instruction. Test hole grouted upon completion to base of fill with cuttings backfill TEST HOLE - MT POLLEY 917 above.

HOLE NO. Sheet 1 of 5 SH14-12 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595297, N 5819842 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 930.8 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 15, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 0 Note: Field log of Grey/brown SAND and GRAVEL with some silt test hole based on and clay and a trace of cobbles. (Fill) visual observation during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing. Density/consistency/strength -930 descriptions are Stiff, brown, moist, sandy, rounded gravelly SILT based on field with some clay and cobbles. (Possible  $\oplus$ observations of ablation/moraine till) highly disturbed samples. Refer to KCB laboratory testing for further information. Top of UPPER TILL at 0.8 m Cvane at 1.7 m is 929 77 kPa Cvane is Torvane -2 - cobble at least 150 mm diameter at 2.0 m 1/7/15- THURBER BC.GLB -928 15-3-280 KCB.GPJ THURBER BC.GDT a trace of partially decomposed oxidized rock -927 fragments at 3.7 m >> - very stiff to hard below 4.1 m TEST HOLE - MT POLLEY - a trace of partially decomposed oxidized rock fragments at 4.6 m 926

HOLE NO. Sheet 2 of 5 SH14-12 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595297, N 5819842 **TOP OF HOLE ELEV:** 930.8 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 15, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) ▲ Passing #200 sieve Ξ USCS ☐ Grab Sample ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 80 100 120 140 160 180 200 SOIL DESCRIPTION 5 Very stiff to hard, brown, moist, sandy, rounded gravelly SILT with some clay and cobbles.  $\bigoplus$ (Possible ablation/moraine till) - partially decomposed, weathered schist cobble at 5.2 m -925 >>**⊕** 6  $\bigoplus$ -924 1/7/15- THURBER BC.GLB VW piezometer Tip B at 7.6 m. 923 - gradual transition to grey at 8 m 15-3-280 KCB.GPJ THURBER BC.GDT  $\bigoplus$ -922 JOG OF TEST HOLE - MT POLLEY - 50 to 100 mm thick layer of medium to coarse sand at 9.3 m - 130 mm diameter rounded cobble at 9.4 m :>>↔ -921

HOLE NO. Sheet 3 of 5 SH14-12 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595297, N 5819842 **TOP OF HOLE ELEV:** 930.8 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 15, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 10 Very stiff to hard, grey, moist, sandy, rounded gravelly SILT with some clay and cobbles. (Possible ablation/moraine till) -920 -919 Top of LOWER Hard/very dense, grey, moist, rounded gravelly SILT and SAND with a trace to some clay and a TILLS (Lower Basal 12 Till) trace of cobbles. (Basal till) 1/7/15- THURBER BC.GLB 918 13 TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT - sandy below 13.7 m -917 916 - 200 mm thick layer of silty, sandy GRAVEL at 14.8 m

HOLE NO. Sheet 4 of 5 SH14-12 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595297, N 5819842 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 930.8 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 15, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 15 VW piezometer Firm/compact (likely disturbed), grey, moist, friable, fine SAND and SILT with a trace to some \_\_\_Tip Å at 15.2 m. fine rounded gravel to 40 mm in diameter. (Possible glaciofluvial) (Top of Lower Basal Till) Hard, grey, moist, sandy, rounded gravelly SILT with a trace to some clay and a trace of oxidized -915 gravel and partially decomposed gravel to 10 mm diameter. (Basal till) -16 -914 1/7/15- THURBER BC.GLB 913 18 15-3-280 KCB.GPJ THURBER BC.GDT `>>⊄ -912 19 TEST HOLE - MT POLLEY - brown between 19.0 and 19.7 m - cored minimum 300 mm diameter boulder Top of WEAK BEDROCK -911

HOLE NO. Sheet 5 of 5 SH14-12 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595297, N 5819842 **TOP OF HOLE ELEV:** 930.8 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 15, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) ▲ Passing #200 sieve Ξ USCS ☐ Grab Sample ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 20 Very dense, dark grey, moist, silty, angular gravelly SAND with some clay. (Possible brecciated volcanic bedrock) - sand and gravel likely of meta-sedimentary or basalt origin -910 21 -909 22 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB -908 23 End of hole at KCB instruction. Vibrating wire piezometers installed at 7.6 m (Tip B) and 15.2 m (Tip A) and test hole grouted. -907 -24 -906

HOLE NO. Sheet 1 of 7 SH14-13 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595405, N 5819770 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 933.1 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 16, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR: BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 0 Note: Field log of (No Recovery) 933 test hole based on visual observation during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing. Grey/brown SAND and GRAVEL with some silt Density/consistency/strength and clay and a trace of cobbles. (Fill) descriptions are based on field observations of highly disturbed samples. 932 Refer to RSCPT14-13 and **KCB** laboratory testing for further information. Cvane is Torvane Boulder, at least 300 mm diameter. 0 -2 931 0 >> Top of UPPER TILL Hard, brown, moist, rounded to sub-angular gravelly fine SAND and SILT with a trace to some clay and a trace of oxidation staining. (Possible ablation/moraine till) **>>**⊕ 1/7/15- THURBER BC.GLB >>⊕ - a trace of partially decomposed schist gravel to 50 mm diameter at 2.9 m 930 15-3-280 KCB.GPJ THURBER BC.GDT >>4 -929 TEST HOLE - MT POLLEY - brown grading to grey between 4.9 and 6.7 m

HOLE NO. Sheet 2 of 7 SH14-13 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595405, N 5819770 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 933.1 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 16, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR: BSP** ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 5 Hard, brown to grey, moist, rounded to 928 sub-angular gravelly fine SAND and SILT with a >>**⊕** trace to some clay and a trace of oxidation staining. (Possible ablation/moraine till) 6 927 :>>⊕ >> Start of - grey below 6.7 m RSCPT14-13 at approx. 6.7 m 926 - a trace of partially decomposed rock fragments at 7.2 m :>><del>(</del> - 100 mm diameter rounded cobble at 7.3 m 1/7/15- THURBER BC.GLB Hard, brown, moist, silty, fine to medium SAND with some coarse sand and rounded to sub-rounded gravel to gravelly, and a trace of clay and cobbles. :>><del>(</del> (Possible ablation/moraine till) -925 THURBER BC.GDT >>4 15-3-280 KCB.GPJ -924 :>><del>(</del> TEST HOLE - MT POLLEY :>><del>(</del> . 6

HOLE NO. Sheet 3 of 7 SH14-13 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595405, N 5819770 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 933.1 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic October 16, 2014 DATE: DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 10 923 Possible top of LOWER TILLS Very stiff, grey, moist, rounded to sub-angular gravelly SILT and fine SAND with some clay and (Lower Basal Till) traces of friable partially decomposed rock fragments and cobbles. (Basal till) Initial refusal of RSCPT14-13 at 922 approx. 10.9 m 12 -921 >> - fine sandy SILT to SAND and SILT below 12.2 m 1/7/15- THURBER BC.GLB >> 13 -920  $\bigoplus$ LOG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT . RSCPT14-13 -919 restarted at approx. 13.9 m - 70 mm thick layer of silty SAND and GRAVEL at 14.2 m

HOLE NO. Sheet 4 of 7 SH14-13 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595405, N 5819770 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 933.1 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 16, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 15 Hard, grey, moist, sandy SILT with some clay and -918 sub-rounded gravel to 70 mm in diameter. (Basal - friable layering between 15.2 and 15.5 m -16 917 - friable layering between 16.7 and 17.0 m 916 (Top of Lower GLU) Stiff, grey, moist, clayey SILT to CLAY with a trace of fine sand. (Glaciolacustrine)
- bedding is undulating with some polished surfaces 1/7/15- THURBER BC.GLB Cvane at 17.8 m is 130 kPa 18 -915 TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT Cvane at 18.9 m is - firm to stiff below 18.9 m 19 42 kPa 914 (Top of Glaciofluvial) Dense (inferred), dark grey to black, moist, fine SAND and SILT with slight organic odour. (Possible glaciofluvial) Firm, grey, moist to wet, fine sandy SILT. (Possible glaciofluvial)

HOLE NO. Sheet 5 of 7 SH14-13 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595405, N 5819770 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 933.1 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 16, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 20 Firm, grey, moist to wet, fine sandy SILT. (Possible -913 glaciofluvial) Cvane at 20.1 m is 42 kPa (No recovery) 21 912 Cvane at 21.6 m is Firm, grey, moist to wet, fine sandy SILT. (Possible 40 kPa glaciofluvial) 22 911 Cvane at 22.3 m is 42 kPa Dense (inferred), grey, moist, rounded, gravelly, 1/7/15- THURBER BC.GLB silty SAND with some clay and a trace of cobbles. (Basal till - possible eroded fragment) RSCPT14-13 refusal - rounded cobble to 130 mm in diameter at 22.9 m at approx. 23.0 m 23 -910 15-3-280 KCB.GPJ THURBER BC.GDT Dense (inferred), grey, moist to wet, silty SAND and rounded GRAVEL with a trace to some clay. (Possible glaciofluvial) 24 -909 TEST HOLE - MT POLLEY Dense (inferred), brown, moist to wet, fine to medium SAND with some silt and a trace of mica. (Possible glaciofluvial)

HOLE NO. Sheet 6 of 7 SH14-13 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595405, N 5819770 TOP OF HOLE ELEV: 933.1 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 16, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 1.1.1 1.1.1 1.1.1 1.1.1 25 Dense (inferred), brown, moist to wet, fine to medium SAND with some silt and a trace of mica. 908 (Possible glaciofluvial) 1.14 -26 907 27 906 (Top of Lower Basal Hard, grey, moist, sandy, rounded gravelly SILT with some clay and a trace of cobbles to 100 mm diameter. (Basal till) :>> 1/7/15- THURBER BC.GLB 28 905 15-3-280 KCB.GPJ THURBER BC.GDT >> 29 - reddish brown below 29.0 m 904 OG OF TEST HOLE - MT POLLEY >><del>(</del>

HOLE NO. Sheet 7 of 7 SH14-13 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595405, N 5819770 TOP OF HOLE ELEV: 933.1 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 16, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 30 Hard, reddish brown, moist, sandy, rounded -903 gravelly SILT with some clay and a trace of cobbles to 100 mm diameter. (Basal till) -31 902 - some cobbles at 31.4 m - some 3 to 4 mm thick layers of fine sand with some silt at 31.7 m 32 901 - trace oxidation on gravel below 32.3 m 1/7/15- THURBER BC.GLB Top of bedrock not End of hole at KCB instruction. Test hole grouted upon completion to base of fill with cuttings backfill encountered within depth of above. investigation. Refer to VW11-10 for 33 possible bedrock 900 elevation. TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT -34 -899

HOLE NO. Sheet 1 of 5 SH14-14 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595096, N 5819936 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 930.1 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 16, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR: BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 0 Note: Field log of Grey/brown, sandy, cobbly GRAVEL and 930 red/brown, silty fine to medium SAND. (Mixture of test hole based on visual observation rockfill and tailings - drill access road) during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing. Density/consistency/strength descriptions are based on field observations of highly disturbed samples. -929 Refer to RSCPT14-14 and **KCB** laboratory testing for further information. Reddish brown, silty, fine to medium SAND. (Tailings debris) -2 - 20 mm thick zone of grey SILT and fine SAND at 928 Top of UPPER TILL Very stiff to hard, brown/tan, sandy, rounded gravelly SILT with a trace to some clay and traces of oxidized and partially decomposed gravel. 1/7/15- THURBER BC.GLB (Possible weathered ablation/moraine till) Start of -927 RSCPT14-14 at 15-3-280 KCB.GPJ THURBER BC.GDT approx. 3.0 m ⊕. very stiff below 3.6 m -926 TEST HOLE - MT POLLEY  $\bigoplus$ 

HOLE NO. Sheet 2 of 5 SH14-14 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595096, N 5819936 TOP OF HOLE ELEV: 930.1 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 16, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Very stiff, brown/tan, sandy, rounded gravelly SILT 5 with a trace to some clay and traces of oxidized 925 and partially decomposed gravel. (Possible weathered ablation/moraine till) **\(\partial\)** - trace of organic rootlets at 5.3 m - 70 mm thick layer of SAND and GRAVEL with some silt and a trace of clay at 5.5 m 6 -924 - grey below 6.1 m  $\oplus$ -923 1/7/15- THURBER BC.GLB ₩. - softens downward from very stiff to firm -922 15-3-280 KCB.GPJ THURBER BC.GDT -921 OG OF TEST HOLE - MT POLLEY - rounded cobble to 140 mm in diameter at 9.3 m  $\bigoplus$ - firm at 9.4 m

HOLE NO. Sheet 3 of 5 SH14-14 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595096, N 5819936 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 930.1 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 16, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 10 Top of UPPER GLU Firm to stiff, greenish grey, moist, laminated CLAY 920 with some laminations of fine sand and a trace of fibrous organics. (Glaciolacustrine) - bedding is deformed Top of LOWER Hard, grey, moist, sandy SILT with some clay and TILLS (Lower Basal sub-rounded gravel. (Basal till) >>**⊕**Till) -919 12 -918 1/7/15- THURBER BC.GLB 13 (Top of Lower GLU) 917 Very stiff, grey, moist, laminated CLAY with some 1 to 4 mm thick laminations of fine sand. 15-3-280 KCB.GPJ THURBER BC.GDT (Glaciolacustrine) - bedding is wavy/undulating  $\oplus$ (Top of Glaciofluvial) Dense (inferred), grey, wet, silty, clayey SAND and GRAVEL. (Possible glaciofluvial) Dense (inferred), grey, wet SAND and sub-angular to rounded GRAVEL with some silt. (Possible Refusal of glaciofluvial) RSCPT14-14 at 916 TEST HOLE - MT POLLEY approx. 14.0 m

HOLE NO. Sheet 4 of 5 SH14-14 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595096, N 5819936 TOP OF HOLE ELEV: 930.1 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 16, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR: BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Dense (inferred), grey, wet SAND and sub-angular to rounded GRAVEL with some silt. (Possible glaciofluvial) 15 915 (Top of Lower Basal Hard, reddish brown, moist, subrounded gravelly SAND and SILT with some clay and a trace of -16 cobbles. (Basal till) 914 Hard (friable), grey, moist, sandy SILT with some gravel. (Basal till) 913 - undulating brown layer 5 mm thick at 17.2 m 1/7/15- THURBER BC.GLB 18 Top of WEAK Hard, grey, moist, fine sandy CLAY with white BEDROCK vein-like structures. (Possible fine volcanic ash tuff -912 15-3-280 KCB.GPJ THURBER BC.GDT bedrock) - blocky, friable with no apparent bedding 19 -911 TEST HOLE - MT POLLEY

HOLE NO. Sheet 5 of 5 SH14-14 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595096, N 5819936 TOP OF HOLE ELEV: 930.1 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 16, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Hard, grey, moist, fine sandy CLAY with white 20 910 vein-like structures. (Possible fine volcanic ash tuff bedrock) - blocky, friable with no apparent bedding 21 -909 - brown to grey mottled with some gravel between 21.3 and 21.6 m 22 908 - fractured rock/possible boulder between 22.3 and 22.6 m TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB - grey-brown below 22.9 m 23 -907 - grey below 23.3 m End of hole at KCB instruction. Test hole sounded through casing upon completion to 23.6 m. Test hole grouted to surface. -24 906

HOLE NO. Sheet 1 of 5 SH14-15 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595104, N 5819959 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 930.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 17, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 0 Note: Field log of Grey, wet SAND and GRAVEL with some silt and test hole based on a trace of clay, and some red/brown, silty SAND. 930 visual observation (Mixture of rockfill and tailings). during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing. Density/consistency/strength descriptions are based on field observations of highly disturbed samples. -929 Refer to RSCPT14-15 and **KCB** laboratory testing for further information. Cvane is Torvane -2 Reddish brown-grey, silty fine to medium SAND. 928 (Tailings debris) i: [ i |- [ ] 1 Top of UPPER TILL Very stiff to hard, brown to mottled grey, sandy, rounded gravelly SILT with some clay and oxidation. (Possible weathered ablation/moraine till) 120 mm diameter rounded cobble at 3.0 m 927 Start of RSCPT14-15 at approx. 3.5 m 926 ₩. - grey below 4.6 m

1/7/15- THURBER BC.GLB

15-3-280 KCB.GPJ THURBER BC.GDT

TEST HOLE - MT POLLEY

HOLE NO. Sheet 2 of 5 SH14-15 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595104, N 5819959 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 930.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 17, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR: BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Very stiff to hard, grey, sandy, rounded gravelly SILT with some clay and oxidation. (Possible 5 -925 ablation/moraine till)  $\bigoplus$ - firm to stiff below 5.8 m -6 924  $\bigoplus$ 923 1/7/15- THURBER BC.GLB Cvane at 7.9 m is - 1 mm thick sand parting at 8.0 m 50 kPa Firm, brown to grey, moist to wet, laminated CLAY 15-3-280 KCB.GPJ THURBER BC.GDT Top of UPPER GLU -922 with some thin laminations of fine sand and a trace of rounded gravel to 20 mm diameter. (Glaciolacustrine) Cvane at 8.4 m is - laminations are 1 to 3 mm thick between 8.1 and 30 kPa 8.4 m - sandy at 8.4 m - 10 to 15 mm thick layers of SAND and GRAVEL at 8.5 and 8.6 m TEST HOLE - MT POLLEY 921 Cvane at 9.4 m is 35 kPa - laminations are 1 to 3 mm thick with partings of fine sand between 9.8 and 10.1 m

HOLE NO. Sheet 3 of 5 SH14-15 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595104, N 5819959 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 930.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 17, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 10 Firm, grey, moist, laminated CLAY with some thin laminations of fine sand and a trace of rounded -920 gravel to 20 mm diameter. (Glaciolacustrine) - bedding is faint, distorted and generally not horizontal Top of LOWER - stiff to very stiff below 10.9 m TILLS (Lower GLU) -919 Cvane at 10.9 m is 85 kPa 12 918 1/7/15- THURBER BC.GLB - sub vertical (approximately 70 degrees below horizontal) parting with some sand at 12.5 m 13 15-3-280 KCB.GPJ THURBER BC.GDT -917 Cvane at 14.0 m is - 150 mm diameter cobble partially cored at 105 kPa 14.0 m TEST HOLE - MT POLLEY 916 - greenish grey with some indistinct vertical to sub vertical structure at 14.0 m - sub vertical, distorted layers of fine to medium sand at 14.3 m Cvane at 14.6 m is 90 kPa - bedding becomes sub-horizontal with grey, fine sand partings 3 to 5 mm thick between 14.3 and 15.5 m

HOLE NO. Sheet 4 of 5 SH14-15 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595104, N 5819959 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 930.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 17, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS **□** Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery SOIL DESCRIPTION 60 80 100 120 140 160 180 200 **COMMENTS** 15 Stiff to very stiff, grey, moist, laminated CLAY with some thin laminations of fine sand and a trace of rounded gravel to 20 mm diameter. -915  $\oplus$ (Glaciolacustrine) - bedding is sub-horizontal - with trace of fine organics in dark grey to black laminations below 15.4 m (Top of Glaciofluvial) Dense (inferred), grey, wet, silty, fine to medium SAND with a slight organic odour. (Possible glaciofluvial) 16 -914 Stiff, grey, moist, fine sandy SILT with a trace to some clay, a trace of subangular gravel to 20 mm diameter, and a slight organic odour. (Possible glaciofluvial)  $\oplus$ Cvane at 17.1 m is 65 kPa 913 111 1111 1111 1111 Dense (inferred), grey, wet, silty, fine to medium 1/7/15- THURBER BC.GLB SAND with a slight organic odour. (Possible glaciofluvial) (Top of Lower Basal Very dense/very stiff to hard, reddish brown to tan mottled grey and green, angular to subangular 18 gravelly, SILT and SAND with some clay. (Basal 15-3-280 KCB.GPJ THURBER BC.GDT -912 Refusal of RSCPT14-15 at approx. 18.8 m 19 TEST HOLE - MT POLLEY 911 `>>**⊕** 

HOLE NO. Sheet 5 of 5 SH14-15 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595104, N 5819959 **TOP OF HOLE ELEV:** 930.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 17, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Very dense/very stiff to hard, reddish brown to tan mottled grey and green, angular to subangular gravelly, SILT and SAND with some clay. (Basal 20 -910 till) Top of WEAK Hard, green mottled brown, moist, sandy, angular to subrounded gravelly SILT with some clay. (Possible brecciated volcanic bedrock) BEDROCK - with reddish brown sub-horizontal banding 21 909 22 908 1/7/15- THURBER BC.GLB 23 15-3-280 KCB.GPJ THURBER BC.GDT -907 End of hole at KCB instruction. Test hole grouted to surface upon completion. -24 OF TEST HOLE - MT POLLEY 906

HOLE NO. Sheet 1 of 5 SH14-16 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595076, N 5819973 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 930.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 17 and 18, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Grey, grading to red where washed, SAND and angular GRAVEL with some cobbles and boulders. (Rockfill - Drill access road) 0 Note: Field log of test hole based on visual observation 930 during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing. Density/consistency/strength descriptions are based on field observations of highly disturbed samples. Refer to 929 RSCPT14-16 and Reddish brown, silty, fine to medium SAND. KCB laboratory (Tailings debris) i į testing for further 'ŀ İ.1 information. Very stiff, brown mottled grey, moist, sandy, rounded gravelly SILT with some clay. (Possible  $\bigoplus$ Top of UPPER TILL weathered ablation/moraine till) -2 -928  $\bigoplus$ Start of RSCPT14-16 at approx. 2.3 m 1/7/15- THURBER BC.GLB - 100 mm diameter rounded cobble at 2.7 m  $\oplus$ 15-3-280 KCB.GPJ THURBER BC.GDT 927 - grey (unweathered) below 3.3 m ⊕. TEST HOLE - MT POLLEY 926  $\bigoplus$ Firm, brown mottled grey, moist, sandy, rounded gravelly SILT with some clay. (Possible ablation/moraine till)  $\oplus$ 

HOLE NO. Sheet 2 of 5 SH14-16 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595076, N 5819973 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 930.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 17 and 18, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR: BSP** ▼ WATER LEVEL SAMPLES PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 5 Firm, brown mottled grey, moist, sandy, rounded gravelly SILT with some clay. (Possible ablation/moraine till) 925 1 -6  $\bigoplus$ 924 - 5 mm thick undulating layer of light grey, fine sandy silt with some clay at 6.4 m - becoming stiff below 7.0 m - 5 mm thick undulating layer of light grey, fine 923 sandy silt at 7.0 m - grades to silt and fine sand with some rounded gravel and clay below 7.3 m 1/7/15- THURBER BC.GLB Very stiff to hard, grey, moist, fine sandy SILT with Top of LOWER some rounded gravel. (Basal till) TILLS (Lower Basal THURBER BC.GDT - grading finer downward with gradual transition to Till) 922 glaciolacustrine 15-3-280 KCB.GPJ :>> TEST HOLE - MT POLLEY -921  $\oplus$ - trace oxidization on gravel fragments at 9.8 m

HOLE NO. Sheet 3 of 5 SH14-16 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595076, N 5819973 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 930.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 17 and 18, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ■ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 10 Top of Lower GLU) Very stiff to hard, grey, moist, clayey SILT to CLAY with some fine sand, a trace of rounded gravel to 920 20 mm diameter. (Glaciolacustrine) **\rightarrow** - occasional polished surfaces (slickensides) and faint horizontal to sub vertical bedding below 919 - traces of rounded gravel and organics (charcoal) below 11.6 m Very stiff to hard, brown mottled grey, moist SILT 12 with some clay and sand. (Glaciolacustrine) -918 1/7/15- THURBER BC.GLB (Probable top of (No Recovery) Lower Basal Till) Refusal of RSCPT14-16 at (Disturbed), reddish brown, moist, gravelly, sandy approx. 12.5 m SILT with some clay and a trace of cobbles. (Basal 13 till) Probable core loss between 12.5 and Boulder (cored and broken by drill action). 15-3-280 KCB.GPJ THURBER BC.GDT 12.8 m 917 0 Very stiff, orange-brown with yellow, moist, sandy, gravelly SILT with some clay and a trace of cobbles. (Basal till) - with significant pervasive oxidation and alteration TEST HOLE - MT POLLEY (possibly from parent material) -916 4

HOLE NO. Sheet 4 of 5 SH14-16 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595076, N 5819973 **TOP OF HOLE ELEV:** 930.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 17 and 18, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) USCS **□** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 15 915 Top of WEAK Hard, bluish green mottled grey-brown, clayey SILT to CLAY with some sand and gravel. BEDROCK (Possible fine volcanic ash tuff bedrock) 16 -914 913 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB 18 Hard, reddish brown, dark grey to black, mottled greenish sandy, gravelly SILT with some clay. (Possible brecciated volcanic bedrock) 912 19 -911

HOLE NO. Sheet 5 of 5 SH14-16 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595076, N 5819973 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 930.2 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 17 and 18, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR: BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Hard, reddish brown, dark grey to black, mottled greenish sandy, gravelly SILT with some clay. 20 (Possible brecciated volcanic bedrock) 910 - with some reddish brown and green sub-horizontal banding 21 - 130 mm diameter rounded volcanic cobble at 21.0 m 909 22 -908 1/7/15- THURBER BC.GLB 23 15-3-280 KCB.GPJ THURBER BC.GDT Very dense (inferred), grey, moist, silty fine SAND 907 with traces of clay and coal. (Possible poorly cemented sandstone bedrock) End of hole at KCB instruction. Test hole sounded through casing upon completion to 23.4 m. Slope inclinometer installed and test hole grouted to surface. -24 TEST HOLE - MT POLLEY -906

HOLE NO. Sheet 1 of 5 SH14-17 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595090, N 5819998 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 929.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 18, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Plastic Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Note: Field log of Grey, wet SAND and GRAVEL with some silt, 0 some cobbles, and a trace of boulders. (Rockfill - drill access road) test hole based on visual observation during drilling completed by KCB. No samples were obtained by Thurber -929 for confirmatory laboratory testing. Density/consistency/strength descriptions are based on field observations of Red-brown, wet, silty fine to medium SAND. highly disturbed samples. (Tailings debris) Refer to RSCPT14-17 and **KCB** laboratory testing for further information. 111 -928 - 5 mm thick layer of grey SAND and SILT at 1.5 m 11:1 -2 1/7/15- THURBER BC.GLB 927 Top of UPPER TILL Hard, grey, moist, sandy, gravelly SILT with some clay and cobbles. >>⊕ (Possible ablation/moraine till) 15-3-280 KCB.GPJ THURBER BC.GDT Start of RSCPT14-17 at approx. 3.4 m -926  $\bigoplus$ - firm to stiff below 3.7 m TEST HOLE - MT POLLEY  $\bigoplus$ -925

HOLE NO. Sheet 2 of 5 SH14-17 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595090, N 5819998 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 929.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 18, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ■ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** SOIL DESCRIPTION 100 120 140 160 180 200 5 Firm to stiff, grey, moist, sandy, gravelly SILT with some clay and cobbles. Top of UPPER GLU (Possible ablation/moraine till) Stiff, grey, moist CLAY with some fine sand and a **(** trace of rounded gravel to 40 mm diameter. (Glaciolacustrine) - faintly laminated in zones with some horizontal -924 layers to 4 mm thickness <del>(</del> - 100 mm thick layer of SAND, SILT and CLAY at 5.7 m - 130 mm diameter rounded cobble at 6.1 m Top of LOWER Hard, grey, moist SILT and fine SAND with some TILLS (Lower Basal clay and rounded gravel to gravelly. (Basal till) >><del>\</del>Till) -923 - 100 mm thick layer of sandy, clayey silt to clay with a faint polished surface (possible slickenside) at 6.7 m Dense (inferred), grey, wet, silty SAND and GRAVEL with some clay. (Top of Lower GLU) 1/7/15- THURBER BC.GLB Hard, grey, moist, clayey SILT with some fine sand and rounded gravel and with faint polished 922 surfaces. (Glaciolacustrine) - some 5 to 30 mm thick layering at 30 degrees to 15-3-280 KCB.GPJ THURBER BC.GDT -921 ·>> TEST HOLE - MT POLLEY - some horizontal bedding below 9.1 m -920 :>><del>(</del>

HOLE NO. Sheet 3 of 5 SH14-17 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595090, N 5819998 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 929.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 18, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ■ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 COMMENTS SOIL DESCRIPTION 10 Hard, grey, moist SILT and fine SAND with traces of clay and rounded gravel to 25 mm diameter. (Glaciolacustrine) -919 - bedding not apparent Initial refusal of RSCPT14-17 at approx. 11.3 m 918 :>>◆ Hard, grey, moist, laminated clayey SILT with some fine sand in partings and a trace of rounded gravel to 30 mm. (Glaciolacustrine) - fine sand partings spaced at 50 to 100 mm Restart of - 100 mm diameter rounded cobble at 11.9 m RSCPT14-17 at 12 approx. 11.9 m 1/7/15- THURBER BC.GLB -917 13  $\oplus$ - becoming very stiff, with some dark grey to black laminations containing trace fine organics below 15-3-280 KCB.GPJ THURBER BC.GDT 13.1 m (Top of Glaciofluvial) Dense (inferred), grey, wet, silty fine to medium SAND. -916 1:1 (Possible glaciofluvial) Dense (inferred), grey, wet, fine to coarse SAND with a trace to some silt. (Possible glaciofluvial) Dense (inferred), grey, wet SAND and GRAVEL (Top of Lower Basal with some silt. Ťill) (Possible glaciofluvial) TEST HOLE - MT POLLEY Refusal of Disturbed (inferred very stiff to hard), brown to RSCPT14-17 at grey, sandy, gravelly SILT with a trace of cobbles. approx. 14.0 m (Basal till) 915

HOLE NO. Sheet 4 of 5 SH14-17 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595090, N 5819998 **TOP OF HOLE ELEV:** 929.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 18, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR: BSP** ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Disturbed (inferred very stiff to hard), brown to grey, sandy, gravelly SILT with a trace of cobbles. (Basal till) 15 914 - 130 mm diameter rounded cobble at 15.5 m Top of WEAK Very dense (inferred), black, moist, silty angular BEDROCK SAND and GRAVEL with a trace of clay. (Possible brecciated volcanic bedrock) - gravel and matrix of basalt-like origin 16 -913 1/7/15- THURBER BC.GLB 912 18 15-3-280 KCB.GPJ THURBER BC.GDT 911 Hard, dark grey to black, moist, friable, sandy, subrounded to subangular gravelly SILT with some clay. (Possible brecciated volcanic bedrock) - gravel and matrix of basalt-like origin 19 TEST HOLE - MT POLLEY -910

HOLE NO. Sheet 5 of 5 SH14-17 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595090, N 5819998 TOP OF HOLE ELEV: 929.6 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 18, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: **BSP** ▼ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) PENETRATION WATER CONTENT (%) (blows/300 mm) USCS **□** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 40 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 20 Hard, dark grey to black, moist, friable, sandy, subrounded to subangular gravelly SILT with some clay. (Possible brecciated volcanic bedrock) - gravel and matrix of basalt-like origin End of hole at KCB instruction. Test hole grouted to surface upon completion. -909 21 -908 22 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB 907 23 -906 -24 -905

HOLE NO. Sheet 1 of 6 SH14-18 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595016, N 5820025 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 934.8 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 20, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 0 Note: Field log of Grey-brown, moist, angular sandy GRAVEL with test hole based on trace of silt. (Fill - drill access road) visual observation during drilling completed by KCB. No samples were obtained by Thurber Loose to compact (inferred), reddish brown, moist, for confirmatory silty fine SAND. (Tailings debris) 1:11 1:11 1:11 laboratory testing. Density/consistency/strength descriptions are -934 based on field observations of highly disturbed samples. Refer to RSCPT14-18 and **KCB** laboratory `I:| :|. testing for further 11:1 information. Nominal sonic core diameter 140 mm between 0 and -933 11.0 m -2 1/7/15- THURBER BC.GLB 932 1:11 Very stiff, grey-brown, moist, sandy SILT with 15-3-280 KCB.GPJ THURBER BC.GDT some rounded to angular gravel and traces of clay and cobbles (Mixture of till-fill and rockfill debris) - with pockets of tailings at 3.2 and 3.7 m (slide debris)  $\oplus$ ᠿ. 931 Top of UPPER TILL Stiff to very stiff, grey-brown, moist SILT with some  $\bigoplus$  $\oplus$ sand to sandy, some gravel, trace to some clay Start of and traces of roots, fibrous organics and cobbles RSCPT14-18 at to 125 mm diameter. approx. 3.8 m (Possible weathered ablation/moraine till) TEST HOLE - MT POLLEY - firm from 4.0 to 5.2 m  $\bigoplus$  $\bigoplus$ -930 .0G OF  $\bigoplus$ 

HOLE NO. Sheet 2 of 6 SH14-18 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595016, N 5820025 **TOP OF HOLE ELEV:** 934.8 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 20, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 80 100 120 140 160 180 200 SOIL DESCRIPTION 5 Stiff to very stiff, grey-brown, moist SILT with some sand to sandy, some gravel, trace to some clay and traces of roots, fibrous organics and cobbles to 125 mm diameter. **\(\partial\)**  $\bigoplus$ (Possible weathered ablation/moraine till) -929 6  $\bigoplus$  $\oplus$ - very stiff to hard, grey, gravelly below 6.2 m depth  $\bigoplus$ `>><del>⊕</del> -928  $\oplus$ 1/7/15- THURBER BC.GLB  $\bigoplus$ -927 - stiff to very stiff with some gravel to gravelly below 7.9 m depth  $\bigoplus$  $\bigoplus$ 15-3-280 KCB.GPJ THURBER BC.GDT  $\bigoplus$ -926  $\bigoplus$  $\oplus$ - firm below 8.8 m depth JOG OF TEST HOLE - MT POLLEY  $\bigoplus$  $\bigoplus$ -925

HOLE NO. Sheet 3 of 6 SH14-18 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595016, N 5820025 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 934.8 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 20, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 10 Top of LOWER Very stiff, grey, moist, sandy SILT with some TILLS (Lower Basal gravel to gravelly, trace to some clay and traces of cobbles to 125 mm diameter. (Basal till) - two zones (each about 50 mm thick) of grey, 924 moist to wet, fine to medium SAND with some silt to silty and trace of gravel with oxidation, at 10.7 and 10.9 m depth (Top of Very stiff/dense (brittle), moist to wet, SILT and Glaciofluvial)) fine SAND to fine sandy SILT with traces of clay and fine black organics. (Possible glaciofluvial). Nominal sonic core - generally massive with trace sub-horizontal diameter 100 mm laminations containing organics between 11.0 and 25.0 m Dense (inferred), grey, moist to wet, sandy GRAVEL and SILT. (Possible till fragment) -923 Dense (inferred), light brown, wet, silty fine SAND to fine SAND and SILT. (Possible glaciofluvial) Refusal of RSCPT14-18 at Dense (inferred), grey-brown, wet, sandy GRAVEL 12 approx. 11.8 m to 75 mm diameter, with trace to some silt. (Possible glaciofluvial) 1/7/15- THURBER BC.GLB Stiff/dense (inferred), light brown, wet, fine sandy SILT to silty fine SAND with some irregular seams of fine to medium sand to 25 mm thick. (Possible 922 glaciofluvial) 13 15-3-280 KCB.GPJ THURBER BC.GDT -921 Dense (inferred), brown, moist to wet, fine to medium SAND with trace to some silt. (Possible TEST HOLE - MT POLLEY glaciofluvial) - pocket of stiff, sandy SILT with some gravel (Till-like) from 14.3 to 14.5 m depth - with trace zones of soft, fine sandy SILT with trace gravel and fine black organics with slight organic odour below 14.5 m -920

HOLE NO. Sheet 4 of 6 SH14-18 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595016, N 5820025 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 934.8 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 20, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ■ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 COMMENTS SOIL DESCRIPTION 15 Dense (inferred), grey-brown, moist, fine sandy SILT to SILT and fine SAND with some gravel to 75 mm diameter. - very stiff/dense zone, 100 mm thick at 15.4 m (Top of Lower Basal Very stiff to hard, grey-brown with reddish -919 oxidation, moist, gravelly sandy SILT to GRAVEL, SILT and SAND with traces of clay and cobbles up  $\bigoplus$ to 100 mm diameter. (Basal till) 16 - gravel is sub-rounded to rounded - very dense (inferred), silty sand and gravel, no oxidation below 16.2 m -918 - purplish brown matrix below 16.8 m - very dense (inferred), purple, gravelly sand with 1/7/15- THURBER BC.GLB some silt to silty below 17.4 m 917 18 15-3-280 KCB.GPJ THURBER BC.GDT -916 19 TEST HOLE - MT POLLEY Top of WEAK Very stiff to hard, purplish brown with green and BEDROCK red bands up to 10 mm thick (undulating  $\oplus$ sub-horizontal), dry to moist SILT with trace to some gravel, sand and clay. (Possible brecciated volcanic bedrock) -915 - gravel particles are sub-rounded to sub-angular, to 50 mm diameter, greenish black meta-volcanic

HOLE NO. Sheet 5 of 6 SH14-18 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595016, N 5820025 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 934.8 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 20, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 20 Very stiff to hard, purplish brown with green and red bands up to 10 mm thick (undulating sub-horizontal), dry to moist SILT with trace to some gravel, sand and clay. (Possible brecciated volcanic bedrock)  $\oplus$ - with some slickensides up to 1 square cm in sub-horizontal planes -914 Hard, reddish brown with green highlights, moist, fine to medium sandy SILT to SAND and SILT. (Possible brecciated volcanic bedrock) -21 -913 22 - greenish grey with red highlights below 22.1 m depth >>⊕ 1/7/15- THURBER BC.GLB Hard, dark grey with black, green and red zones and streaks, dry to moist, fine gravelly SILT with some sand and trace of clay. 912 (Possible brecciated volcanic bedrock) gravel particles are sub-angular to rounded, to 25 mm diameter, of meta-volcanic origin 23 15-3-280 KCB.GPJ THURBER BC.GDT :>>**⊕** - with frequent undulating sub-horizontal colour bands (banded), green-purple-red/brown all of same apparent gradation -911 24 TEST HOLE - MT POLLEY -910

HOLE NO. Sheet 6 of 6 SH14-18 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595016, N 5820025 **TOP OF HOLE ELEV:** 934.8 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 20, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) PENETRATION WATER CONTENT (%) (blows/300 mm) ▲ Passing #200 sieve Ξ USCS ☐ Grab Sample ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 25 End of test hole at KCB instruction. Test grouted to surface upon completion. Artesian groundwater flow noted flowing from 7" casing at 11.0 m when 6" casing removed (on order of 1.5 to 3 m head). -909 About 0.5 hours following initial grouting artesian 26 flow resumed at 10 to 20L/min. Returned and successfully regrouted with heavier mix. -908 27 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB 907 28 -906 29 -905

HOLE NO. Sheet 1 of 5 SH14-19 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 594883, N 5820042 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 942.8 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 20, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Note: Field log of 0 Grey-brown, moist, sandy angular GRAVEL with trace of silt. test hole based on visual observation (Road fill) during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing.
Density/consistency/strength
descriptions are 942 based on field observations of highly disturbed samples. Refer to RSCPT14-19 and **KCB** laboratory testing for further information. Nominal sonic core diameter 140 mm between 0 and 941 11.0 m -2 1/7/15- THURBER BC.GLB 940 Top of UPPER TILL Stiff to very stiff, grey-brown, moist, sandy SILT 15-3-280 KCB.GPJ THURBER BC.GDT with some gravel to gravelly and traces of roots, fine organics and oxidation. (Possible weathered ablation/moraine till)  $\bigoplus$  $\oplus$ Start of RSCPT14-19 at approx. 3.4 m Dense to very dense (inferred), grey-brown, moist, silty SAND to SILT and SAND with some gravel. 939 (Possible ablation/moraine till) TEST HOLE - MT POLLEY Initial refusal of RSCPT14-19 at approx. 4.6 m -938

HOLE NO. Sheet 2 of 5 SH14-19 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 594883, N 5820042 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 942.8 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 20, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 5 Dense to very dense (inferred), grey-brown, moist, silty SAND to SILT and SAND with some gravel. (Possible ablation/moraine till) -937 -6 Restart of Very stiff to hard, grey, moist, sandy SILT with RSCPT14-19 at some gravel to gravelly.
(Possible ablation/moraine till) approx. 6.2 m 936 - 50 to 75 mm thick seam of fine to medium SAND with a trace to some silt, irregular sub-horizontal, Refusal of at 6.9 m RSCPT14-19 at approx. 7.0 m 1/7/15- THURBER BC.GLB - 25 mm seam of fine to medium SAND with trace to some silt, irregular sub-horizontal, at 7.5 m -935 15-3-280 KCB.GPJ THURBER BC.GDT -934 TEST HOLE - MT POLLEY Very dense (inferred), grey, moist, silty SAND with some gravel. (Possible ablation/moraine till) -933

HOLE NO. Sheet 3 of 5 SH14-19 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 594883, N 5820042 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 942.8 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 20, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ■ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 COMMENTS SOIL DESCRIPTION 10 Very dense (inferred), grey, moist, silty SAND with some gravel. (Possible ablation/moraine till) Hard, dark grey, gravelly SILT with some sand to sandy. (Possible ablation/moraine till) -932 - red/brown with oxidation below 10.8 m Nominal sonic core diameter 100 mm below 11.0 m Compact to dense (inferred), light grey/brown, moist to wet, fine SAND and SILT with some Top of LOWER gravel with trace fine to medium sand seams to TILLS (Glaciofluvial) 5 mm thick. (Possible glaciofluvial) Compact to dense (inferred), brown, wet, gravelly, 931 fine to coarse SAND with a trace to some silt. (Possible glaciofluvial) 12 1/7/15- THURBER BC.GLB Compact to dense (inferred), brown, moist to wet, silty fine to medium SAND with some gravel to gravelly. (Possible glaciofluvial) 930 13 (Top of Lower Basal Very stiff to hard, grey-brown, moist, gravelly SILT with some sand to sandy. (Basal till) 15-3-280 KCB.GPJ THURBER BC.GDT - oxidation at 13.1 m depth - 100 mm thick zone of brown, wet, fine to medium SAND with some silt and gravel at 13.3 m 929 TEST HOLE - MT POLLEY -928

HOLE NO. Sheet 4 of 5 SH14-19 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 594883, N 5820042 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 942.8 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 20, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 15 Very stiff to hard, grey-brown, moist, gravelly SILT with some sand to sandy. (Basal till) 927 Very hard, purple-brown, dry to moist, gravelly SILT to SILT and GRAVEL with some sand to 16 sandy and trace to some clay. (Basal till) - gravel particles to 40 mm diameter, sub-angular to rounded. - generally matrix supported, with no apparent structure (massive) 926 Top of WEAK Very dense (friable), dry to moist, purple mottled BEDROCK greenish grey, angular sandy GRAVEL with some 1/7/15- THURBER BC.GLB silt and trace to some clay. (Possible brecciated volcanic bedrock) - gravel particles are purplish grey meta-volcanic 925 18 15-3-280 KCB.GPJ THURBER BC.GDT -924 19 TEST HOLE - MT POLLEY - trace of white, vein-like structures at 19.5 m -923

HOLE NO. Sheet 5 of 5 SH14-19 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 594883, N 5820042 **TOP OF HOLE ELEV:** 942.8 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 20, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) PENETRATION WATER CONTENT (%) (blows/300 mm) USCS **□** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 40 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 20 Very dense (friable), dry to moist, purple mottled greenish grey, angular sandy GRAVEL with some silt and trace to some clay. (Possible brecciated volcanic bedrock) - gravel particles are purplish grey méta-volcanic End of test hole at KCB instruction. Test hole grouted to surface upon completion. 922 21 -921 22 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB -920 23 -919 -24 -918

HOLE NO. Sheet 1 of 11 SH14-20 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 594862, N 5819968 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 969.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 21, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ■ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Grey-brown, moist, angular GRAVEL with some 0 Note: Field log of sand to sandy and trace to some silt, and trace test hole based on visual observation cobbles up to 100 mm diameter. during drilling completed by KCB. (Downstream dam shell- rockfill) No samples were obtained by Thurber for confirmatory laboratory testing. Density/consistency/strength descriptions are based on field 969 observations of highly disturbed samples. Refer to KCB laboratory testing for further information. Nominal sonic core diameter 140 mm between 0 and 26.2 m Grey-brown, moist, angular GRAVEL with some 968 sand to sandy and trace to some silt. (Possible -2 transition zone) - typically minus 25 mm crushed material with trace oversize 1/7/15- THURBER BC.GLB - sharp colour break, brown and with some silt below 2.6 m (possible lift or stage boundary) 967 15-3-280 KCB.GPJ THURBER BC.GDT - sharp colour break, grey below 3.5 m (possible lift or stage boundary) -966 TEST HOLE - MT POLLEY - sharp colour break, grey-brown below 4.3 m (possible lift or stage boundary) 965

HOLE NO. Sheet 2 of 11 SH14-20 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 594862, N 5819968 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 969.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 21, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 5 Grey-brown, moist, angular GRAVEL with some sand to sandy and trace to some silt. (Possible transition zone) - typically minus 25 mm crushed material with trace oversize - trace woodwaste (stick) at 5.2 m depth - sharp colour break, grey below 5.3 m (possible lift or stage boundary) 964 -6 Grey-brown, moist, angular GRAVEL with some sand to sandy and some silt to silty. (Possible filter zone) - typically minus 25 mm crushed material with trace oversize 963 1/7/15- THURBER BC.GLB 962 - sharp colour break, grey below 7.9 m (possible lift or stage boundary) 15-3-280 KCB.GPJ THURBER BC.GDT -961 TEST HOLE - MT POLLEY -960

HOLE NO. Sheet 3 of 11 SH14-20 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 594862, N 5819968 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 969.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 21, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 10 Contact is irregular Stiff to very stiff, grey-brown, moist SILT with some sand and gravel and trace of clay. (Till fill core) at 10.2 m 0 959 - very stiff, gravelly with some sand to sandy below 11.0 m  $\bigoplus$ -958 12  $\bigoplus$ 1/7/15- THURBER BC.GLB 957 13  $\bigoplus$  $\oplus$ 15-3-280 KCB.GPJ THURBER BC.GDT - 100 mm thick soft zone at 13.9 m (possibly drill disturbance) -956 Very stiff / dense, grey-brown, moist, gravelly sandy SILT to SAND and SILT. (Till fill core) TEST HOLE - MT POLLEY - 15 mm thick zone of wet, silty sand and gravel at 14.0 m (possible drill segregation) -0G OF -955

HOLE NO. Sheet 4 of 11 SH14-20 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 594862, N 5819968 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 969.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 21, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Very stiff / dense, grey-brown, moist, gravelly sandy SILT to SAND and SILT. (Till fill core) 15 - 15 mm thick zone of wet, silty sand and gravel at 14.0 m (possible drill segregation) Very stiff to hard, grey-brown with oxidization, moist SILT with some sand and gravel and a trace  $\oplus$ :>>◆ of clay. (Till fill core) 954 -16 :>>**⊕** -953 - sandy below 17.4 m 1/7/15- THURBER BC.GLB 952 18 15-3-280 KCB.GPJ THURBER BC.GDT -951 19 - 25 mm thick layer of stiff, grey, sandy SILT to SILT and SAND with trace of clay at approximately TEST HOLE - MT POLLEY 19.1 m - trace of woodwaste at 19.4 m 950

HOLE NO. Sheet 5 of 11 SH14-20 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 594862, N 5819968 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 969.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 21, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Very stiff to hard, grey-brown with oxidization, moist, sandy SILT with some gravel and a trace of clay. (Till fill core) 20 949 21 Hard, dark grey with brown mottling, moist SILT with some sand and gravel and a trace of clay. >> (Till fill core) -948 22 >>⊕ 1/7/15- THURBER BC.GLB - brown zones, each less than 100 mm thick, 947 centered at about 22.9 and 23.0 m 23 15-3-280 KCB.GPJ THURBER BC.GDT :>>⊕ - sharp transition to brown with trace oxidation below 23.5 m (possible lift or stage boundary) - minor trace of grass, thin roots and fibrous organics at 23.5 m 946 24 :>> TEST HOLE - MT POLLEY - minor trace of grass, thin roots and fibrous organics at 24.2 m - 150 mm thick grey zone at 24.4 m - very stiff below 24.7 m -945

HOLE NO. Sheet 6 of 11 SH14-20 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 594862, N 5819968 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 969.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 21, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 25 Very stiff, brown, moist SILT with some sand and gravel and a trace of clay. (Till fill core) - 50 mm thick grey zone at 25.5 m  $\bigoplus$  $\bigoplus_{i}$ 944 -26 Nominal sonic core diameter 100 mm below 26.2 m -943 27 1/7/15- THURBER BC.GLB Compact to dense (inferred), brown, wet, angular GRAVEL with some sand and trace to some silt. 942 (Possible upstream toe-drain) 28 15-3-280 KCB.GPJ THURBER BC.GDT Top of UPPER TILL Very stiff, grey-brown, moist SILT with some sand and trace to some gravel and clay. 941 (Possible ablation/moraine till)
- trace irregular surfaces less than 1 mm thick 29 infilled with grey fine sand and silt and partially TEST HOLE - MT POLLEY  $\oplus$ ⊕. decomposed fibrous organics (possible infilled dessication cracks) from 28.8 to 29.9 m - some gravel to gravelly below 29.6 m 940

HOLE NO. Sheet 7 of 11 SH14-20 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 594862, N 5819968 TOP OF HOLE ELEV: 969.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 21, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) ▲ Passing #200 sieve Ξ USCS **□** Grab Sample ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 30 Very stiff, grey-brown, moist SILT with some gravel to gravelly, some sand and trace to some clay. (Possible ablation/moraine till) -939 -31 Very dense, grey, moist, SAND and SILT with some gravel to gravelly and trace of clay. (Possible ablation/moraine till) 938 32 1/7/15- THURBER BC.GLB -937 33 15-3-280 KCB.GPJ THURBER BC.GDT -936 JOG OF TEST HOLE - MT POLLEY -935

HOLE NO. Sheet 8 of 11 SH14-20 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 594862, N 5819968 TOP OF HOLE ELEV: 969.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 21, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 35 Very dense, grey, moist, SAND and SILT with some gravel to gravelly and trace of clay. (Possible ablation/moraine till) 934 >><del>(</del> -36 -933 -37 1/7/15- THURBER BC.GLB `>>**⊕** 932 -38 15-3-280 KCB.GPJ THURBER BC.GDT - 10 mm thick sub-horizontal irregular seam of fine to medium SAND with trace to some silt at  $\,$ 38.3 m depth :>>**⊕** -931 39 OG OF TEST HOLE - MT POLLEY Top of LOWER Compact to dense (inferred), dark grey, wet, fine TILLS (Glaciofluvial) to medium SAND with some silt to silty. 1. j i 1. j . j. (Possible glaciofluvial) -930

HOLE NO. Sheet 9 of 11 SH14-20 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 594862, N 5819968 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 969.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 21, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 40 111 111 Compact to dense (inferred), grey-brown, wet, gravelly SAND with some silt. (Possible glaciofluvial) (Top of Lower Basal Very stiff, grey-brown with pockets of oxidation, moist, sandy SILT with some gravel to gravelly and trace of clay. (Basal till) 929 928 Very stiff, purplish brown, moist, gravelly, sandy SILT with trace of clay. (Basal till) 42  $\bigoplus$ 1/7/15- THURBER BC.GLB 927 43 LOG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT  $\bigoplus$ Very stiff, grey, moist, gravelly SILT with some sand and trace to some clay. (Basal till) 926  $\bigoplus$ 925

HOLE NO. Sheet 10 of 11 SH14-20 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 594862, N 5819968 TOP OF HOLE ELEV: 969.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 21, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 45 Very stiff, grey, moist, gravelly SILT with some sand and trace to some clay. (Basal till) 924 46 Hard, grey, moist, gravelly SILT with some sand and a trace of clay. (Basal till) - gravel particles are rounded to sub-angular, mixed origin 923 :>>∢ 1/7/15- THURBER BC.GLB 922 48 15-3-280 KCB.GPJ THURBER BC.GDT :>> -921 49 TEST HOLE - MT POLLEY Top of WEAK Hard, reddish brown with greenish grey in bands, dry to moist, sandy SILT with some gravel to BEDROCK gravelly and trace of clay. (Possible brecciated volcanic bedrock) - gravel particles to 50 mm diameter, ranging from angular to rounded, meta-basalt like -920

HOLE NO. Sheet 11 of 11 SH14-20 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 594862, N 5819968 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 969.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 21, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 50 Hard, reddish brown with greenish grey in bands, dry to moist, sandy SILT with some gravel to gravelly and trace of clay. (Possible brecciated volcanic bedrock) - greenish grey bands, very dense (inferred) silt and fine sand (texture resembles fine meta-igneous rock) at 50.0 m 919 - 100 mm thick layer of reddish brown, wet, -51 angular to sub-angular GRAVEL with some silt and trace to some clay at 51.2 m Hard, reddish brown with greenish grey bands, dry to moist SILT with some sub-rounded gravel and a trace to some sand and clay. (Possible brecciated volcanic bedrock) -918 -52 1/7/15- THURBER BC.GLB 917 -53 15-3-280 KCB.GPJ THURBER BC.GDT - sub-rounded cobble shaped pocket consisting of very dense (inferred), dark grey, SAND with some silt at 53.3 m (may be crystals in decomposed cobble) 916 End of test hole at KCB instruction. Test hole sounded through casing upon completion to 54.0 m. Vibrating wire piezometers installed at 51.8 m TEST HOLE - MT POLLEY (Tip A), 39.9 m (Tip B) and 35.1 m (Tip C) and test hole fully grouted up to 10.2 m upon completion. -915

HOLE NO. Sheet 1 of 15 SH14-21 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595304, N 5819760 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 968.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 23 and 24, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Grey, moist, angular GRAVEL with some sand and 0 Note: Field log of test hole based on a trace to some silt and cobbles to 125 mm visual observation diameter. (Downstream dam shell - rockfill) during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing. Density/consistency/strength descriptions are based on field -968 observations of - grey/brown below 0.9 m (possible lift/stage highly disturbed boundary) samples. Refer to RSCPT14-21 and **KCB** laboratory testing for further information. Note RSCPT14-21 located approx. 55 m to southeast. Start of 967 RSCPT14-21 at 0 m -2 in till fill core. Nominal sonic core diameter 140 mm between 0 and - grey below 2.3 m (possible lift/stage boundary) 35.4 m -966 -965 964

1/7/15- THURBER BC.GLB

15-3-280 KCB.GPJ THURBER BC.GDT

TEST HOLE - MT POLLEY

HOLE NO. Sheet 2 of 15 SH14-21 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595304, N 5819760 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 968.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 23 and 24, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 5 Grey, moist, angular GRAVEL with some sand and a trace to some silt and cobbles to 125 mm diameter. (Downstream dam shell - rockfill) - some silt below 5.8 m -963 962 1/7/15- THURBER BC.GLB -961 THURBER BC.GDT Brown, moist, silty SAND and GRAVEL to sandy GRAVEL with some silt. (Downstream dam shell -15-3-280 KCB.GPJ rockfill) - gravel is angular to sub-angular and to 75 mm diameter -960 (colour change may indicate lift/stage boundary) TEST HOLE - MT POLLEY Grey, dry to moist, angular GRAVEL with some sand and a trace to some silt and cobbles to 125 959 mm diameter. (Downstream dam shell - rockfill)

HOLE NO. Sheet 3 of 15 SH14-21 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595304, N 5819760 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 968.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 23 and 24, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 10 Grey, dry to moist, angular GRAVEL with some sand and a trace to some silt and cobbles to 125 mm diameter. (Downstream dam shell - rockfill) -958 - possible pinkish grey boulder at 11.6 m (shattered by drill) 957 12 Greenish grey-brown, dry to moist, silty SAND and GRAVEL. (Downstream dam shell - rockfill) - gravel is angular to rounded and to 75 mm diameter 1/7/15- THURBER BC.GLB (possible lift/stage boundary) -956 13 15-3-280 KCB.GPJ THURBER BC.GDT -955 Brown, moist, sandy, angular GRAVEL with some silt and cobbles to 100 mm diameter. (Downstream dam shell - rockfill) TEST HOLE - MT POLLEY (possible lift/stage boundary) -954

HOLE NO. Sheet 4 of 15 SH14-21 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595304, N 5819760 TOP OF HOLE ELEV: 968.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 23 and 24, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 60 80 100 120 140 160 180 200 SOIL DESCRIPTION Brown, moist, sandy, angular GRAVEL with some silt and cobbles to 100 mm diameter. (Downstream dam shell - rockfill) 15 (possible lift/stage boundary) - grey-brown, dry to moist, with a trace to some silt below 15.4 m -953 -16 952 - grey, moist to wet, with some silt and a trace of clay below 17.1  $\mbox{\ensuremath{m}}$ 1/7/15- THURBER BC.GLB 951 18 15-3-280 KCB.GPJ THURBER BC.GDT -950 19 TEST HOLE - MT POLLEY - dry to moist, no clay below 19.5 m -949

HOLE NO. Sheet 5 of 15 SH14-21 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595304, N 5819760 **TOP OF HOLE ELEV:** 968.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 23 and 24, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS PENETRATION ▼ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) WATER CONTENT (%) (blows/300 mm) USCS **□** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 20 40 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 20 Grey, dry to moist, sandy, angular GRAVEL with some silt and cobbles to 100 mm diameter. (Downstream dam shell - rockfill) -948 21 947 22 1/7/15- THURBER BC.GLB -946 23 15-3-280 KCB.GPJ THURBER BC.GDT 945 -24 JOG OF TEST HOLE - MT POLLEY -944

HOLE NO. Sheet 6 of 15 SH14-21 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595304, N 5819760 **TOP OF HOLE ELEV:** 968.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 23 and 24, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) USCS **□** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 40 60 80 100 120 140 160 180 200 SOIL DESCRIPTION 25 Grey, dry to moist, sandy, angular GRAVEL with some silt and cobbles to 100 mm diameter. (Downstream dam shell - rockfill) -943 -26 - brown moist below 26.2 m (possible lift/stage boundary) 942 27 1/7/15- THURBER BC.GLB -941 28 15-3-280 KCB.GPJ THURBER BC.GDT -940 29 TEST HOLE - MT POLLEY -939

HOLE NO. Sheet 7 of 15 SH14-21 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595304, N 5819760 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 968.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 23 and 24, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 30 Brown, moist, sandy angular GRAVEL with some silt and cobbles to 150 mm diameter. (Downstream dam shell - rockfill) -938 -31 Pinkish grey-brown, moist to wet, silty SAND and angular GRAVEL to 20 mm diameter. (Possible transition / filter zones) 937 32 1/7/15- THURBER BC.GLB (Irregular contact, concave upward) Stiff, grey-brown, moist SILT with some sand and sub-rounded gravel to 25 mm diameter and a  $\bigoplus$ trace of clay. (Till fill core) - some discontinuous smooth, faintly striated 936 surfaces (possible slickensides) in approximately 33 parallel planes to the stratigraphic contact above from 32.6 to 33.2 m 15-3-280 KCB.GPJ THURBER BC.GDT  $\oplus$ >> - very stiff to hard below 32.9 m -935 -34 TEST HOLE - MT POLLEY -934

HOLE NO. Sheet 8 of 15 SH14-21 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595304, N 5819760 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 968.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 23 and 24, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** SOIL DESCRIPTION 80 100 120 140 160 180 200 35  $\oplus$ Very stiff to hard, fine sandy SILT to fine SAND and SILT with some gravel to 50 mm diameter and traces of medium to coarse sand. (Till fill core) Nominal sonic core diameter 100 mm below 35.4 m -933 -36 -932 -37 1/7/15- THURBER BC.GLB >>**⊕** -931 38  $\bigoplus$ - 20 mm thick layer of thinly laminated, stiff, moist 15-3-280 KCB.GPJ THURBER BC.GDT SILT with a trace to some clay and fine sand at 38.1 m - 20 mm thick layer of compact (inferred), moist, silty fine SAND at 38.3 m - grey below 38.4 m -930 -39 TEST HOLE - MT POLLEY (Contact is bluish grey silt horizon, 1 mm thick) Top of UPPER TILL Very stiff, brown with oxidization, moist, gravelly SILT with some sand and traces of clay and fibrous organics. (Possible weathered ablation/moraine till) - with irregular, sub-vertical, surfaces infilled with stiff, light grey, silt (possible infilled desiccation cracks or rootlets) 929

HOLE NO. Sheet 9 of 15 SH14-21 CLIENT: LOCATION: See Fig. 209 Mount Polley Independent Expert E 595304, N 5819760 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 968.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 23 and 24, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery COMMENTS SOIL DESCRIPTION 80 100 120 140 160 180 200 40 Stiff to very stiff, grey, moist, fine sandy SILT with some gravel to gravelly with thinly laminated zones with trace of clay and no gravel. Possible fragments (Possible ablation/moraine till) of UPPER GLU - 100 mm thick laminated zone deformed concave upward (open folds) at 39.9 m  $\bigoplus$  $\oplus$ - 100 mm thick laminated zone with an overturned þ fold (limbs at 30 and 60° upward from horizontal in same direction) at 40.5 m Vibrating Wire Tip C -928 at 40.8 m. - 100 m thick laminated zone with an overturned fold (limbs at 60 and 80° upward from the horizontal in opposite orientation to fold at 40.5 m) at 40.8 m Very stiff, grey-brown, moist, gravelly, sandy SILT with a trace of cobbles to 100 mm diameter and trace pockets of soft, grey silt with some clay.  $\oplus$ (Possible ablation/moraine till) 927 42  $\oplus$ 1/7/15- THURBER BC.GLB Dense (inferred), grey-brown, moist to wet, silty SAND and GRAVEL to 75 mm diameter. (Possible ablation/moraine till) -926 43 - gravelly, silty sand below 43.3 m 15-3-280 KCB.GPJ THURBER BC.GDT - rough, undulating sand surfaces dipping at about 30° to horizontal at 43.4 and 43.5 m Vibrating Wire Tip B Very stiff to hard, grey-brown, moist, sandy SILT with some sub-rounded gravel to 75 mm diameter at 43.6 m. to gravelly and a trace of clay. (Possible ablation/moraine till) 925 TEST HOLE - MT POLLEY  $\bigoplus$  $\bigoplus$ Possible fragment of - 35 mm thick layer of thinly laminated, stiff, clayey **UPPER GLŬ** silt interbedded with fine sand partings, beds deformed concave upward with 0 to 30° dip from horizontal. Lower surface of laminated zone is blackish grey, possibly with fine organics at 44.2 m (possible glaciolacustrine fragment) 924

HOLE NO. Sheet 10 of 15 SH14-21 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595304, N 5819760 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 968.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 23 and 24, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 45 Very stiff to hard, grey-brown, moist, sandy SILT with some sub-rounded gravel to 75 mm diameter to gravelly and a trace of clay. (Possible ablation/moraine till) -923 46 >>**⊕** 922 :>>⊕ 1/7/15- THURBER BC.GLB - 1 mm thick upward curved layer (resembling 3D 921 paraboloid, possible drill disturbance) consisting of 48 firm, bluish grey, moist, clayey silt at 47.9 m THURBER BC.GDT - approximately 75 mm thick layer of compact to dense (inferred), grey, wet, fine to medium SAND with a trace to some gravel and silt at 48.0 m 15-3-280 KCB.GPJ -920 49 TEST HOLE - MT POLLEY Compact to dense (inferred), grey, wet SAND and sub-angular to rounded GRAVEL to 50 mm diameter with a trace to some silt. Possible top of Very stiff to hard, grey-brown, moist, sandy SILT LOWER TILLS with some sub-rounded to rounded gravel to (Lower Basal Till) 75 mm diameter and a trace of clay. (Basal till) 919

HOLE NO. Sheet 11 of 15 SH14-21 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595304, N 5819760 TOP OF HOLE ELEV: 968.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 23 and 24, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) ▲ Passing #200 sieve Ξ USCS ☐ Grab Sample ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 60 80 100 120 140 160 180 200 SOIL DESCRIPTION Very dense (inferred), grey-brown, dry to moist, silty, fine SAND with some gravel to gravelly, a trace to some medium to coarse sand, and a trace 50 of cobbles to 100 mm diameter. (Basal till) -918 -51 - approximately 75 mm thick layer of grey, wet, sand and gravel with a trace to some silt at 51.4 m 917 -52 1/7/15- THURBER BC.GLB -916 -53 15-3-280 KCB.GPJ THURBER BC.GDT -915 OG OF TEST HOLE - MT POLLEY -914

HOLE NO. Sheet 12 of 15 SH14-21 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595304, N 5819760 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 968.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 23 and 24, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 COMMENTS SOIL DESCRIPTION 55 Very dense (inferred), grey-brown, dry to moist, silty, fine SAND with some gravel to gravelly, a trace to some medium to coarse sand, and a trace of cobbles to 100 mm diameter. (Basal till) -913 -56 (Top of Glaciofluvial) Dense (inferred), grey-brown, moist, silty, fine to medium SAND with some gravel. (Possible Vibrating Wire Tip A glaciofluvial) at 56.4 m. - coarsens downward Dense (inferred), dark grey, wet, fine to medium SAND with some silt and odour of organic : 111 1:11 1:11 decomposition. (Possible glaciofluvial) 912 -57 - fine to coarse sand with a trace to some silt below 57.0 m (coarsening downward) - 1 mm thick layer of black organic silt apparently folded sinusoidally at 57.2 m with silty fine sand below Dense (inferred), dark grey, moist, fine SAND and SILT to fine sandy SILT with some sub-angular to 1/7/15- THURBER BC.GLB rounded gravel to 50 mm diameter to gravelly and a trace to some medium to coarse sand, with odour of organic decomposition (no organics visible). (Possible glaciofluvial) 911 (Top of Lower Basal Hard/very dense (inferred), grey-brown with greenish zones, dry to moist, sub-rounded to rounded gravelly, silty SAND to sandy SILT with -58 15-3-280 KCB.GPJ THURBER BC.GDT traces of cobbles to 100 mm diameter and clay, with oxidation. (Basal till) 910 >> -59 TEST HOLE - MT POLLEY 909

HOLE NO. Sheet 13 of 15 SH14-21 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595304, N 5819760 Engineering Investigation and Review Panel **TOP OF HOLE ELEV:** 968.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 23 and 24, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL PENETRATION SAMPLES GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 60 Very dense (inferred), grey brown with oxidation, moist to wet, SAND and GRAVEL with some silt to silty. (Basal till) -908 -61 - 100 mm thick layer with diffused precipitated carbonate mineral within silt matrix (likely calcite, vigorous reaction to acid) at 61.3 m 907 62 - 25 mm thick oxidized layer, reddish-orange at 62.2 m 1/7/15- THURBER BC.GLB - 25 mm thick oxidized layer, reddish-orange at 62.6 m 906 63 - a trace to some silt from 63.1 to 63.6 m 15-3-280 KCB.GPJ THURBER BC.GDT -905 64 - a trace to some silt from 64.0 to 64.2 m TEST HOLE - MT POLLEY 904

HOLE NO. Sheet 14 of 15 SH14-21 LOCATION: CLIENT: See Fig. 209 Mount Polley Independent Expert E 595304, N 5819760 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 968.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 23 and 24, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 **INSPECTOR:** CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ■ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 COMMENTS SOIL DESCRIPTION 65 Very dense (inferred), grey brown with oxidation, moist to wet, SAND and GRAVEL with some silt to silty. (Basal till) - 50 mm thick layer with trace to some silt at 65.2 m - a trace to some silt below 65.7 m Hard, reddish brown/bluish grey, moist, sandy -903 gravelly SILT. (Basal till) 66 - gravel particles are rounded to sub-angular, to 75 mm diameter >>**⊕** Top of WEAK Very dense (inferred), dark grey with reddish brown zones and streaks, dry to moist, silty, angular SAND and GRAVEL to 25 mm diameter BEDROCK with a trace of clay. (Possible brecciated volcanic 902 bedrock) 67 - gravel particles are meta-basalt like, in some zones interlocking as if brecciated cobbles - frequent irregular sub-vertical to vertical,  $70^\circ$  to  $90^\circ$  , streaks of very stiff, dark red, clayey silt (like gouge, possible infilled shears), ranging from 1 to 1/7/15- THURBER BC.GLB 5 mm thick -901 -68 THURBER BC.GDT Very dense (inferred), red mottled grey, angular 15-3-280 KCB.GPJ SAND with some silt and traces of clay and angular gravel to 50 mm diameter. (Possible weathered igneous bedrock) 900 -69 TEST HOLE - MT POLLEY 899

HOLE NO. Sheet 15 of 15 SH14-21 LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595304, N 5819760 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 968.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 23 and 24, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 111 70 Very dense (inferred), red mottled grey, angular SAND with some silt and traces of clay and angular gravel to 50 mm diameter. (Possible weathered igneous bedrock) -898 Very dense (inferred), grey, dry to moist, angular GRAVEL with a trace to some angular sand and silt and a trace of clay. (Possible brecciated volcanic bedrock) gravel particles are meta-basalt like, to 25 mm diameter - generally clast supported 897 72 End of test hole at KCB instruction. Test hole sounded through casing upon completion to 72.4 m. Vibrating wire piezometers installed at 1/7/15- THURBER BC.GLB 56.4 m (Tip A), 43.6 m (Tip B) and 40.8 m (Tip C) and test hole fully grouted up to 22 m upon completion with bentonite chips and drill cuttings above. -896 OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT -895 894

HOLE NO. Sheet 1 of 3 SH14-22 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595118, N 5819985 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 929.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 25, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Note: Field log of 0 Grey, moist to wet, angular, sandy GRAVEL with a trace to some silt and a trace of cobbles to test hole based on visual observation 125 mm diameter. (Rockfill - drill access road) during drilling completed by KCB. No samples were obtained by Thurber for confirmatory 1.1.1 1.1.1 1.1.1 1.1.1. laboratory testing.
Density/consistency/strength
descriptions are Loose to compact (inferred), reddish grey-brown, wet, silty, fine SAND. (Tailings debris) based on field -929 observations of highly disturbed samples. Refer to RSCPT14-22 and **KCB** laboratory 1.1.1 testing for further information. Nominal sonic core -928 diameter 140 mm -2 Cvane is Torvane Top of UPPER TILL Very stiff, grey-brown, moist, sub-rounded to 1/7/15- THURBER BC.GLB rounded gravelly to 75 mm diameter SILT with some sand to sandy and a trace of clay. (Possible ablation/moraine till)  $\bigoplus$  $\stackrel{\cdot}{\bigoplus}$ -927 15-3-280 KCB.GPJ THURBER BC.GDT  $\Phi$  $\bigoplus$ 926 Start of RSCPT14-22 at approx. 3.9 m TEST HOLE - MT POLLEY  $\bigoplus$ 925

HOLE NO. Sheet 2 of 3 SH14-22 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595118, N 5819985 **TOP OF HOLE ELEV:** 929.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 25, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION 40 Firm to stiff with soft zones, grey, moist, 5 sub-rounded to rounded gravelly to 75 mm diameter SILT with some sand to sandy and a  $\bigoplus$  $\bigoplus$ trace of clay. (Possible ablation/moraine till) -924 6  $\bigoplus$  $\stackrel{\cdot}{\bigoplus}$ -923 - firm with trace to some clay below 7.3 m 1/7/15- THURBER BC.GLB  $\bigoplus$ Cvane at 7.8 m is 922 45 kPa No recovery. Cvane at 7.9 m is 55 kPa (Driller notes pushing a cobble/small boulder (sand particles may ahead of the bit) 15-3-280 KCB.GPJ THURBER BC.GDT be skewing results) 921 JOG OF TEST HOLE - MT POLLEY 920

HOLE NO. Sheet 3 of 3 SH14-22 LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595118, N 5819985 **TOP OF HOLE ELEV:** 929.9 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 25, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES UNDRAINED SHEAR STRENGTH (kPa) GRAIN SIZE (%) PENETRATION WATER CONTENT (%) (blows/300 mm) USCS **□** Grab Sample ▲ Passing #200 sieve Ξ ◆ Peak Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery **COMMENTS** 60 80 100 120 140 160 180 200 SOIL DESCRIPTION No recovery. 10 (Driller notes pushing a cobble/small boulder ahead of the bit) -919 -918 12 -OG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT 1/7/15- THURBER BC.GLB -917 13 916 End of hole due to poor recovery. Test hole grouted upon completion. Continued drilling at SH14-22A. -915

HOLE NO. Sheet 1 of 5 SH14-22A LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert E 595120, N 5819984 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 930.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 25, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Plastic Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Note: Field log of 0 Drilled out. (No recovery) test hole based on visual observation during drilling completed by KCB. No samples were obtained by Thurber for confirmatory laboratory testing.
Density/consistency/strength
descriptions are based on field observations of 929 highly disturbed samples. Refer to RSCPT14-22 and **KCB** laboratory testing for further information. KCB instructed driller to quickly drill to 4.9 m, discarding -928 -2 any heavily washed/disturbed recovery. Re-drill to sample interval which was not recovered at SH14-22. Nominal sonic core diameter 140 mm Cvane is Torvane -927 -926 Start of RSCPT14-22 at approx. 3.9 m 774 925

1/7/15- THURBER BC.GLB

LOG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT

HOLE NO. Sheet 2 of 5 SH14-22A LOCATION: CLIENT: Mount Polley Independent Expert See Fig. 209 E 595120, N 5819984 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 930.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 25, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery SOIL DESCRIPTION 60 80 100 120 140 160 180 200 **COMMENTS** 5 **UPPER TILL** Soft to firm, with stiff zones, grey, moist, gravelly SILT with some sand and a trace to some clay.  $\bigoplus$  $\bigoplus$ (Possible ablation/moraine till) -924  $\bigoplus$  $\bigoplus$ -923  $\bigoplus$ 1/7/15- THURBER BC.GLB Soft to firm, grey, moist SILT with some gravel, sand, and clay. (Possible ablation/moraine till)  $\bigoplus$ Cvane at 7.8 m is - 40 mm thick layer of firm CLAY at 7.8 m 35 kPa to 45 kPa 922 - firm below 7.9 m - 15 to 20 mm thick layer of soft CLAY at 8.1 m 15-3-280 KCB.GPJ THURBER BC.GDT - 15 to 20 mm thick layer of soft CLAY at 8.2 m  $\Phi\Phi$ - 15 to 20 mm thick layer of soft CLAY at 8.4 m Top of UPPER GLU Firm to stiff, grey, moist, thinly laminated clayey SILT to CLAY interbedded with fine sand partings Cvane at 8.7 m is and trace beds of clay to 20 mm thick 40 kPa 921 (Glaciolacustrine) TEST HOLE - MT POLLEY - bedding generally deformed with concave upward curvature (possible drill disturbance) with Cvane at 9.3 m is occasional sections with low amplitude undulating 40 kPa bedding Cvane at 9.6 m is 20 kPa

HOLE NO. Sheet 3 of 5 SH14-22A CLIENT: LOCATION: See Fig. 209 Mount Polley Independent Expert E 595120, N 5819984 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 930.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 25, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery COMMENTS SOIL DESCRIPTION 80 100 120 140 160 180 200 Firm to stiff, grey, moist, thinly laminated clayey SILT to CLAY interbedded with fine sand partings 10 and trace beds of clay to 20 mm thick Cvane at 10.2 m is (Glaciolacustrine) 60 kPa - 100 mm thick layer without structure (massive) with some fine to coarse sand (till-like texture) at 10.4 m  $\oplus$ Top of LOWER Very stiff, greenish grey, moist SILT with some TILLS (Lower Basal sub-angular to rounded gravel to 40 mm diameter  $\bigoplus$  $\oplus$ and a trace to some sand and clay. (Basal till) 919 (Top of Lower GLU) Very stiff, grey, moist, clayey SILT to CLAY with traces of sand and sub-rounded to rounded gravel to 75 mm diameter. (Glaciolacustrine) **⊕:>>**⊕ - with faint structure visible in discontinuous zones (11.0, 11.3, 12.8, and 13.9 m depth) - thin laminations, deformed in highly variable orientations (chaotic) including concave upward and downward curvature, steep tilting of beds and wave folding - between zones with visible structure, deposit is -918 12 massive or structure not readily apparent (note absence of fine sand partings which serve as bedding marker in upper glaciolacustrine deposit) **⊕**`>>� 1/7/15- THURBER BC.GLB 917 13 **⊕:>>**◆ 15-3-280 KCB.GPJ THURBER BC.GDT **⊕:>>**◆ 916 Very stiff, interbedded grey and black, moist, thinly laminated clayey SILT to CLAY with some organic TEST HOLE - MT POLLEY silt in black laminations and some fine sand thin laminations and partings, with organic decay **⊕**:>>**⊕** odour. (Glaciolacustrine) - bedding is sub-horizontal, undulating with low amplitude (Top of Glaciofluvial) Compact (inferred), dark grey, moist to wet, silty, fine SAND with traces of organic silt and organic decomposition odour. (Possible glaciofluvial)

HOLE NO. Sheet 4 of 5 SH14-22A CLIENT: LOCATION: See Fig. 209 Mount Polley Independent Expert E 595120, N 5819984 Engineering Investigation and Review Panel TOP OF HOLE ELEV: 930.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 25, 2014 DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES GRAIN SIZE (%) PENETRATION WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm)  $\widehat{\mathbf{E}}$ USCS ☐ Grab Sample ◆ Peak ▲ Passing #200 sieve Remolded O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦ Residual ◆ Pocket Pen △ Passing #4 sieve Undisturbed Limit Limit ☑ No Recovery COMMENTS SOIL DESCRIPTION 60 80 100 120 140 160 180 200 15 Compact to dense (inferred), interbedded dark grey and black, moist to wet, thinly laminated fine SAND and SILT with some organic silt in black laminations and organic decomposition odour. (Possible glaciofluvial) - bedding is deformed with overall curvature concave downward (possible drill disturbance) and also undulating Compact (inferred), grey, moist to wet SAND with a trace to some silt and fine rounded gravel. (Possible glaciofluvial) 914 16 Compact (inferred), grey, moist to wet, fine SAND with some silt to silty. (Possible glaciofluvial) - possibly thinly bedded (very faint) Compact (inferred), grey, moist to wet SAND with some sub-rounded gravel to 25 mm in diameter Sample fell out of and a trace of silt. (Possible glaciofluvial) core barrel during Compact (inferred), grey, wet, fine to medium retrieval from 16.8 to -913 SAND with a trace of silt. (Possible glaciofluvial) 17.4 m. Recovered during next run with significant disturbance. Compact (inferred), grey, wet SAND with some fine rounded gravel. (Possible glaciofluvial) Compact (inferred), dark grey, moist to wet, fine SAND and SILT with traces of clay and sub-rounded gravel to 25 mm diameter. (Possible glaciofluvial) 912 18 Refusal of RSCPT14-22 at approx. 18.4 m Hard/very dense, dark grey, dry to moist SILT and angular SAND and GRAVEL. (Possible eroded bedrock fragment) Compact (inferred), dark grey, moist to wet, sub-rounded to rounded gravelly to 25 in diameter Top of WEAK SAND with a trace of silt. (Possible glaciofluvial) 911 BEDROCK 19 Hard/very dense, dark grey, dry to moist, silty angular SAND to SAND and SILT with a trace to some fine gravel. (Possible brecciated volcanic bedrock) - coarse particles are of consistent dark grey basalt-like origin 910

1/7/15- THURBER BC.GLB

15-3-280 KCB.GPJ THURBER BC.GDT

TEST HOLE - MT POLLEY

HOLE NO. Sheet 5 of 5 SH14-22A LOCATION: See Fig. 209 CLIENT: Mount Polley Independent Expert Engineering Investigation and Review Panel E 595120, N 5819984 TOP OF HOLE ELEV: 930.0 m PROJECT: Mount Polley Tailings Dam Breach METHOD: Sonic DATE: October 25, 2014 **THURBER** DRILLING CO.: Mud Bay Drilling Ltd. FILE NO.: 15-3-280 INSPECTOR: CHS ▼ WATER LEVEL SAMPLES PENETRATION GRAIN SIZE (%) WATER CONTENT (%) UNDRAINED SHEAR STRENGTH (kPa) (blows/300 mm) Ξ USCS ☐ Grab Sample ◆ Peak Remolded ▲ Passing #200 sieve O Disturbed Liquid ELEVATION DEPTH ( USCS ■ Tube Sample ♦Residual △ Passing #4 sieve ◆ Pocket Pen Undisturbed Limit Limit ☑ No Recovery 60 80 100 120 140 160 180 200 **COMMENTS** SOIL DESCRIPTION Hard/very dense, dark grey, dry to moist, silty angular SAND to SAND and SILT with a trace to some fine gravel. (Possible brecciated volcanic 20 bedrock) Drill is rattling, as - angular gravelly SAND with some silt and a trace with weak rock of clay, clast supported with interlocking angular particles (possible un-brecciated zone) from 20.4 m to 22.6 m 909 21 -908 22 1/7/15- THURBER BC.GLB -907 23 LOG OF TEST HOLE - MT POLLEY 15-3-280 KCB.GPJ THURBER BC.GDT End of test hole at KCB instruction. Test hole grouted to surface upon completion. -906 -24 -905